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The training and development of high technology specialists in science-based companies a comparative study: the United Kingdom and Taiwan

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THE TRAINING AND DEVELOPMENT OF HIGH TECHNOLOGY SPECIALISTS IN SCIENCE-BASED COMPANIES

A COMPARATIVE STUDY: THE UNITED KINGDOM AND TAIWAN

by

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For

My family

Content

Acknowledgements

Abstract

This thesis aims to examine the training and development of high technology specialists in science-based companies. It is a comparative study focused on the UK and Taiwan. The study examines through case studies, the cultural, historical and global economic factors which have a decisive impact on the development of training policies in companies.

The study identifies areas of new research and action required to improve the training potential of companies employing specialist staff.

Introduction

This research examines the importance of training and development in relation to the employment of highly qualified technical staff in high technology industry, and the differences between training and development practices in two countries. The study is set in the UK and Taiwan. A comparison between these two countries was done to examine the ways in which socio-economic differences and patterns of culture impact on strategies of training and development in commercial companies.

The basic question of the research is: 'how far do observed differences in training and development practice in British and Taiwanese companies reflect wider differences in national cultures, labour supply structures and public policies toward work-based training?' The project begins from the premise that comparative studies can illuminate many aspects of organisational behavior in different countries. It might appear at first sight that the training of technical specialists reflects primarily the changing technical imperatives of their work. Such factors are important. But other considerations need to be taken into account in addition. This study shows that differences in national cultural patterns influence what takes place in companies. These are explored in chapter 2. It is also important to take into account a range of educational and labour market factors for these determine the kind of training problems companies must solve. These issues are discussed in this study which is based on case studies of companies and interviews with individual employees – managers and engineers.

This research focused on the training and development of high technology specialists in science-based companies. Such employees are crucial to company success in a global, competitive economy. Because of their specialised knowledge, they have distinctive needs in relation to their professional development. It is also the case, however, that the training needs of such employees have not received a great deal of attention in the literature of management of human resources or human resource development (HRD).

I was hoping that through case studies of science-based companies and interviews with individual technical specialists, I would find out what the patterns for training and

development were in these two countries whether the differences between them are affected by national differences of history and culture. Finally, I hoped to understand the relationship between good training and a company's commercial success.

The reason for me to start this research is that I think high-technology employees in Taiwan are neglected, they do not get the treatment they deserve either in the literature of management or in the practice of companies. And the sad truth is, that they themselves do not even know how important continuous training and development is and neither do their companies. Moreover, before I came over to England to do this study, I thought that the HRD and training and development practices in the UK were better than in Taiwan, which is what many other Taiwanese believe too. But very interestingly, I found that in the UK, people believe that the learning climate in companies is stronger in the East because Asian cultures make it so. Stern and Sommerland (1999) commenting in a prestigious Institute of Personnel and Development (IPD) publication said that 'Japan, Germany and various of the 'tiger economies' are usually singled out as countries that have a strong workplace learning tradition, leading to a highly skilled workforce coupled with high productivity' (Stern & Sommerland, 1999:72). This is in conflict to what we believe in Taiwan or in the East. Therefore, I thought it would be interesting to conduct research and to discover what the truth of the matter is.

It is worth mentioning here is that I myself was an engineer. I had been doing an engineering job in an aerospace company for five years before I came to England to study. I believed that I would gain deeper insight about the importance of training and development to a highly technology trained specialist. I was employed in Taiwan by the Ministry of National Defense to help with the manufacture of fighter aircraft. My special role was solving the engineering problems on the production line for both aluminum castings and heat treatment of metal parts. Besides that, I was also responsible for planning the project budget and evaluating employees' performance. This experience led me to think about the training I had, its strengths and weaknesses, and to a determination to find ways to improve it for successive generations of young engineers.

At that time, my training involved the following steps:

- In-house training: There were a few management courses, such as TQM (Total Quality Management), JIT (Just In Time) and so on. There was little formal training for engineers to promote our expertise except for a few academic lectures given to us.
- Outsiders' training: I have only been to training programmes organised by outsiders twice within five years. Both were related to my professional expertise. They were about metal distortion problems caused by heat treatment and a quality promoting method called 'Tenco Quality Engineering'.

Looking back, a number of points in this experience are of great concerns to me:

- Training was poor, because there was no time for those people who work in the production line. The training department was always in conflict with managers of factories who did not want training because it influenced the production schedule and they did not consider training might enhance the product quality. The top manager had no sense about such poor circumstance because he himself did not have much experience of training;
- There was only a little emphasis on training and few people responsible for it. This organisation did not seek to improve training or even consider how to train the trainers;
- Everything was regulated; employees are not encouraged to think, to innovate. Instead, we were expected to follow every regulation and that makes many engineers feel frustrated;
- In a large and bureaucratic company, if one wants to do something, one has to go through many layers of decision-making to gain permission and support and the

process becomes very inefficient.

The company was suffering from a high turn over rate of staff. The company actually paid very well compared with other companies in Taiwan. But people still left, and all left for the same reasons – feeling that they were not being taken good care of by the company, believing the company did not help their future careers. They could not see what their futures were in this company. And they were also afraid that they would be gradually out of date, as the company did not have a good policy to continuously train them and develop them. I myself was one of them. I felt that I would rather work in other companies although the pay might not be as good but at least I could be happy because of the satisfaction of continuous personal growth.

Therefore, my experiences strongly led me to this study - to explore the importance of training and development for highly trained technical specialists.

I understand that it is controversial whether or not there is a link between workplace learning and the company's performance improvement. Research has been conducted to see how strong the linkage is. Keep & Mayhew (1994) point that the evidence indicates that the linkages are complex and indirect. And Stern & Sommerlad (1999) suggest that 'it is difficult but possible to create a framework that allows us to map some of the accumulating evidence about linkages'. They reflect on the work of Ichiniowski and claim in their book *'Workplace Learning, Culture and Performance'* that:

> In a multi-year study of steel finishing lines, companies with high levels of training, frequent worker-management discussions, many problem-solving teams, pay based or team productivity, and policies to avoid lay-offs, had lines that ran 98 per cent of the time. Plants with none of these practices had only 88 per cent uptime, and also produced lower quality than did high-performance plants (Stern & Sommerlad, 1999:72).

Another exciting discovery is from Professor West, University of Sheffield. He conducted a programme called 'the Sheffield effectiveness programme' together with

Malcolm Patterson. They have surveyed 100 employers over 7 years. They found that there is a link between effective people management and strong business performance. Especially two forms of HR practice are mentioned in his report. The report said: 'Our findings generally support these links. As well as confirming strong ties between attitudes and performance, they show that two forms of HR practice are related to improvements in profitability and productivity: acquisition and development of skills (as assessed by the sophistication of induction, training, selection and appraisal practices); and job design (as assessed by the degree of job variety, responsibility, skill flexibility and team work).' And more, they also found that the satisfaction of the work force is an important predictor of future productivity (West & Patterson, 1998:29).

I hope through my work and research to understand more about the relationship between training and development and companies' commercial success in both Taiwan and the UK.

Before we move on to the details of the research, I would like to clarify the terms I am using in this thesis. They are 'training', 'development' and 'HRD'. First, we looked at the definitions that Steve Truelove (1992) used in his book '*The Handbook of Training and Development*'.

> Training: training endeavors to impart knowledge, skills and attitudes
> necessary to perform job-related tasks. It aims to improve job performance
> in a direct way.
>
> Development: development is a process whereby individuals learn through
> experience to be more effective. It aims to help people utilize the skills and
> knowledge that education and training have given them-not only in the their
> current jobs, but also in future posts. It embodies concepts such as
> psychological growth, greater maturity and increased confidence.
> (Truelove, 1992:291)

And let us see what these two terms, plus 'HRD' and 'CPD', mean in this thesis.

Training and development: In this thesis, training means work-based training, which is

different from the initial training which is aimed to train people to be employable for work. Training and development are always mentioned together in this thesis because only having training is not enough for either the needs of individuals or companies. A company has to invest in its employees to continuously keep them developing to be employable for now and for the future. Training is a short-term process, which is important when an individual needs to learn some particular skills. But development is a long-term process, and it is only under continuous development that individuals and organisations can grow and achieve their fullest potential.

HRD: HRD stands for human resource development. Megginson *et al.* (1993) defined this term as 'A holistic and integrated approach to improving work-related behaviour, using a range of learning techniques and strategies.' (Megginson *et al.* 1993:160) Walton J.(1999) has defined HRD as follows:

1. Human resource development is an extension of Training and Development, with a specific orientation towards organisational learning interventions designed to improve skills, knowledge and understanding.

2. Human resource development has wider, more holistic origins, focusing on 'the interplay of global, organisational and individual needs' (Walton, 1999:53-54).

In this work, HRD is defined as a more strategic way to develop human resources in companies. It is a concept to develop human resources on the basis of companies' profits related activities. As R. Harrison said, 'HRD can no longer afford to be only about 'training and development' – important through the task of training must remain in ensuring and updating competency and flexibility at every level of the organisation. HRD needs to be a primary area of policy-making and strategy. It has the potential to be a key business process and is essential to secure the purposive development of the human and organisational capacity whereby goals and strategy themselves can be changed and expand through time (Harrison R. 1997:XII)

CPD: CPD is short for continuous professional development. It is different from initial training. It is more focused on work-based training and is aimed to help those who are in employment to develop more skills and finally become more effective. For professionally qualified staff, such development in central to their ability to continue their practice. It helps them take a critical view of their own professional skills and it may be a requirement of their ability to remain employed.

The focus of this study, then, is on the ways in which the further development of well qualified technical specialists is organised in the UK and Taiwan. My hope is that comparative studies of this kind will open up wider discussions about how the training needs of such staff can best be met.

This thesis is orginised as follows: Chapter 1 explores the importance of training and development and introduces the concept of knowledge productivity. Chapter 2 is to bring out how training and development are affected by cultural, government policy and labour structure factors. In the later analysis of the research, I have tried to interpret the differences between UK and Taiwanese companies in the light of these three factors. Chapter 3 is the methodology chapter which explains the rationale of the approach of the study. Chapters 4 to 7 are the fieldwork chapters. They show the work I have done to examine the training and development situation in these two countries and the interpretation of the results. The final chapter, chapter 8, develops the comparisons between the UK and Taiwan and sets out some conclusions.

Chapter 1. The importance of training and development

This study focuses on the post-qualifying professional development of technical specialists. In the global economy such people are critical to the success of their companies. Why is training of high technology specialists important?

The study approaches this question from the points of view of companies in the UK and Taiwan respectively. The special focus of this study arising from my own experience is on the training provided for technical specialists. Such employees present their companies with special challenges: to recruit well qualified people; to retrain them; to sustain their technical interests and motivation and to provide them with real opportunities to use their abilities. Such companies, as well is seen, function in a competitive environment and must keep up to date with new knowledge and techniques.

The experience of work and of training of technical specialists is not, however, uniform. It varies between countries, among different companies and it changes through time. This study compares training and development in the UK and Taiwan. The study examines, through comparison, the factors which shape the development and experience of training of technical specialists. The study shows, as will be seen, that there are many issues to take into account other than the demands of technology. Cultural and organisational factors are significant, too.

1-1. Demand/Supply factor

1-1-1. The view from the UK: Industries are crying out for engineers

The UK's industry is crying out for engineers, as there has been a shortage of qualified engineers for years. This phenomenon can be seen from a newspaper report written by David Bowen and was headlined as:'Who wants to be an engineer? We don't.' He thinks the cause of a looming skill shortage could stifle British economic recovery. He said:

'British industry is paying the price for its disinvestement in training and engineering in the past 10 years' (Brown, David. 1996: C6).

Many companies are suffering in recruiting not enough engineers. The reasons might be due to the fact there is a decline in the number of students who want to study science or engineering and there is a lack of continuous training for engineers. David Bowen explained it as follows:

> There were 3 million people working in engineering industry in 1980, but now there are only half the number people left in engineering. Besides, the pay for engineers in the UK is not high, an engineer in Britain rarely earns headline-making money. Moreover, the lack of training makes things worse. The economic recession in the 1980s made companies found little difficulty finding the skills they needed, they therefore cut right back on training. Towards the end of the eighties, when the economy is booming, there was a brief "skills scare" - but the early Nineties' recession swept that away (1996:C6)

Engineering is a tough profession, engineers have to run faster to stand still because of the speed of knowledge change in their field of expertise. If there is neither attractive rewards in order to encourage more students studying engineering and for the sake to maintain engineers staying in the industry, nor well-organised training and development plans in order to let engineers to see their future and feel self-fulfilled, the shortage of engineers probably cannot be ended.

Problems of pay and recruitment are difficult to solve. They are, at least, short term ones. There remain long term problems in Britain concerning the social status of work in science and especially in technology. It is a paradox that the world's first industrial nation has historically not given engineers the social status to match their economic importance to society.

1-1-2. The view from Taiwan: Sufficient supply of engineers at present, but a potential shortage of engineers is waiting

Taiwan's situation is a bit different to that in the UK. Firstly, many people would like to work as engineers. This is probably due to the reason that engineering is one of the top 10 jobs with high payment. (Sky Magazine, 1996) Secondly, the government has put much emphasis on developing industry, especially high technology industry. Therefore, there are relevant education plans to cultivate technical specialists. According to a survey during 1982 to 1983, there were 52.0% students studying sciences & technology which is much more than other subjects such as humanities or social sciences; and during 1992 to 1993, the number increased to 58.1% and it is still increasing (Department of Education, 1994. Taiwan). But surprisingly, although there is huge amount of science and engineering graduates flowing into the high level labour market, the supply still will be not enough for the demand in the very near future. The detail will be discussed in chapter 2-3-1, and it said after the year 2000, there would be a shortage of engineers in Taiwan.

Hence, Taiwan will face the same fate as the UK in the very near future, although the Department of Education recently opens more spaces for students who want to study science and engineering in universities. But is action cannot save the critical situation. Training therefore has become very important for Taiwan's industry as well. If they do not train their engineering staff, they would leave their positions because they gain no self-fulfilling experience from being engineers. This makes things worse. Unfortunately, many Taiwanese managers only see a false picture because currently there is adequate supply, they are not aware that they will face shortages of technical staff just like other developed countries do.

1-2: Global competition Factor

We have discussed the importance of training and development from the aspect of demand/supply of engineers factor in the previous two sessions. Now we want to see if there are other factors to make training and development important.

Competition in the global market will in future be a competition in knowledge productivity between companies because the business market is no longer a market to compete on labour cost. Even Third World countries will soon have no cheap labour and will focus on developing higher-level industries. Therefore knowledge productivity will be the weapon for firms use to compete in the future.

The following sections aim to discuss how global competition influences a company's training and development and introduce the concept of knowledge productivity.

1-2-1. Global competition makes training important

Taiwan is a small island in the Pacific Ocean, with a total area of nearly 14,000 sq. miles (about the size of Netherlands) and 21 million populations. It used to have a notorious reputation for making cheap, not good quality products. But now, Taiwan is changing. Because Taiwan is small, with limited natural resources, the abundant resource of Taiwan is its people (the population density of Taiwan ranks number 2 in the world). The only way for Taiwan to succeed on the international stage is to develop high-tech industry through the long-term accumulation of high-quality technology and good management. The founder of the biggest computer company - Acer, Mr. Shih (1996) said: "the effective development of 'brain power' within a nation will decide the prosperity of a country in the future. If Taiwan is to make history and increase its competitiveness, it requires the mutual influence of people with the heart to work towards the upgrade of technology, capability and infrastructure" (1996: pxix).

At present, since 1980s, PC clone manufacturing is the most dynamic sector of Taiwan's industry. In 1997, Taiwan has already become the third biggest country in the world to produce the IC chips, coming only after America and Japan (The statistics shows that in 1995, Taiwan was the fourth largest supplier of IC chips, in terms of production value, behind the US, Japan, and South Korea). (Source: Industry Week, 1995) Taiwan is one of the four Asian Tiger Countries and Taiwan is moving toward a high-tech island now.

Britain, one of the pioneer countries of the first industrial revolution, has already become a technology-intensive country from a labour-intensive country one or two

centuries ago. Certainly the policy and strategy to develop its 'brain power' is worthy of study and as a model for Taiwan's reference. The UK and Taiwan have very different cultures and business organisations. These contexts - historical and cultural - affect the style of training and development in the two countries. The following diagram identifies some factors that influence training and development:

Diagram 1-1

National culture

⇩

Government policy ⇨ (**Training & Development**) ⇦ **Labour supply**
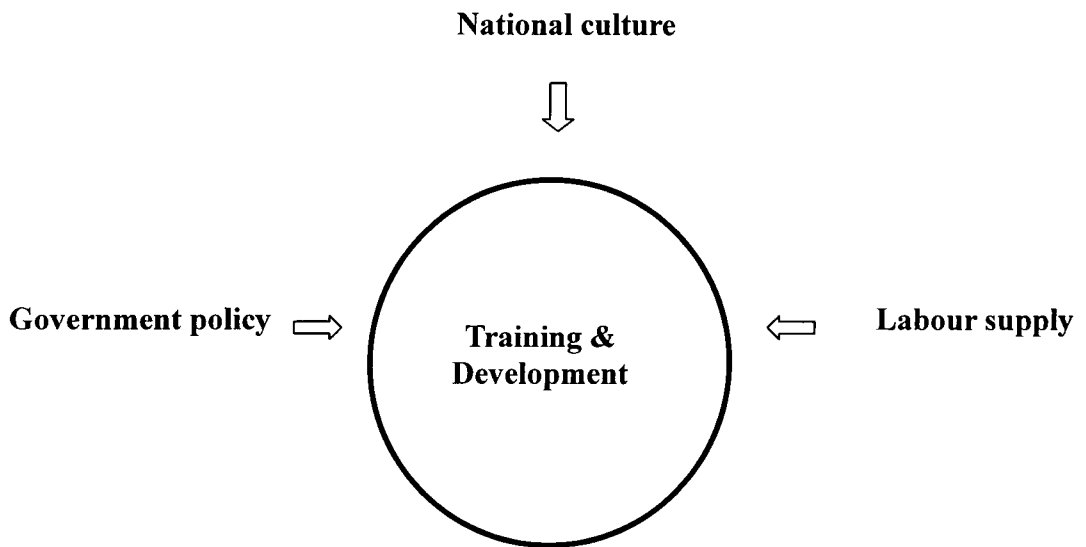
The diagram helps us visualise some of the key factors that influence the systems of training and development. I show in this study that national difference in the management of the training of highly qualified technical personnel reflects wider differences of culture, government intervention and labour supply structure. It follows, therefore, that any specific study of technical human resource development in any society should be designed to take these types of influence into account.

The reason for me to compare the UK and Taiwan for their systems in training and development is because these two countries are so different. One is in the West and has been a dominant player in the global economy for centuries. The other is in the East and has just started its industry for a few decades but it has quickly become successful and prosperous. The strong contrast between these two countries - between the old and new, West and East, individualistic and conservative culture and so on - all of those

make this research interesting and fascinating and relevant to other cross-national comparative research.

Both Britain and Taiwan want to have a seat in the international stage just as every country does. However, the business world, undoubtedly, is a competitive world. Firms have to all the time prepare themselves to face every single challenge in the cruel and highly changeable global economy. Actually the business world is just like an ecological system on a smaller size. Firms are just like the many different species; the business crises are just like the many dangers in the natural environment. Darwin's 'Theory of Evolution' -- nature selection - can be used to describe how the changing environment influence a firm's chances of living or dying. In a real ecological system, when there is competitive pressure existing, such as climate change, food shortage, natural enemies, etc., which will threaten species' continuous living or not, some stronger or adaptable species can find ways such as changing their colour, size or diet then they could be able to continue their lives and generations while other weak species don't. Those weak species' numbers would decline and even the whole species would go extinct. The same, in the business world, when companies are facing competitive pressure, they have to adopt some changes in order to continue to survive. Companies could only choose to change or face the fate of disappearing.

Mark Casson (1990) probed into this point in his book 'Enterprise and competitiveness: a system view of international businesses' noting that:

> A firm possesses a competitive advantage when it has access to some (tangible or intangible) asset which is denied to its competitors. And for a long-term perspective the competitiveness of the firm is most likely to be sustained by maintaining continuous innovation in technology and business strategy, so as to remain always one step ahead of the competition. Innovation is a costly process, however, because it ties up highly skilled human resources, such as strategic planners and research worker. (Casson M., 1990)

The two main things - technology and business strategy for maintaining companies' competitiveness - are both supported by people. High quality managers produce good business strategies and high quality research workers (such as engineers and technical specialists) produce good technology. Developing human resources certainly is the

common trend of all the companies in all the countries in the world. Therefore, how to help people function at higher levels of quality and achievement would be the first priority business of every company.

1-2-2. How to keep human resources at a high level?

From the literature of HRD, there are two ways for a company to employ high quality human resources:

- Recruit good quality people;
- Continuously train and develop people.

The first, recruiting good quality people is a factor which can not always be controlled. It depends to some extent on chances. However, the second way - train and develop people to make them better is a thing which can be under companies' control. Successful companies stress training, both as a way of increasing efficiency and as a means of instilling the company's values into employees. Although employees may not be exceptional, the successful companies get from them extraordinary levels of performance. They are willing to spend money on training - but so do some unsuccessful companies. The difference is that successful companies make sure that training is effective - that is related to its future needs in a consistent and planned way. It is business oriented. But, what is good training?

1-2-3. Good training helps companies become more competitive

Good training should be able to meet companies' business goals in both short-term and long-term, and enable both the company itself and employees to continuously develop. Should the following things done then the training could be called good training. They include:
- Analysing organisational training needs according to organisational objectives;
- Designing learning and training;
- Developing good ways to deliver training (good training materials and good trainers);
- Forming a learning company.

Forming a learning company is the only and the best way to put training into effect, otherwise training can easily to become a formality. In session 1-4-1 there will be more detailed explanation about the learning company. Steve Truelove (1992) pointed out his ideas about training:

> Creating an appropriate organisational climate is a key element in providing for employees to grow, and jobs should be designed to encourage individual development through more or less constant learning. Personal and organisational development is closely linked, and training interventions often address both needs simultaneously. Although much of the development process is informal, progressive organisations take positive steps to maximise opportunities for learning and growth by setting up monitoring systems and showing an interest in individuals' development. (Truelove S., 1992:286)

Companies can benefit from a good and successful training. A good training generates the chain reaction effect. Not only because of its employee's skills and understanding get improved, but also because employees become more motivated because they feel they have continuous personal growth from their jobs. Companies therefore have better performance according to all of those chain reactions. The following chart presents the chain reaction attributable to good training:

Diagram 1-2

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┌─────────────────────────┐         ┌─────────────────────────────┐
│                         │         │      Improved skills;       │
│     Good Training       │  ──►    │      Understanding;         │
│                         │         │    Knowledge productivity   │
└─────────────────────────┘         └─────────────────────────────┘
            ▲                                      │
            │                                      ▼
┌─────────────────────────┐         ┌─────────────────────────────┐
│   Creative productivity │         │ Higher motivation and competence │
│                         │         │                             │
└─────────────────────────┘         └─────────────────────────────┘
            ▲
            │
┌─────────────────────────┐
│ Better performance of company │
└─────────────────────────┘

      ▲        ┌─────────────────────┐
      │        │ More effective and creative │    ◄──
      └────    │         work        │
               └─────────────────────┘
```
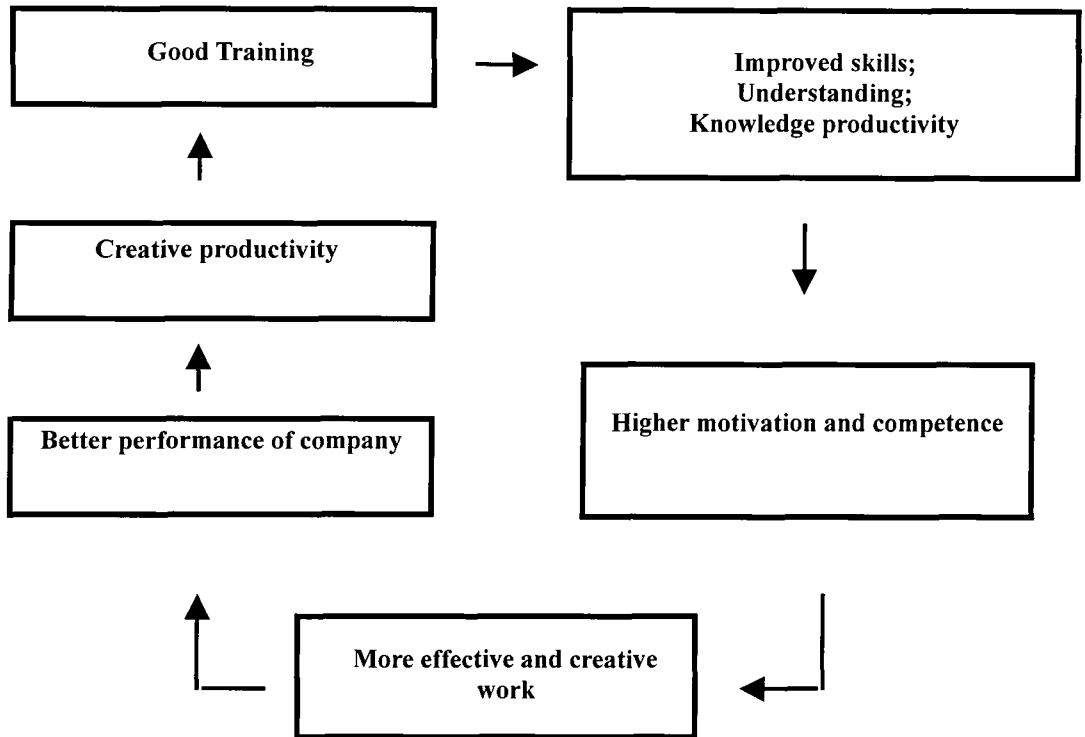
At the moment this training and success cycle, represent a hypothesis to explore. It has, however, become part of the orthodoxy of modern management practice and there is much support for the underlying propositions about learning, motivation and achievement that it incorporates. (See e.g. Handy. 1991)

1-3. Knowledge Productivity Factor

The success of a company depends on many factors such as investment, technology, marketing, human resource development and good management. Each of those activities need specialised knowledge to support it, so developing the knowledge base is vital to lead companies to success. As everybody knows, it is people who make the difference. Only people inside the company can help to build up the knowledge base and continually develop it since the company itself cannot learn. Thus, those people

who are considered as companies' human resources are companies' important assets. But, how about when human resources stop being resources? Business and organisations always announce that 'people are the most important resource and capital in an organisation'. However, if the statement is true, what kind of message is it that many large corporations such as General Motors, Honeywell and BASF cut their manpower 5%, 6% and 8% down respectively (Fortune, 1994). In the case studies conducted as part of this research, there was one company, Cummins Engine, which used this slogan a lot. It did not prevent then in 1996 closing down their manufacturing plant and staffs in Central Scotland because of overcapacity in Europe.

Companies would not care to spend fortunes to ask people to leave, is it true that people are the most valuable assets of companies? Or only those people who can contribute to companies' profits would be considered as valuable capital? Employees can only play an important role as human resource when they prove to be valuable in the processes of knowledge creation and knowledge application. (Kessels, 1996:168) Although the concepts of human resource have changed rapidly, all trends reveal that the emphasis of human resource has moved from the appreciation of an individual's physical labour and ability to regulate and organise employees' potential contribution to knowledge productivity.

Especially for science-based companies, technical knowledge is the weapon for companies to fight to live. Knowledge productivity has become the index of a company's success and the quality of human resource management. Not surprisingly, how to promote knowledge productivity has been significantly noticed by companies. Human resource managers in science-based companies should place more emphasis on training their engineers and technical specialists to enhance their knowledge productivity.

For promoting knowledge productivity, Kessels thinks:

> The talents of knowledge workers are put to optimal use through material
> provisions and especially through an educational environment that furthers
> personal expertise. This climate enhances and stimulates participation by
> talented employees in interesting and useful projects and in professional

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and scholarly networks. Their surroundings encourage them to take initiatives and to develop an individual perspective within the opportunities of the organisation's strategic policy. (1996:169)

This is the idea of 'the learning organisation' or 'the learning company', which can help the companies to form a favourable learning climate in order to facilitate the knowledge productivity.

1-3-1. The learning company

The learning company places an emphasis on the development of the individual and the organisaton together. (Pearson G., 1992) In Pearson's book *'The competitive organization'*, he notes that:

> In a learning organization human resource development is an important part of corporate strategy, not merely an output from it, and it is linked closely to concepts such as participation, openness, trust and responsibility.
>
> (Pearson, 1992:141)

This, 'the learning company' idea, has gained global attention because the concurrent growth of the individuals and organizations definitely enhance company's competitiveness in the global market.

Mike Pedler, John Burgoyne, and Tom Boydell (1991) specified their ideas about the learning company as follows:

> The learning company is a vision of what might be possible. It is not brought out simply by training individuals; it can only happen as a result of learning at the whole organisation level: A Learning Company is an organisation that facilitates of all its members and continuously transforms itself. This is the dream - that we can design and create organisations which are capable of adapting, changing, developing and transforming

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themselves in response to the needs, wishes and aspirations of people, inside and outside. Such companies will always be realising their assets without predatory take-over; they will be able to flex without hiring a new Top Man; they will be able to avoid the sudden and massive restructuring that happen after years of not noticing the signals. (1991: 1)

In Pearson's book (1992) 'The competitive organization', he quoted some descriptions from Pedler *et al.* (1988) which suggests that a learning company

-   has a climate in which individual members are encouraged to learn and develop their full potential;

-   extends this learning culture to include customers, suppliers and other significant stakeholders;

-   makes human resources development strategy central to business policy;

-   undergoes a continuous process of organizational transformation, i.e. the organization develops itself rather than being changed by outside intervention.

There are many other research about the ideas of the learning company or the learning organisation (see, for example, Robinson *et al.*, 1997; Battersby, 1999) all discuss the significant importance of the learning organisation. Though a learning company process, both individual employee and the company can grow. And it is a humane and kind concept towards employees actually. Because it does not only place pressures to employees to require them to be good, the company has to help them to learn too.

Organisations cannot expect that they can always recruit the most excellent people for their companies because they cannot be always lucky and even if they, those new people need time to get themselves really involved in the new companies' climate and business goals. Companies would face a lethal crisis if they were to meet a big environmental change and not have the right people for them to use. The problem is: many training programmes pursue very general goals, for example, 'corporate management', 'introduction to information technology', 'customer-friendly conduct' and 'communication skills'. Such course could be very useful and might satisfy the

knowledge needs of some companies. But for those science-based companies in which engineers are central, professional expertise is the main asset of companies. The training programmes offered by outsiders may not be enough for those highly talented knowledge people. Hence, it is important that companies should train their own staffs to be employable in order to face the pressures coming from fast-changing technology and the rapidly changing market place. Only the company itself knows the direction the company is going towards and what are the exact bodies of expertise that they want their employees to possess. Training and learning are two things which should be always mentioned together, each of them becomes meaningless without the other one. Creating a proper learning environment is as important as building a good training system. Only under a safe learning environment with adequate learning materials and expert guidance, employees will continue to acquire the necessarily cognitive, technical-instrumental and interactive skills.

In Taiwan, high-tech industries play a crucial role for building up Taiwan's economic power. In science-based companies, the knowledge workers are those highly talented engineers, more than 30% of them possess Master or Ph.D. degrees. They are the important human resource of firms. Most companies are willing to invest in training; they consider training as an important 'non-monetary' reward. However, the willingness to invest in employees' training opportunities is not necessarily the same as having a quality learning and training environment. Under a good learning environment, employees will become increasingly responsible for initiating their own programmes as a result of the primary interest of knowledge workers have in protecting and cultivating their intellectual capital, which is one of the factors of their continued employability. The attitudes of Taiwanese engineers towards training, according to my field work, is that 90% of them think that they should keep on learning to remain employable. However, due to the absence of regulations, or that there is no positive learning climate inside their companies, engineers are only willing to attend formal training when they are still energetic or the training courses take place during work time. They do not have very strong desires to attend the training courses after work. However, it's not very practical that firms arrange all the training courses during work time. It impedes working progress, especially for those engineers on the production lines. Should those companies count those extra training hours as working hours and pay for it in order to encourage their highly talented knowledge worker to learn to

promote firms' knowledge productivity? It is a bit controversial but, it seems there few companies are doing it.

Also, the climate of public discourse and academic and professional debate in the UK is much more supportive of training and development than the climate in Taiwan.

In the UK, the company climate for learning and training is stronger than in Taiwan. Both employers and employees are willing to train and learn. We will discuss the difference of training between UK and Taiwan in a later chapter (Chapter 8).

1-3-2. The corporate curriculum

This study also shows that it is not only the formal training policies and programmes of companies that matter. The curriculum of training is much more subtle than that and includes all the informal attitudes, value and beliefs which become part of the corporate curriculum.

Joseph Kessels thinks the corporate curriculum represents a firm's knowledge landscape. It progresses constantly, provided the firm cultivates this asset. The harvest depends largely on the prevailing climate. The quality of the corporate curriculum determines a firm's knowledge productivity and hence its success in a knowledge society (Kessels, 1996). According to his paper about the corporate curriculum, Kessels values the effect of informal training more than formal training. He thinks that through the interactions of colleagues, learning by doing the job, employees can promote their knowledge well, even better than the influence of the formal training courses. If this is true, the value of formal training can be questioned.

Bill Williamson (1997) thinks that formal training has its own significant value to firms. Informal training does happen more frequently than formal training and perhaps it is more effective in many ways too. However, formal training supplements the insufficiency of informal training. For example, mentoring is one of the informal training methods considered as the best way to deliver training. However, it depends a

lot on people' relationship and the way of communication. If a person cannot get along with others well, or cannot express things well by words, then the efficiency of mentoring can be questioned. And informal training is also influenced by a company's climate as well. If the climate is passive, then the informal training would take place slowly and inefficiently. Williamson uses engineers' training to describe this situation:

> Engineers can keep learning through carrying out special projects, changing positions participating in quality teams and discussion groups. But formal training programmes help firms to create abundantly growing learning atmosphere which help to become 'learning organisation'. Especially if firms are having the intent of creating good quality training, that will be very helpful (Williamson, 1997: 3-5).

Williamson also tried to analyse the elements of what people both think and feel about themselves and their work. He used the diagram to hypothesis those possibilities:

Diagram 1-3

Structures of Feeling and the Corporate Curriculum

Opportunities for Training and Development
High and open

Perception of
Openness of   High
Organisation

Optimism   Cynicism

High ←——————————→ Low

Frustration   Indifference
Resentment   Irresponsibility

Low and restricted
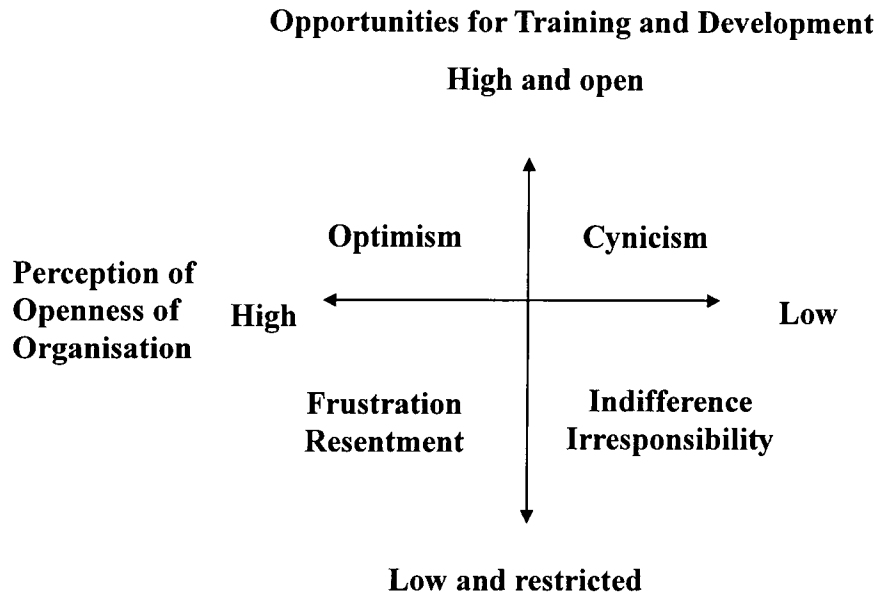
He comments as follows:

> Where employees feel that the opportunities open to them to acquire new
> knowledge and act upon it are high, there are good reasons to assume they
> will respond with a sense of optimism and challenge. Where training
> opportunities are few and restricted and people do not believe the
> organisation is willing to act on new knowledge, that is very likely that
> people will feel unmotivated, indifferent and feel it is not their
> responsibility to urge or bring about improvement, innovation and change.
> The concept of the corporate curriculum is a revealing one. It must
> embrace more than current training provision and the patterns of dialogue,
> understanding and communication in an organisation. It has to be
> extended to include how people feel, both about themselves and their
> work, for it is their feelings which govern their commitment and their
> willingness to entertain new ideas or promote them. Structures of feeling
> are woven into the structures of power, communication and control is an

organisation (Williamson B. 1997:6).

Training has functions more than delivering knowledge and skills to employees. It makes employees more motivated to do their jobs because they think their task is considered as important therefore they have to accept training. Besides, since informal training is affected by so many factors, and those factors usually cannot be 100% under companies' control, formal training becomes the safest way to make sure that companies continue to improve their knowledge productivity.

1-4. Training and development is important for a company and a country's success

Training and developing the human resource is becoming important all over the world. Much research and much more of the management literature are stressing the importance of HRD, training and development.

To summary those ideas, training has the following importance:

• to enhance national competitiveness;

• to enhance companies' competitiveness;

• to help employees develop themselves and to fulfil themselves. (see Beardwell I. & Holden L. 1997:370-371)

In this thesis, the researcher would like to examine the similarities and differences between Taiwan - a developing country and the UK - one of the leaders of the developed countries and highlight the strengths and weaknesses of their approach to high-level technical training. A comparison of the experience of the two countries highlights a number of important points to keep in mind about training and development. All generalisations about HRD must be qualified. As the UK - Taiwan comparison will show, there are differences between countries in their approach to HRD

which reflect fundamental differences of culture - in this case between the East and the West which affect attitudes about and policies towards, HRD. These are related to prevailing social values - the different emphasis the two cultures place on the value of the individual and the group. And there are many differences related to the patterns of industrial and commercial development between the two countries.

The continued professional development of technical specialists is important for organisations in both countries. The problems to be overcome and the means to achieve successful HRD policies are different, however.

1-5. Conclusion

In this chapter the claim has been made that for both business sustaining and business success for high-tech firms in the global economy depend fundamentally in the quality of the training they provide. To enhance what Kessels (1996) calls, their 'knowledge productivity' companies need to improve their 'corporate curriculum' and create a positive climate for training and learning. Many factors promote such climates; at the same time, there are many factors which stifle them. In the later chapter, the activities and perception of Taiwanese and British managers towards training are examined.

In the "Anglo and Nordic" countries on the other hand, relationships between people are not so rigidly prescribed. (Hofstede G. 1980: 384-386)

There are many other researchers who have carried out studies about the relationship between the socio-cultural background and industrial development. But most of them are studies about North East Asian countries like Japan and Koran, South East Asian countries such as Singapore, or ASEAN countries like Thailand, Malaysia and Indonesia. There are some about the East Asian countries, but most are focus on China and Hong Kong. There is very little research being done about Taiwan in this respect. Taiwan is no doubt a Chinese society, more than 99% of its residents on the island are Chinese. But still, the culture there is somehow not exactly the same as that of in China and Hong Kong. China has lost many traditional Chinese values such as Confucian values and Buddhist values as they were banned during the Cultural Revolution in the 60s. In Hong Kong, which was a British colony for nearly a century, people's ideas there are more westernised than are those in Taiwan or China.

Taiwan is a small island, but has an interesting historical background. In 1949, lots of Chinese intellectuals came over to Taiwan with Chiang Kai-Shek because China had been taken over by Mao. Those Chinese immigrants were well educated mostly, they preserved Chinese virtues well in this island. In Taiwan, every schoolchild has to study Confucianism for three years. Confucian ideas have a deep influence on every Chinese in Taiwan, and affect almost everything Taiwanese people do, including business management certainly.

The value system of Taiwanese society stresses the importance of family life, of tradition, of respect for authority, hard work. People are expected to conform to the rules of society. Critical attitudes are not encouraged. Taiwan's geo-political position reinforces this conformity. The Taiwanese have been prepared for three generations now to be ready to defend themselves from a possible Chinese attack. It is this which also explains the high value attached to discipline and hard work and the development of a work ethic in which science and engineering are important. Taiwan had to modernize quickly. This explains why many Taiwanese students are keen to study science and technology subjects.

The following two sessions we are going to have a look to see how Chinese and British

cultures do to the HRD/Training and development in these two countries.

2-1-1. In what ways does Chinese culture influence training and development in Taiwan?

In a western society like the U.K., there is a 'Civil Society' (Gellner E., 1994). The society, in comparison to those of the East, is more individualistic. The state has less interference in the development of businesses. This is unlike the situation in Taiwan, where the government has more support for its industries, for example things like public infrastructure, attraction of foreign capital, via tax incentives, subcontracting and enhancement of quality standards for Taiwanese firms and workers that came into with foreign companies, government support for R&D, technology transfer and diffusion and so on (Castells M.. 1996:186-187). This government intervention is the important factor leading to Taiwan's fast industrial expansion and economic growth. However, the economics of both Western and Far Eastern societies are successful. The traditional Chinese or Japanese living philosophies and conservative attitudes do not keep the Far Eastern countries from being successful and wealthy. Gellner (1994) has noted that individualism as a social philosophy is not the only philosophy to promote the values of industrial and commercial success. He characterizes the culture of Far Eastern societies - which he agrees have been successful economically - as communal, holistic, traditional, hierarchical, authoritarian, lacking in social and intellectual liberty and governed by a "Confucian family sprit". (Gellner E. 1994:199)

Cazal (1993) points a very vivid description about how Confucian philosophy is viewed in Korea, which is very true in Taiwan too. He claims there are five basic relationships to determine how the society operates, those are: master/subject, father/son, husband/wife, senior/junior and peer relationships. (Cazal, 1993:23) Those are so-called 'Five Ethics' that Confucius thought people should follow. The rights and duties of each towards the other are clearly defined. For example, for the master/subject relationship, the subjects should have absolute obedience to their masters. This master/subject relationship was used to apply to the relationship between the emperor to his officials in the old China eras. It is nowadays used to regulate the ways that employer/employee relationship should be. Of course it is not to the extreme degrees as it used to be, but it definitely does have a significant influence on how people think they

should relate to their bosses. Another relationship, the senior/junior one, also influences people's behavior a lot. These two relationships – the master/subject and the senior/junior are the two relationships used in business organisations. And they clearly have some impact on the ways that people think and behave.

Redding (1993) used a diagram to describe the cultural determinants of individual Chinese values (Redding, 1993:43. Basically, he was saying that there are fundamental values and beliefs which are Confucianism, Buddhism and Taoism which impact upon the society's structure and people's relationships, and, as a result, for rules of action. Chinese have a strong work ethic, they value money and frugality and pragmatism. These characteristics present themselves in their daily lives.

Diagram 2-1: Cultural determinants of individual Chinese Values (adopted from Reddings, 1993)

```
                    ┌─────────────────────┐
                    │ Fundamental Beliefs │
                    │ and Values          │
                    │                     │
                    │ Confucianism        │
                    │ Taoism              │
                    │ Buddhism            │
                    └─────────────────────┘
                         ↙        ↘
┌─────────────────────┐              ┌─────────────────────┐
│ Social Structures   │              │ Relationships Rules │
│                     │              │                     │
│                     │              │ Filial Piety        │
│ Family              │              │ Collectivism/Face   │
│ Networks            │              │ Limited and Bounded │
│ Ethnicity           │              │ Trust and           │
│                     │              │ Non-cooperation     │
└─────────────────────┘              └─────────────────────┘
              ↘       ┌─────────────────────┐     ↗
                      │ Rules for Action    │
                      │                     │
                      │                     │
                      │ Work Ethic          │
                      │ Money and Frugality │
                      │ Pragmatism          │
                      └─────────────────────┘

              ↑              ↑              ↑
┌───────────────────────────────────────────────────────┐
│                  Forms of Cognition                    │
└───────────────────────────────────────────────────────┘
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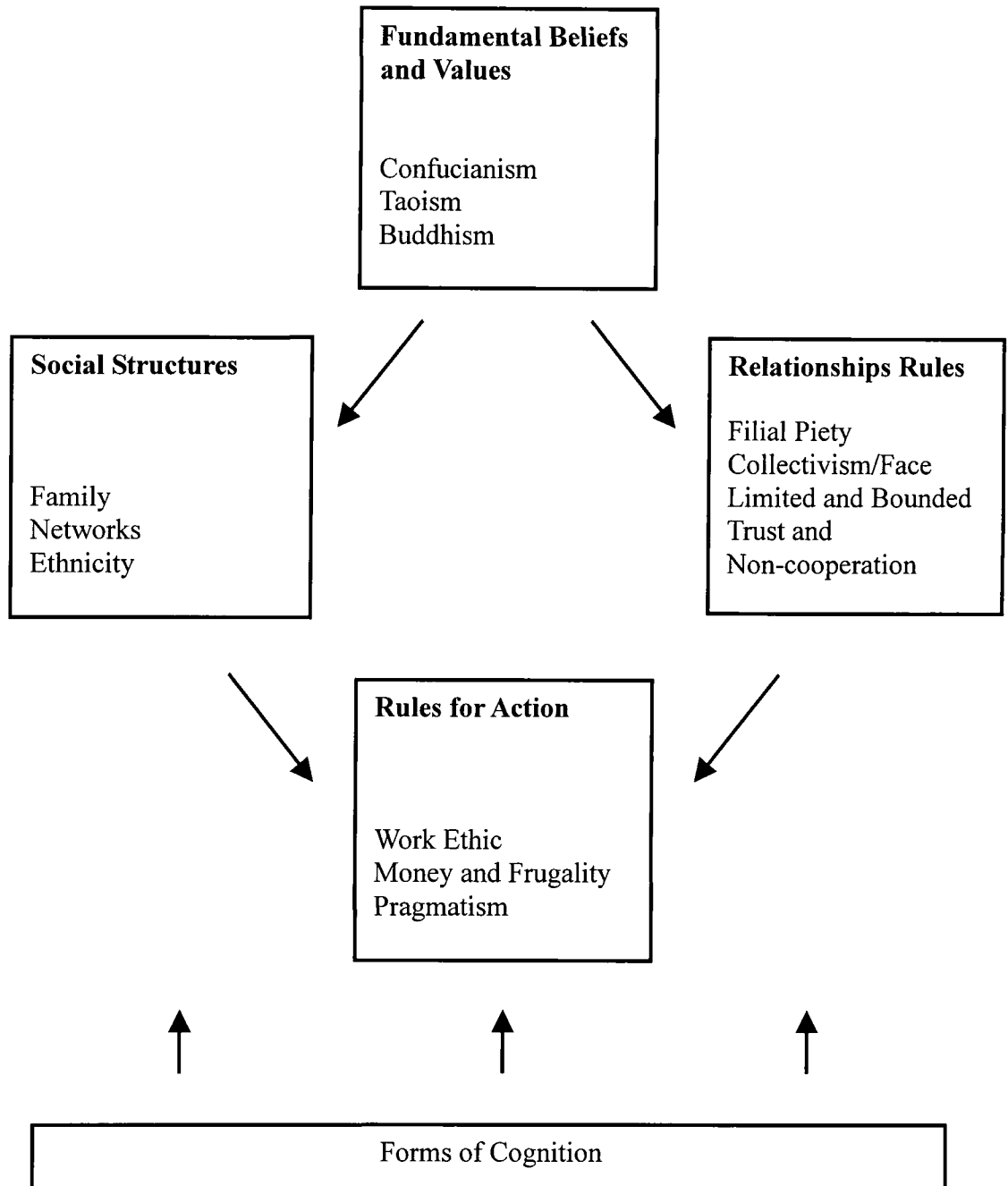
In general, Chinese culture is deeply influenced by Confucianism and the main religions of Buddhism and Taoism. To sum it up, Chinese are family oriented, filial piety is highly emphasised in the society. Chinese value ethnicity a lot. They apply this in every thing they are doing. Chinese are pragmatic and money-oriented. Their

pragmatic and money-oriented characteristics have deep historical roots. Being poor for centuries, the Chinese are willing to do anything which can improve the quality of their lives. Therefore, they adopt many western management ideas, HRD, training and development, are examples.

However, long-standing Chinese habits, Buddhist ideas and the most valued Confucian spirits are still influencing their behavior inside businesses a lot. For example, the Chinese respect the relationship between the monarch and his subjects, which has existed since thousands of years ago and has been considered more or less the same as the relationship between employers and employees: - it is hierarchical, and that is why Taiwanese workers can remain tolerant of management authority. Barry Wilkinson (1994) also said in his book *'Labour and Industry in the Asia-Pacific'* that there is 'strong central, personal control and authority' is related to Chinese's moral superiority and Confucian social rules. Of course this phenomenon is also because of the money-oriented nature of Chinese. As long as the pay keeps coming, they would not care about other things too much. Besides, Chinese respect seniority rather than a person's ability. This habit makes HRD policies and strategies difficult to conduct in companies because senior people have the best possibility to get promotion which is not only unfair, but also frustrates young and hard-working people. Recent changes have helped people became more aware of their personal agendas. However, they still do not want to spoil their interpersonal relationship with others, therefore there is a reluctance to take initiatives to try and change things. Moreover, Buddhism does not encourage people to seek for materialistic things since everything is illusion. This idea somehow impedes a real dynamic and thriving atmosphere happening in a company.

Redding (1993) described personnel management is influenced by Chinese culture as:

> The management of personnel has a distinctly harder edge to it in the Chinese case than in the Western. The use of control and of penalty is universally stronger among the Chinese. Appraisal of performance is accorded high importance relatively, and recruitment is an area which also requires and gets extensive management attention. What one might see as the more sophisticated personnel functions of selection and development are clearly given lower priority. While much of this difference may be due to environment differences and differences in worker expectations as well as labor market pressures, it is

nevertheless arguable that a degree of Chinese pragmatism is at play here, refusing to spend money unless absolutely necessary, and concentrating on the discipline of making it above all else. The impacts of paternalism, and the relatively low emphasis on professionalism, are also visible in the priorities assigned. (Redding S. 1993:170)

All of those factors influence the HRD pattern and development significantly. Far Eastern companies are often very successful economically despite their values being collective rather than individual. Yet, these same organisations are not nearly so successful in the development and promotion of HRD policies. We can only speculate why this is the case. Partly it is because HRD ideas are quite recent to the Far East. Zong-Chou Hong (1991) in his book - *Human Resource Development* specified that the ideas about HRD have been widely used since 1970s. But however, in Taiwan, these terminologies are only familiar by a few training managers (Hong Z. 1991:1). Some of these ideas came through whether companies trading in Taiwan or from returning Taiwanese who have had experience in the west. Perhaps mainly it is because of broader economic conditions. Until recently, the Pacific Rim economics, including that of Taiwan, have been booming. It has not been vital therefore - at least until now - for companies to pay much attention to training and development.

Apart from these traditional moral burdens which make barriers for implementing HRD, there are still other reasons to inhibit good HRD and training policies in Taiwanese companies. They include, as we shall see:

• Top managers are not aware of the importance of them;
• There are not many HRD specialists;
• Employees themselves are not aware of it or particularly concerned about it.

Employees and company managers typically do not value the HRD roles in organisation. Taiwan is taking advantage of being a developing country therefore the economy grows very fast. Under these circumstances, it is not easy for companies themselves to feel the factors which might lead companies to be less successful or even to fail in the future. The lack of a well-planned HRD and the thoroughgoing practice of HRD, is just like a time setting bomb for Taiwan's economy. No one will know when it is going to explode.

2-1-2. In what ways does British culture influence the training and development in the UK?

British culture is significantly affected historically by the Protestant religion - the Protestant values such as individualism, liberalism and democracy, the language of 'rights' or 'entitlements' and so on. Each of these values contributed something to help develop the philosophies of self-interest for the British people. These values are very distinct from the Eastern ones which are generally considered as more group-oriented, valuing seniority and tradition, respect and hierarchy. Instead, the more liberal and individualistic philosophies provide a more open atmosphere and attitude for British people when they do things. Once the goals have been agreed and accepted, they simply concentrate on achieving them. In contrast, Chinese, are often restricted by many traditions and the need to maintain harmony and so on. Apart from the religious influence on British culture, if we see the British culture from the angle of its historical background, British people were used to being winners. Being the leader of the industrial revolution and being the first nation in the world to have industry, to own the most colonies in the world. British people had many reasons to feel proud. These elements of history and culture also influence business management style in the UK. The relationship among these three issues are closely linked. We can present the relationship as follows:

Management

Philosophy _____ History
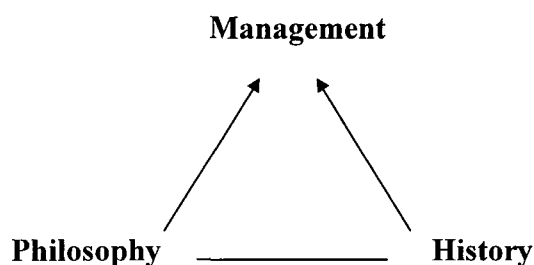
From the angle of this history of philosophical approach, there are the themes of self-interest and radicalism which must be highlighted. From the approach of history, the themes of both pride and complacency must be stressed if we are to understand the political and industrial culture of the UK. All those factors in contrast to Taiwan, actually have quite positive influences in the forming of the concepts of HRD in the UK. Since HRD is a revolution in managerial concepts, British companies feel that

they have to be the pioneers to implant HRD and carry it forward. They therefore exert efforts to make things better. From the point of view of employees' level, people are keen to see the changes and they have a high degree of self-awareness about the importance of improving themselves and they think they deserve good HRD systems to continuously develop them. This puts the pressure to force the UK's companies move towards a more positive and dynamic situation in respect of HRD. This is not to say that all companies and organisations are successful; it is to claim that in comparison with Taiwan, the cultural support and climate for good HRD is much stronger in the UK.

Of course there are other things which affect the development of HRD and training and are must to be mentioned. They include:

1. The early setting up trade of unions and employers and employees' associations: Britain was the world's first industrial nation. The history of its pattern of industrial development has left its mark on attitudes and values in the work place. The industrial revolution brought with it a strong 'Them-Us' (rich and poor, royal family and ordinary people, bosses and workers) division based on class inequality. From the end of nineteenth century and through much of the twentieth, this older model of industrial relation prevailed, reinforced by the both the developments of trades unions and employers' associations.

2. New ideas introduced: During the inter-war years, British management adopted a number of different styles: paternalism, scientific management and often, ruthless capitalism. The second World War brought in new elements: state intervention in the economy, the legal regulation of employment relations and corporatism, where the state played a strong role in the economy. During the 1970s and 1980s new models of employment relations and management emerged. These included the Right Wing model of market-led management and softer forms of the new managerialism which emphasised the importance HRD. In both cases there was a recognition that the British economy was in great need of modernisation and that British management needed improvement.

3. Professionalised management: Britain remains, however, a divided society and the pace and direction of economic change over the past 15 years has had a very

significant impact on employment relations and attitudes in management. Management has become much more thoroughly professionalised and feeds off ideas about HRD which are now in the international arena of management debate: these centre on team work, communication, HRD and finding the best ways to recruit, motivate and train employees. They are accompanied, however, by a residual suspicion on the part of many ordinary workers that these new social technologies are merely devices to boost productivity and profit at their expense.

4. Government policy and the employers and employees' relationships: Governments in Britain over the past 20 years have stressed the importance of education and training at work and have promoted a national training agenda. This has followed on the recognition that the country's industrial competitors have been more successful in this field. Some attribute Britain's relative economic decline to values which are deep in its political culture and its class system (Hutton, 1995). Among working people there is an historic tradition of mistrust of employers and a culture of low expectations about their careers and opportunities. This is linked to the persistence of class attitudes which have survived the disruptions of the twentieth century and which still inform the ways in which people approach their education. These factors do not encourage a strong commitment to personal development and training. On the other hand, it can be argued that such attitudes are a response to a situation rather than the cause of it. The situation is that of the relative failure of British employers to invest in training and of governments to attach a high priority to post-school education and training or to have effective policies in these fields.

5. Dominant, residual and emergent ideologies: Raymond Williams (1961) once described the prevailing ideologies within a society as either dominant, residual or emergent. If applied to the history of HRD in Britain, it helps describe current patterns of relationships in the markets for labour and training. The dominant attitude and approach to these matters in Britain is once which endorses the new managerialism of the 1980s. There remains in many organisations the 'residual', older Them-Us patterns where employers assert their rights to manage and workers their determination to resist. The emergent models are less clear but stress the importance of good HRD to promote new ways of thinking and working to help organisations develop flexible responses to the challenges of the global market place.

(Castells, 1996; Hutton, 1995)

Here is a table to show the cultural influence on HRD and the training and development for both the UK and Taiwan.

Table 2-1. History, culture and HRD

Cultural factors	UK	Taiwan
Philosophies	individualistic, liberal, self-interested (Protestant values influenced)	Collective, tradition-respected, seniority-respected (Buddhism & Confucianism influenced)
History	"Glorious" past ↓ recent recognition that other countries have been more successful in HRD field	Colonised history and poverty (till 1970s) ↓ money-oriented business, lower priority for HRD and training
Trade unions and profession bodies	Long-standing and until recently, powerful	Not very powerful
State intervention	Strong to Weak	Strong
Professionalised level of management	High	Low
Relationships between employers and employees	Mistrust ↓ British employers are not reluctant to invest in training and development	Hierarchy ↓ Employers are not aware of the importance of training and development of their employees, and employees do not think they should have the rights to have training.

2-2. Government policy factors

2-2-1. The UK's government policy for its VET (Vocational Education and Training)

Government in Britain does not have much direct involvement in VET. It does, however, set the policy framework for this activity leaving training responsibilities to employers. But because of the relative long term decline of economy, successive British governments have taken the view that employers do not invest enough in training and development (Harrison, 1995: 26-28). Gradually government has put a bit more emphasis on training and development.

The government's concerns about training and development was criticised by Ford (1993) in the following way:

> Industry is no longer has the comparative advantage of abundant natural resources, but instead to pools of human skills. American and British governments neither provide the education nor the training in depth, nor the infrastructural foundations necessary for the post-electro-mechnical society. (Ford, 1993:41)

British business spends about £25 billion a year on training, according to CBI Director-General Howard Davies, this record is not impressive (Davies, 1993). Nearly two-thirds of UK employers invest less than 2% of payroll costs in training while three-quarters of French employers invest more than that level (CBI, 1989). More than this, because of realising the under-investment in training is one of the major weaknesses of neo-liberal economics. Many European countries have set up minimum standards for training investment for all employers. For example, German businesses have to contribute 3.5% of payroll towards training and French businesses have to spend 2.5% of payroll on training. But the UK does not yet have such a regulation (Raggatt P. et el. 1996:194-195).

Being aware of not investing enough in training, the British is more concern about the vocational training now. There is also evidence from the Labour Force Surveys that they overall volume of training is rising (Stevens J. & R. Mackay. 1991:26). Let us look

at the VET system in the country. Aydery Collin and Len Holden have compared the British VET with other European countries in the book "Human Resource Management" (1995, 1997). They describe the British system as follows:

⇒ Training for Work (includes old Youth Training for 16 to 18-year-olds, and Employment Training for adults unemployed (Action Programme));

⇒ Training and Enterprise Councils (TECs) (England and Wales); Local Enterprise Companies (LECs) (Scotland) - to encourage companies to train their employees;

⇒ National Vocational Qualifications (NVQs) Levels 1 to 5;

⇒ Competency movement, e.g. Management Charter Initiative (MCI);

⇒ Investors in People (IIP) - to encourage companies to attain a recognised level of strategic training;

⇒ Apprenticeships - declining, about 13000 places;

⇒ Colleges of higher and further education;

⇒ Universities (including the 'old polytechnics');

⇒ Business schools, usually part of universities.

And the training culture in the UK has been described as 'voluntarist: finance rather than industry oriented; with class biased public/private education.

Generally speaking, they claim the British VET system has three main functions:

1. To train people to work: to train those unemployed adults and youth;
2. To use the school systems (including universities) to produce employable people;
3. IIP system and TECs to encourage companies to train their employees.

In general, it is a system of training which reflects many aspects of British political culture. It is decentralised. It relies on the voluntary effort of individuals and employers. It is pragmatic, having grown up as a series of responses to problems rather than having been centrally planned. There is much evidence that successful companies, including public sector organisations, are more likely than unsuccessful companies, and particularly, small and medium-sized enterprises, to train people.

It is very difficult to collect precise data about the national patterns of training for highly qualified technical personnel. Professional accreditation required continued

professional development. There is much circumstantial evidence that engineers in successful companies do have the opportunities to train and develop further. A recent article in the Independent on graduate recruitment to engineering noted that in companies like Smiths Industries or GKN, engineers are offered highly structured and varied programmes with some companies offering 'fast track' promotions opportunities. (Gosling, 1998)

2-2-2. Taiwanese government policy for its VET

As with the U.K., Taiwan does not yet have a policy focusing on the training and development of high technology specialists. Although there are occasional training programmes held by the Economic Bureau for those in the high level workforce, there is no regular training taking place, nor are there clear plans for training and develop those technical specialists. Most of the training relies on companies themselves.

With regards to the VET, Taiwan's vocational education and training policies are similar to the British one. And encouragingly, the Taiwanese government actually has an active involvement in it as the larger number of small-to medium-sized companies in Taiwan have only very limited training resources to use. The focus of the manpower development policy has been summarised by Farh J. (1995) as follows:

> ⇒ Over the years, the government has built a vast educational system to prepare high school graduates to meet the needs of economic development. This system consists of vocational schools, junior colleges, and universities. The highly centralised educational system allows the government to take a decisive role in meeting industry needs. For example, a strong demand for engineers in manufacturing has led to an educational policy that places strong emphasis on engineering-related disciplines. In the 1990-1991 academic year, the island's college and university systems enrolled 462,492 students, more than 30% of whom studied engineering. (Council for Economic Planning and Development, 1991). In 1990, about 44% of employed persons have completed a senior high school or earned a degree.
>
> ⇒ Since 1981, the government has established 13 public vocational training

institutes for students who are unable to go to college or vocational school, for the disabled, for workers who seek to change occupation, and for workers who are currently employed, but wish to obtain advanced skills training. In 1989, these institutes trained more than 20,000 workers (Council for Economic Planning and Development, 1990) (Farh J. 1995:286)

Apart from lacking a system like IIP to encourage the enterprises to train their own employees, Taiwan's VET system has almost the same functions as the British one. It is good to see that the Taiwanese government is to have a great concern to cultivate people to meet the future needs of the economy. But it seems that the Taiwanese government is only good at producing skilled people and there is not enough emphasis on continuously developing them.

It is a regrettable thing that both the countries have not yet policies for training and developing their high level technical specialists although these two countries both say they want to become high technology countries. It is to be hoped that relevant policies will appear soon in order to supplement the insufficiency of the training within enterprises.

2-3. Labour structure factors

It seems that Taiwan has a sufficient supply of engineers and that Britain does not. That is why Britain has to put more emphasis on training and development for technical specialists while Taiwan has not to worry about this problem yet. In this section we are going to see the actual engineers labour structure in these two countries.

2-3-1. Taiwan's technical specialists' structure

Studying science and engineering has become the trend among all the young students in Taiwan. There were 52.0% students studying sciences & technology in 1982 and 1983 and this figure increased to 58.1% in 1993 and it is still increasing (Resource:

Department of Education, Taiwan. 1994).   However, surprisingly, there is still an engineers shortage as noted by Taiwan's Economic Research Yuan (Commission). They think there is going to be a shortage of engineers due to the huge demand of engineers in the future in Taiwan's industry. We can see from table 2-2 & 2-3 that in the year 2000, there many kinds of engineers will be in big demand.

Table 2-2. The demand and supply of future undergraduate and postgraduate engineering manpower

	Demand	Supply	Insufficiency(%)
Electric, Electronic Engineering	4,870	1,920	(60.6)
Mechanic Engineering	2,950	1,630	(44.7)
Weaving Engineering	110	310	180.2
Civil Engineering	3,620	1,630	(54.0)
Environmental Engineering	455	300	(34.1)
Chemical Engineering	825	920	11.5
Material Engineering	350	240	(31.4)
Industry Engineering	760	750	(1.3)
Industrial Design Engineering	250	85	(66.0)
Printing Engineering	150	115	(23.4)
Transport Engineering	25	320	1180
Engineering	240	170	(70.8)
Nuclear Engineering	50	35	(30.0)
Information Engineering	2,590	1,785	(31.1)
Total	17,245	10,210	(41.8)

Note 1: The number of supply is exclusive of those people who are overseas.

Note 2: ( ) means demand is larger than supply.

Source: Economic Construction Committee, The Executive Yuan, from 1990 to 2000

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Table 2-3. The demand and supply of engineering manpower in the year 2000

	Demand	Supply	Insufficiency(%)
Electric Engineer	4,765	6,311	14.5
Electronic Engineer	8,138	8,074	(7.9)
Mechanic Engineer	6,803	10,557	35.6
Industry Mechanic & Tool Engineer	2,033	967	(110.0)
Chemical Engineer	8,724	3,477	(150.1)
Industry Engineer	4,337	1,964	(120.1)
Industrial Design Engineer	1,552	1,878	17.4
Measure Engineer	914	184	(396.7)
Aviation Engineer	1,114	318	(250.3)
System Analyse Engineer	21,106	2,161	(876.7)
Communication Engineer	4,366	446	(878.9)
Quality Control Engineer	2,488	7,937	313
Biology Scientist	2,462	116	(2122.4)

Note 1: ( ) means demand is larger than supply.

Source: Jiang J. J., Taiwan Economic Research Yuan, 1993

Table 2-2 told us that the situation of the demand and supply of science and engineering graduates from the year 1990 to 2000. And table 2-3 showed that the situation of the demand and supply of engineers in the labour market in the year 2000. Both tables reveal the potential shortage for Taiwan's high technology specialists labour market, especially in the fields of communication engineering, system analyse engineering, electronic engineering and biological engineering. Those subjects are the stars in

tomorrow's technological world.

2-3-2. The UK's technical specialists' structure

Unfortunately, there are no such statistics about the demand and supply situation of British high technology specialists. Those figures have not been found from published books, nor from the journals like 'Skills and Enterprise Executive' and not from the professional bodies themselves. I once tried to phone the 'Institute for Employment Studies' and I was hoping the institute could provide me the relevant statistics because it is an organisation which conducts research about the British employment affairs. Very disappointingly, people there told me that they do not have such data because the government has not yet thought it important to have a survey of the high level technical workforce.

So, because of the lack of empirical evidence to show the demand and supply of British engineers, I only could use the general impressions I have gained the situation in Britain. First of all, the four interviewed training managers of my U.K. case studies all said it is difficult to recruit engineers, especially these past two years, there is a severe shortage of engineers. Secondly, many science and engineering academic departments are suffering in recruiting not enough students as well. Engineering is a demanding profession and with not too impressive payment in Britain. Besides, manufacturing salaries for new graduates are almost half the level of those in other sectors. In addition, Liz Amos from the Foundation for Manufacturing noted that promotion opportunities are poor for engineering graduates. Amos believes these problems are made were by the character of engineering education in Britain which is too desk bound and academic (Gosling, 1998). Perhaps the shortage of engineers is the reason to make British firms more keen to train their technical staff compared with Taiwan, but if the government does not do something about this, a serious crisis cannot be prevented.

2-4. Conclusion

With those three national difference factors, the training and development for those high

technology specialists in these two countries do have different practices in the UK and Taiwan. The British companies have more urgent needs to train and develop their engineers as they have a supply crisis. And the individualistic, liberal and self-interested characters make people from the bottom of the organisation to the top think that training and development is important. As a result, the training and development of employees is presented in the UK as a more lively and dynamic way. And the organisations have enthusiasm to continue to work on improving it. In contrast to the UK, the training and development has different look in Taiwan. Because the sufficient supply of engineers, Taiwan does not have the urge to emphasise training and development too much at the first place. Then, the pragmatic nature of Chinese, make them unwilling to spend too much money on those non-monetary investment such as training. There are other characters such as money-oriented, collective and obedient to employers make training and development gain very little attentions in companies in Taiwan.

In the later chapters, the points of views about training and development will be talked by both the training managers and the trainees levels. From the detailed analysis from the organisational levels, plus the voices from those high technology employees, we hope the practices of training and development are clearly presented to readers, and how far those observed differences reflects the those national differences can be seen as well.

Chapter 3. Methodology

The aim of this chapter is to explain the methods of research followed in this study. The methods used, as will be seen, are qualitative rather than quantitative and of an exploratory kind. The study itself is out of necessity limited in its scope. The methodology of the research does open up lines of new research for it emphasises the importance of trying to relate the experience of training of both individual technical specialists and individual organisations, to the historical, cultural and economic contexts of their work. The methodology of the study has to be both flexible and sensitive to the complexity of the problem being studied.

The underlying question being explored is this: how far can the observed differences in specialised HRD in the UK and Taiwan be attributed to the cultural, political and organisation factors and differences discussed earlier? The challenge is to develop a methodological approach which enables us to measure, or at least, assess the importance of, these factors in particular settings – in particular companies and for particular individuals.

The approach taken can be represented as follows. The study began with and continued with, a search of the literature appropriate to the study. Among other things, this revealed a much greater interest in the business literature of the UK on HRD matters, than the equivalent literature in Taiwan. The following diagram indicates the way I approached the study and the rationale for my case studies and interviews. These were planned, within the limited time resources available to me, to explore and clarify aspect of the approach. Refinements of this basic approach would in future allow a much more sophisticated comparative empirical programme of studies to be undertaken.

Diagram 3-1

Literature review

⬇

Cultural factors

Philosophies
History
Trade unions and professional
    bodies
State intervention
Professional level of
    management

To form � **Interviews**

⇨

To explore

**Training and development
in the UK:
Better emphasised,
compared with Taiwan**

Government policy factors

UK: some involvement on
  the training and
  development of high-tech
  specialists
 	
Taiwan: very little
  involvement compared
  with the UK.

To form

⇨

**Case
studies**

To explore

**Training and development
in Taiwan:
Less emphasised,
compared with the UK**

Labour supply factor

UK: shortage of engineers,
    which causes more
    attention on continuos
    training and development
    on technology specialists.
 	
Taiwan: sufficient supply at
    the moment, therefore
    there is less awareness on
    training and development
    to those technology
    specialists.

⇨

To form

**Engineers'
voices**

To explore

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The elements have informed the methods employed to undertake this study. At its simplest, the approach required the researcher to relate the training and development experience of the UK and Taiwan against the background of culture, government policy and labour structure. And the researcher used the combination of interviews and case studies to verify the assumption she made by reviewing the literature. There are differences in the approach to high-tech training in Britain and Taiwan. National differences are somehow playing crucial roles to form the differences of training and development in different industries and companies in the two countries. They also became evident in the differences we can see between companies themselves, each one of which interprets its training policies differently. Managers in organisations may hold one view of what training is required. Technologists and engineers may had different views. As professionals, engineers - the main focus of this study - bring to their understanding of their training needs a high level of technical understanding as well as personal hopes and ambitions.

In some situations there will be a correspondence between the views of the managers, the engineers and governments. In others, these views will conflict as people might feel they cannot realise their hopes and expectations about training. The methodologies of this study which allow the researcher to hear the "voices" of the engineers in a range of different companies in the two countries.

The challenge then is to interpret what they are saying so that we can all better understand the complex factors which influence the patterns, experience and efficiencies of high-tech training in the global economy. If we can understand their patterns then we should be in a better position to improve them.

Methodology describes the way and the techniques used by a researcher to conduct his or her research. There are many methods that researchers can adopt for conducting research.

If one checks the dictionary for the meaning of the word 'research', it means - which?
careful study of a subject, especially scholarly or scientific study of a given field or problem. In this research, the researcher hopes that through the careful study and investigation about the training and development of high technology specialists in science-based companies and by comparing the situation in the two countries of the UK and Taiwan, she can discover something specific and useful for these two

countries in terms of the training and development of high technology specialists.

In order to achieve this goal, this research required a variety of methods to approach the topic. The researcher used interviews, case studies and a comparative approach to interpret the results of the case studies. In this section, the researcher is going to explain why she chose those methods and how she conducted the work.

3-1. Research Design

The basic design of the study can be visualised as follows:

Cases

Literature review ———— **Interviews**
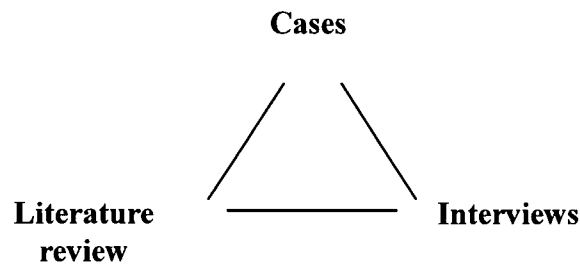
There are three pillars to the thesis. They are the case studies, interviews and literature review; hoping to show to readers that training and development is important and how different the training and development is in the two countries by the evidence provided by the case studies and interview. The idea behind this approach is as has been just explained: training and development in a country is influenced by many factors; it is not simply the result of the state or of a company's policy. There are other factors such as cultural attitudes, government inventions, and the type of labour market in which a firm functions all influence a company's training and development programme. In order to work within this approach, the researcher adopted a research design based on case studies and interviews in particular companies chosen to reflect the diversity of industrial organisation in the two countries.

3-2. Research methods

3-2-1. Interviews

Interviewing is a very good way to find out how people think about particular issues. Because the researcher can talk to people face to face, record the dialogue and then analyse the conversation and discover the existing reasons about the phenomena - in this case training - or new agendas for the future. Interviewing is a time consuming process and it is not always possible to gain access to the organisations one would like to. In a time-limited study such as this, these are difficult problems to overcome. As will be seen, the choice of companies in which to conduct interviews was based on personal rather than strategic factors. Personal networks of contact were used in both countries. Although this limits the range of companies studied, it illustrates the usefulness of the method and the approach for future research.

In this research, I interviewed 10 Taiwanese training managers, 4 UK training managers and 10 Taiwanese engineers. From the interviews with the training managers, I came to understand their concepts about training and the design and provision of training. Form the interviews with engineers, I got to know how they think of the training they have received and their expectations about their training and development in the future. Both sets of interviews were supplemented with information and data collected from the professional literature and publications related to technical specialists in both countries. This data is presented in subsequent sections of the study on the 'voices' of the technical specialists.

In this work, a semi-structured interview schedule was used ensure some standardisation across the case study and these were supplemented with more general conversation have been used. The interviews were designed to:

- reveal different points of view;
- learn something in depth about the context in which people work;
- identify issues in training and development from the point of view of the high-tech staff themselves.

The focus of this study on individuals is based on the assumption that it is the technical staff themselves who have first-hand information and knowledge of the settings in which they work. They know directly both their own training requirements and the ways in which knowledge in their field is changing. It is important, therefore, that researchers in this field take seriously what individual specialists say about themselves. It is important to learn about what they feel about it. We need to know whether the training available to them meets their hopes and expectations because this has an important effect on their motivations to participate in it.

There are, of course, limitations to this method of research. Some staff may not know fully the training provision of the company in which they work. It is a problem, therefore, to know how much a particular interviewee actually knows.

It is also problem that there are sensitive issues about which interviewees are not allowed to speak. This is more likely to be the case with training managers rather than engineers. Managers are closer to the centre of authority in a company than engineers.

Sometimes the views of respondents can be influenced by their personal feelings. It is possible, for example that people who are feeling negative about their jobs themselves will produce responses which reflect their inner feelings rather than the realities of their work organisations. In only one case among the people interviewed for this study was there any evidence of this kind of dissatisfaction influencing responses. In all other cases interviewees seemed to report their experience objectively. They seemed to say what they wanted to say rather than what they believed the interviewer wanted to hear. Most, for instance, explained that they did not consider training issues very much when they were asked about their views on working in different companies or in changing their jobs. Had they been concerned merely to impress the researcher, they would have been much more positive about training than they actually were.

Of course interviewer's attitude might influence the answers from the respondents as well. As Selltiz et al (1962:583) pointed out, 'interviewers are human beings and not machines.' Therefore interviewers' moods or manners would more or less affect

the interviewees. But fortunately this situation does not apply to this research much. Because the topic of the interview was not a sensitive one in any of the organisations - the discussion might have been different if the research was about salaries or organisational structure - and because the research itself was being undertaken by a stranger, few were threatened by it. This was not the case for the training managers. They may have been sensitive about other companies learning about their companies, their systems and policies. In some, companies asked to remain anonymous in the study.

The main limitation to the interview method of research is that it is always difficult to carry out more than a limited number of interviews. The people selected for interview in this study were not selected randomly but through personal contacts. For this reason it is important to supplement the responses of interviewees with other kinds of information. It is for this reason that this study followed a case study and comparative methodology.

3-2-2. Case studies

Case studies can take several different forms. Some case studies are based on in-depth studies over long periods of time in particular organisations. Others can be based on short-term studies of particular issues. Some case studies seek to invest the experience of a particular organisation in respect of some themes or topics. Others seek to generalise their findings across a number of different organisations.

Robert K. Yin thinks:

> Case studies are an appropriate research method when you are trying
> to attribute causal relationships - and not just wanting to explore or
> describe a situation. The major rationale for using this method is when
> your investigation must cover both a particular phenomenon and the
> context within the phenomenon is occurring, either because (a) the
> context is hypothesised to contain important explanatory variables
> about the phenomenon or (b) the boundaries between phenomenon and

context are not clearly evident (Yin Robert. K. 1993:31).

I use case studies as part of my research because they would supplement my interviews. Besides, my guiding hypothesis was that Taiwan's HRM and training is poor and that the UK has better HRM and development. Case studies could in principle help me to examine this hypothesis. I therefore interviewed training managers and engineers in most highly technical industry in Taiwan - the semi-conductors industry - to see what people think and what they do about training and development. The same method has been applied to firms in the UK's high technology industries although the industrial sectors were different.

Through case studies I can explain my hypothesis. Besides, doing case studies also has the following advantages for research:

- It offers an insight view about companies themselves;
- It is close to reality;
- The researcher can see people in context;
- The researcher can understand people's attitudes and values and perceptions.

Information was collected about the company from public sectors but mainly through interviews with engineers and training managers. However, there are some limitations about case study method as well. This research did not involve the use of participant observation because of the time factor. The researcher has only one year to complete her study and participant observation is a very time consuming task. Participant observation is a research method which involves the researcher in taking a particular role within a culture in order to examine at first hand a social situation from a participant's point of view (Burgess R. G.. 1984:98). And the task of a participant observer, as Becker (1958) mentioned, is to join the daily life of the chosen group or organisation and see things which are undertaken and see how people react to the situation they meet. The participant observer also has to join the conversation with some or all the participants in order to see people's interpretations about the events the researcher has observed (Becker, 1958).

Because of the nature of the topic of this study, it would be better if the researcher could spend a period of time staying inside the organisations chosen, then she could

be able to know the learning climate and the real situation of training practice. Participant observation could supplement the insufficiency of interviews and case studies and help make the studies more accurate. Unfortunately, this methods was not practical in the context of this research but would be a most useful tool for any subsequent inquiry.

3-2-3. Comparative studies

The answers to the question 'why comparative study?' for my research are as follows:

- By comparing two countries - UK and Taiwan's training systems, we can understand more clearly the historical cultural and economic factors which influence training systems. We analyse the strength and weaknesses of these systems in the two countries and then we can suggest some innovative and constructive ideas to each country to improve its own training system and ways of developing their people.
- By comparing those aspects other than the training itself, such as cultural and economic factors, it offers a broad scope for readers to see clearly why the training and development in these two countries are as they are and identifies they challenges they must meet in the future. Comparison enables researchers to identify issues and factors which influence training in organisations which might not be apparent to managers and specialists themselves. They can often be too close to their own problems or trapped within the perspectives and values of their own organisations, that they cannot see new solutions to those problems.

There is a vast literature (May, 1997; Hantrais & Mangen, 1996; Hill, 1996; Oyen, 1990 and Room, 1995) discussing the problems of comparative studies. These problems can be summarised as follows:

- It is rather difficult to compare things like the multiplicity and diversity of cultures and social phenomena;
- Comparative studies are limited by the data's availability and comparability. For example, the research design, sampling and data collection problems and so on;

- The objectivity of comparative studies is sometimes influenced by the researcher's cultural background and values;.

- Comparative studies are more or less influenced by the experience of the researchers and whether they are well-trained or not.

The objections are very clear. They do not mean that comparative studies are worthless. Rather it means they should be conducted with care and in full awareness of their limitations.

3-3. The conduct of Interviews

3-3-1. Selection of companies

Because the topic of this research - 'The training and development of high technology specialists in science-based companies.' A key question is raised: who are those high technology specialists?

- **Definition of 'high-tech'**

It is difficult to describe what 'high-tech' is. In this thesis, I would define 'high-tech' as: any science-based company which has its own high-level commitment to R&D, to new product design, manufacturing and selling and all the processes from product design and research to the manufacture of products involve the application of high-level knowledge skills and techniques. This is a relative definition rather than an absolute one, for technology change. What was once "high-tech" can became "low-tech". It is for this reason that the definition has to incorporate some idea of the speed of change in the technical environment. High-tech companies work at the limits of current technology in their field. Some will continue to do so; some will fail. One of the main reasons for the interest of this study in training, is that success and failure in the long term are related to a high degree to the level and quality of training for professional development available to employees.

To do this research, I chose some companies from the manufacturing, process

engineering and electronic industries from both of the countries. (See the table 3-1)

Table 3-1

Country	Manufacturing	Electronic engineering	Total
UK	4	0	4
Taiwan	2	8	10
Total	6	8	14

This gave me a total of 14 companies, 10 in Taiwan and 4 in the U.K..

3-3-2. Selection of engineers

In the fieldwork in Taiwan, I chose 10 young engineers from the Hsin-Chu Science Park. They are aged from 27 to 32, with from 2 to 4 years working experience in the high-tech industries in Taiwan. (See table 3-2)

Table 3-2

Interviewees	Age	Working experience
Mr. Peng	29	1.5
Mr. Lin	28	2
Mr. Chen	28	2
Mr. Huang	30	4
Miss Tsai	27	3
Mr. Kuo	28	2
Miss Yang	30	5
Mr. Lo	30	4
Mr. Chang	31	1
Miss Chen	27	3

The reasons for me to chose those engineers from the particular area are as follows:

Those companies in the Hsin-Chu Science Park mostly employ young employees, therefore the employees are more open-minded compared with those who work in the traditional industries. Based on my own working experience and knowledge of Taiwanese industry, I calculated, rightly I think, that employees here would co-operate more openly with the research and be less defensive in their answers than people in older, more traditional organisations.

Those engineers represent the engineers who work in the high-tech industries in Taiwan since the Hsin-Chu Science Park has been specifically set up to concentrate high-tech R&D in Taiwan and to build the new technology industries in the future.

I did not interview British engineers for my study. Instead, I extracted their "voices" about their training and development from one of the journals - The GTI careers journals. I chose 6 engineers. They are:

Table 3-3

Interviewees	Graduated year	Working experience (years)
Mr. Dixon	Unknown	Unknown
Ms. Inglis	1996	2
Ms. Baker	1992	6
Mr. Atkins	1996	2
Mr. Munn	1996	2
Mr. Porter	1995	3

Their account of themselves, set out in a professional journals, are very revealing of prevailing attitudes and values among specialists of their group and generation. The attitudes and values they articulate draw upon a wider discourse among the members of their profession - graduate engineers - and can be taken as being representative of the group as a whole. They are not representative in a statistical sense; their "voice" does reflect a prevailing climate of opinion, however.

3-4. Design of interviews

For the interviews with training managers and engineers in both of the countries, the design of the question format is through the semi-structured interview. The aim was to understand the following things:

1) Strategies and plans and courses for employees' training;

2) Ideas in companies about successful training;

3) Ideas about how training should be provided (in-house or by outsiders);

4) Recruitment and training of trainers;

5) The effectiveness and evaluation of training.

For the interviews with engineers, the researcher still used the semi-structured interview

method in order to discover the following things:

1) The training programmes they have received;
2) How they thought about the quality of the training they have received;
3) Their ideas about the importance of training and development. How do they believe they need to learn to remain employable?
4) Their career plans.

3-5. Conducting interviews

Before the interview started, a brief outline of the research design was explained to every interviewee. During the interviews, the researcher used a tape recorder in order to be able to transcribe the interview easily and precisely. Of course the researcher asked for approval from the interviewees each time. The time length of the interviews ranged from forty minutes to one and a half hours and the work was undertaken over a period from December 1996 to March 1998.

3-6. Data analysis

After all the interviews with training managers and engineers had been done and they were transcribed. The researcher highlighted the important issues the interviewees had mentioned during the interviews. The next step was to analyse the transcripts in the light of all the background information which have been collected for the studies and the information collected about the companies themselves. This process of analysing is one of interpretation. The transcripted interviews do not speak for themselves; what people say to researcher has to be explained and interpreted.

3-7. Conclusion

The researcher has tried to use the methods which maximise the potential of the

research. There are in total 24 interviews which have been done including both the UK and Taiwan's cases. And there are 14 case studies analysed in this thesis as well. This thesis has been developed based on the field work and the methodology which has been discussed in this chapter. The analysis has been approached from the dimensions of the cultural background, labour structure and government policy in order to arrive at a clearer picture of the aspects of the training and development of the high technology specialists in science-based companies in both countries: the UK and Taiwan. There are many limitations to this study which reflect the research design and the time constraint within which it was carried out. The overall approach, however, in an appropriate one for the problem being studied and is one which in principle could be used in subsequent studies in other societies.

Chapter 4. Taiwan: Case Studies

There is a common perception that the HRD is not well developed in Taiwan. Training and development is one of the areas of HRD, so we can see what the training is like in Taiwanese companies through the interviews with training managers. It is worth noting that the study's sample consists of some of the largest Taiwanese firms or at least moderate-to-large private enterprises. The reason those companies were selected is because they have developed training systems and they offer the information this research needed better than small firms. It is not hard to understand that the personnel function and the training activities in big companies are likely to be more specialised and differentiated from those of smaller firms.

For the interview with Taiwan's training managers, I randomly picked out 10 science-based companies in Taiwan. As mentioned before, the size of the firms range from medium to large. The business types covered manufacturing, process engineering and electronics. The following table shows the interviewees' personal data and the information of the companies they belong to.

Table 4-1 Interviewees' (Taiwan's training managers) personal data

Interviewees	Company	Working experience
Mr. Chien	Chungwa Picture Tubes, Ltd.	4 years
Mr. Lai	Company C.	21 years
Mr. Chang	Acer Incorporated	7 years
Mr. Wang	Taiwan Semiconductor Manufacturing Company Ltd.	11.5 years
Ms. Chen	Vanguard International Semiconductor Corporation	3 years

Mr. Chen	Winbond Electronic Corp.	10 years
Mr. Chang	United Semiconductor Corp.	5 years
Ms. Jan	USC Corp.	4 years
Mr. Chiu	Holtek Microelectronics Inc.	2 years
Ms. Chien	Texas Instrument Corp.	5 years

The topics in the interview covered the company's expectations about training and development, the managers' ideas about successful training and their ideas about how training should be provided. The aim was to try to understand the situation of training and development in Taiwan's science-based companies through the talks with training managers. Individual interviews which reflect the unique training experience and ideas in different companies, helps us build up composite picture of current training issues in Taiwan.

4.1 The case study of Chunghwa Picture Tubes, Ltd.

The first case was that of 'Chunghwa Picture Tubes, Ltd.'. Chungwa is a subsidiary company which always makes the biggest profit among the Tatung groups (one of the biggest family businesses in Taiwan). Chunghwa has experienced fast expansion and even has a manufacturing factory being set up in Glasgow, Scotland since 1996.

I had an interview with the training manager - Mr. Chien - on the 14th of December, 1996. There was actually a set of prepared questions, but here the researcher has just summarised and picked up the significant points from the interview.
This is a telling interview indeed, because it reveals the common defects of Taiwan's training and development system. These can be summarised as follows:

● **Passive business culture**

Mr. Chien was asked to talk about Chunghwa's business culture and to reflect on the company's training and learning climate. Mr. Chien put it in this way:

In Chinghwa, like other subsidiaries of the Tatung group, employees are trained to obey the rules. Individuals are not expected to think for themselves and take what they consider to be the correct course of action. Everything has its own rule to be followed. The whole structure of this company is very inflexible. However, Chunghwa makes a very good profit every year although it does not have a very dynamic environment. Therefore, the top manager is not alarmed by its non-dynamic business climate and does not think Chunghwa should have any cultural change, even there are some people having the intent of doing something to change the present situation, the speed is extremely slow which makes many young people feel dejected.

This is a very frank description of the internal management climate of this company. There are many typically Chinese elements of culture being described here, especially the emphasis on obedience and the slow pace of change.

● The concealed resistance of training and development

We also talked about the training policy in Chunghwa. It was described by Mr. Chien as follows:

> The company's training goal is to train people to make them able to do their jobs and develop employees' potential. However, things became funny since 1989. Chungwa set up a so called 'Work Qualifications and Positions System' to decide employees' promotion. It clearly defined what each individual at each level has to accept what kinds of courses then he or she can get promotion. The conception of this is trying to have a fair promotion system and also trying to make training systematic. The intention was good but it outweighed its advantage: the learning culture and motivation became very passive. People accept training because they have to, not because they want to or they need to. It seems not to meet the training policy.

In Chunghwa, such a formal and feudal company, everything has a rule to follow and training is used as an evaluation tool for the decisions on employees' promotion. It just like the ancient Chinese Feudalism, but

Chunghwa is unique in this aspect.

Mr. Chien was also asked to specify the company's training strategy and system. He explained:

> Chunghwa divides all the positions into three major kinds: business staff, technician and engineers. There are eighteen different training programmes for each position. All the training, including internal and external training, are authorised by the training department. But each unit has to propose their training needs to the training department, then training department has to organise for both the whole-year training plan in every December and the single-month plan at the end of previous month. The training department is also responsible for the evaluation of the training programme to make sure the quality of training. Chunghwa in this aspect is all the same with other Taiwanese companies.

The similarity is greater than Mr. Chien thinks for the system he is describing is a very bureaucratic one and seems more concerned with itself than the business goals it is meant to support.

• **High employees turnover rate**

Mr. Chien's was asked to talk about his personal ideas about successful training: He said:

> First, Chunghwa can become a more competitive company and can run forever through the training programme. Secondly, employees feel happy to stay in the company for a very long time.

The first point is usually the same in every company, but the second point is an interesting one. The fact is: Chunghwa's employees change quickly (the turnover rate is high). If we only look at things from the points of view of the employees' salary and seemingly completed training and education within the firm, we might think Chunghwa's employees would like to stay for a long time. But they do not. We have to explore more deeply why this is the case. Perhaps the answer lies in the fact that the

firm only meets a limited range of needs among its employees. Abraham Maslow is recognised as the apostle of the "needs" school of thought. He distinguished basic drives from temporary needs, and established a hierarchy which is often quoted; and he developed a theory of "pre-potency"-that one need must be largely satisfied before the next need can come into full play (Rogers A. 1996). Maslow's hierarchy of needs from low to high are: food, shelter and safety, love and belonging, esteem and self-actualisation. Chunghwa probably provides its employees the first two or three stages of basic needs, but the needs for "esteem" and "self-actualisation", seem unable to be met in Chunghwa. This is because of the passive nature of Chunghwa's organisational culture: people are restricted by many rules; bosses, managers and researchers are thought to be the only focus aims of wisdom and employees are expected to accept their authority uncritically.

Near the end of the interview, we talked about the possibility of specialisation of the trainers. Mr. Chien' opinions about this point are not too different from other training managers in other science-based companies. He thinks that trainers' expertise is more important than their adult teaching knowledge and skills, especially in the science and engineering fields. Besides, trainers usually will amend their teaching methods gradually in order to meet the trainees' needs. I am not surprised that Mr. Chien would hold this opinion even though a manager in HRD department. Most of the people in Taiwan do not understand adult education concepts well, and there are few specialised adult educators. As a recent paper written by Mr. Yang (1996) who is a lecturer in adult and continuing education department in Chung-Chen University in Taiwan noted that there are major difficulties in the development of adult teachers in Taiwan (1996).

This interview lasted approximately one and half an hours. The interviewee seemed to feel helpless about the training system in the company. Although the company itself values training and they do have a great variety of training programmes including, Off-JT (off-job training), OJT (on-the-job training) and SD (self-development), the training usually cannot reach the goals which should be achieved. The reasons for this lie in the passive organisational culture and inflexible rules of the company. Employees usually have to attend very basic knowledge courses which are useless just because they are compulsory. Sometimes they have to join lectures which are not what they want or can be not related to their jobs (training is not job-oriented). Moreover, Mr. Chien also thinks that Chunghwa's training policy does not cover a wide enough field. He thinks

they should extend the range in order to meet the tendency of internationalisation of business and competition. For example, managers have to learn international business laws. Researchers have to attend seminars held overseas and so on. Another problem that exists in Chunghwa is the quick turnover of staff which is possibly related to their training system.

People who have expectations for themselves want to develop themselves through both company-delivered and individually-pursued education and training, and those people are usually better qualified employees. In Chunghwa, individuals accept training for their promotion. With regards to employees' self-fulfillment through education and training, it seems to be a difficult thing in Chunghwa. Therefore, people just want to consider Chunghwa as a "spring board". Once they find other job opportunities, they leave Chunghwa. For instance, the semi-conductor companies in Hsin-Chu Science Park which are only 50 kilometers away, attract lots of high-tech specialists from Chunghwa. Those companies use more humane management methods and respect individuals more. Employees can seek their self-development there. They meet better Maslow's hierarchy of needs: especially those related to self-actualisation.

As mentioned earlier, Chunghwa's case is like many other big and bureaucratic companies in Taiwan. The researcher's old company is a very similar case to Chunghwa. Training does not have its expected effect. Employees continue to leave. These employees suggest that HRD policies need to be seen against the background of wider cultural influences. These factors can, however, be modified to some degree by the policies of particular companies. Company HRD policies, as the Chunghwa case makes clear, are also related to patterns of ownership and control and business success.

4-2. The case study of Company C.

The next case is 'Company C.' (the company insisted on being anonymous), which is the biggest steel production company in Taiwan, and the 18th biggest one in the world. (Source: from Company C., 1997) with more than 9,000 employees, 1/3 of them are engineers. (Source: from the training manager) Company C. used to be a government-owned company. It transferred to the private sector in 1995. As a government-owned

company with a large number of employees, it is very easy for people to imagine that the company's training system should be like the one in Chunghwa (the first Taiwan case study) with training a formality which does not have the expected effect. But, Company C. is different. The elements which highlight the differences can be summarised as follows:

● Top manager's foresight and outstanding HR manager

Top managers emphasise and support training and there is a very specialised training manager. There is a strong training and development atmosphere in Company C.. Looking back over the history of Company C., each president has emphasised training very much. Especially the 2nd one - Mr. Chiao Yiao-Don - who became the former minister of the Economic Bureau afterwards. He is always famous for his bold style of doing things and making great changes. During his tenure as the president of Company C., he advocated the "Chinese style management philosophy". This philosophy is a combination of Confucian ideas plus the scientific ways of modern management. The Confucian ideas here mean 'set a good example with one's own conduct', to be 'open-minded and understanding', 'training employees' and 'self-management'. And training, fortunately, is one of the main company policies. Mr. Chiao said:

> Training is seemingly a cost item. But if we do not train, then the delay or any problem of production will be possibly caused which will be the real 'cost item'. Therefore, the money for training cannot be frugal (1970).

Mr. Chiao's management philosophy deeply influenced Company C., and because of this, Company C. values training differently from other government-owned organisations. Moreover, the present HR manager - Mr. Lai has been in the HR position for 21 years. He is not only an experienced HR manager, but has himself very unique points of views for training and development. As before, there was a set list of questions used during the interview. Here the researcher only selected a few interesting points to discuss.

Firstly, we talked about the training policy in Company C.. Mr. Lai put it in this way:

> In Company C., there is a 'competence-based training policy'. It is to train

people to be employable to their present positions and then cultivate the specialists who the company might need in the further. Hopefully by doing this can make sure the company's existing and continuous development.

Mr. Lai also mentioned that Company C. helps employees to organise their career development. For example, an engineer has to accept the technical training in order to meet his or her job needs. After a certain number of years, he or she has also to attend training courses to learn how to be a manager because the company would promote excellent and motivated engineers to be managers in the future. If the company does not give those potential managers the needed training in advance, they then would face a huge shock when they suddenly become managers and they would soon feel the knowledge gap too.

● Training: Profitable and non-profitable performance

We talked about Mr. Lai's ideas about successful training. Again Mr. Lai's answer afforded good for thought. He said:

> Whether training is successful or not depends on the company's overall performance. And the performance should include both the profitable performance and the non-profitable performance such as the company's social image and reputation and so on. If the company's performance has been approved, then it means the training's value and effect should also be approved too.

Mr. Lai is the first and the only manager I have interviewed in Taiwan who mentioned that training does play a part of the role to contribute to the non-profitable performance of the company. This is a great view for Taiwan's training's future development. It reminds all the Taiwan's top managers, when they are evaluating the efficiency of training, that the non-profitable performance of a company should be one of the considered factors too.

● Too much evaluation is no good

Besides, Mr. Lai has another unique point of view which is about training's evaluation

of training. He thinks that excessive evaluation is not only no good for training, but also has negative effect on it. He thinks if a company evaluates every training programme, it only will obstruct the wish of every working unit to hold training courses. Therefore, in Company C., only important courses needed to be evaluated.

Another point worth mentioning is that Company C's training system has been computerised. All the training programmes, timetable and trainers can be identified through the network. Trainees can register for the training programme through the network and all the programmes each employee attended can be made into personal profiles. Besides, when each working unit is going to have their internal training, from the course design to the evaluation, they could simply use the format from the computer. It saves technical staff's time and the central training unit can easily integrate the whole company's training by doing this.

Company C. has a strong business culture that is reflected in its training and learning atmosphere. The company has a good concept of training and development and is willing to train its employees. Both (Chunghwa and Company C.) are large, private businesses. Unlike Chunghwa and other large-size businesses in Taiwan, Company C. is a rare case among those big organisations. Part of the reasons for this were mentioned above - top manager's support, specialised HR manager and company's policy and clear execution plans about training. These elements continue to create a climate within the company which encourages a positive attitude among employees to training. In this way, the behavior of people in Company C is different to that of people in Chunghwa. It is an instance of the ways in which training policies (HRD) can influence organisational behavior.

4-3. The case study of TSMC

The next case study is TSMC (Taiwan Semiconductor Manufacturing Company). Speaking of TSMC, every Taiwanese knows it is the most profitable company in Taiwan for the past 15 years. TSMC's employees, even those working as cleaners, earn good salaries. This is not a joke because TSMC shares the profits with its employees.

Working in TSMC has become the dream of many young people. TSMC is the first semiconductor company in Taiwan and is also the company which makes the biggest profit among all the semiconductor manufacturing companies in Taiwan's Hsin-Chu Science and Industry Park. TSMC employs more than 4,200 people and 56% of them are engineers and this figure is expanding with surprising speed. Being a bellwether of Taiwan's semiconductor companies, and because their awareness of technology is changing so fast, TSMC's ideas about empolyees' training are also worth discussing here.

I had an interview with the training manager - Mr. Wang on December 23, 1996. We talked about the company's ideas of employees' training and the specialisation of trainers in TSMC. Before the discussion, it is worth to mention TSMC's westernised business culture.

Mr. Wang put it in this way:

> In TSMC, due to its open-minded company climate and humanistic management, many technologists are keen to work for them. Therefore, TSMC has never gotten the problem of recruiting employees. More than that, they only recruit the best qualified specialists for TSMC. Because of the competitiveness among colleagues, they create a strong culture. They have good qualifications; they work hard, but meanwhile, they think they deserve better things. They demand a good salary, good management system, including good quality training.

Like all the modern companies in Tiawan, TSMC has an informal atmosphere such as open office landscape architecture; extreme informality of dress and manners; a high level of interpersonal communication, debate and rivary. These are the ingredients of what Kessels (1996) has called 'creative turmoil' which is so necessary to commericial success in the tight markets of the semi-conductor industry. The elements of this company's successful HRD strategy can be characterised as follows: ·

● Long-term training policy and strategy

In addition to the interview, there was a set of company's training policy documents examined too. The training policy was summarised as follows:

    a) <u>Purpose</u>: To decentralize the responsibility for employee learning to line management and provide employees with a valuable opportunity to develop the competencies required to meet the future demands of a fast-growing IC company.

    b) <u>Policy</u>: Each employee will be required to complete a minimun of 40 hours learning per person per year, with a rational build-up to that level. Learning includes all training and developmental activities in the form of formal off-the-job (classroom) training, on-the-job training and self-development. Every person will be guided and encouraged to broaden and develop himself or herself through both company-delivered and individually-pursued education and training. Education and training will be "need-based", tailored to each individual. Job-oriented education and training will be aligned with corporate and company business objectives.

    There will be follow-up measurement of all education and training to determine if the intended results are being achieved (From TSMC's training plan).

Compared with other companies in Taiwan, TSMC does has a complete training policy. Their training policy is linked to TSMC's company objectives. They specify each item such as purpose and policy very clearly. They try to give definition to each different type of training. They also show the way they calculate employees' training hours in details. The most important thing is they give each unit, department or individuals a very clear picture of their own responsibilities for training. Then we talked about the training strategy and system in TSMC. Mr. Wang put it in this way:

    Since August 1994, the Training and Development Department have been authorized to prepare a long-term strategic training plan. From that time we have analyzed relevant TSMC literature, held interviews with almost all the

senior management, set up a benchmarking association with semiconductor companies such as Motorola and Texas Instruments, including a visit to TI headquarters in Dallas. We also participated in the Strategic Conference held at TSMC at the end of 1994 which provided us with a clearer picture of the issues at hand and the expectations of the Chairman and top management. Due to TSMC's aggressive business plan, there are a number of major issues facing us:

- how to prepare for the demands of a fast expanding workforce which will more than double in the next five years;
- how to develop our future management and technological leaders to drive the new fabs and process technologies;
- how to cope with the rapidly changing business environment in which the knowledge explosion means that people's current knowledge may be out-of-date within six months of learning.

Then, Mr. Wang continued to say that:

The past few years have seen some major changes in the trends of training and development. We want to pursue the ideal of a learning organisation which seeks to meet the continuous improvement demands, especially of high-tech companies, by making continuous learning a shared value of its company culture. In order to meet TSMC's business objectives, they have a great variety of training programmes, such as computer training, language training, cross-cultural skills training, law seminars, TQM, customer service, team skills, management training and son on. Besides, they are going to implement an "Instructors Certification System" whose aim is to train and certify internal instructors to provide training at the local level and to provide "Training Information System" to have the training programmes on-line. Moreover, they are going to set up "Learning Centres"; to have a learning centre for each site with the newest learning technologies for self-development.

- **Trainer training system**

There is another feature worth mentioning here: TSMC is planning to train the trainers. TSMC is the only interviewed company in Taiwan which has plans to do this. They recruit willing and senior engineers to be trainers and give them training to be trainers. Those trainers then would become the regular trainers in the company. The company would not raise their salary. But it would acknowledge their achievement and importance in in-house company literature and notice boards. Recognition of this kind is important in maintaining staff motivation.

- **Very western management style**

TSMC is a company with a very western style of management. Actually, the former president was an American and the present HR manger is English. Therefore when I was interpreting this interview I felt that it seemed I was analysing a western company. I think TSMC is a company with a very strong business culture. They believe through individual learning, they can achieve a learning organisation environment. And by doing so, they can keep their employees' professional knowledge which is a weapon to help their company to achieve outstanding performance. TSMC is such a successful company, and more, it does have long-term views for its training development.

4-4. The case study of Acer Incorporated.

The next case is Acer Incorporated. Acer is an internationally well-known company compared with other interviewed Taiwanese companies in this study. It is the 7th biggest computer manufacturing company in the world. It sells personal computers and lap tops. The interviewee - Mr. Chang - who has 7 years experience in training, is well known in the training and development circles in Taiwan. He gives talks to many organisations. It is interesting to see in such a famous company with a famous training manager, what the training is like. As usual, a set of fixed questions have been used for the interview but here I only pick up some key points for discussion. The general impressions I gained from this interview are that:

- Acer thinks that the most important thing for establishing a learning environment for employees is to pay the tuition fees for employees;

- Acer seeks to set up a responsible business culture so that employees would like to contribute what they have learned to their work;

- The ideas of the training manager for successful training are: firstly, the investigation of training needs; secondly, the teaching skills; then there is evaluation and improvement;

- The training manager thinks that most of the responsibility for employees' training should belong to the unit managers. Therefore, on-the-job training seems to be more important than other kinds of training. Regarding to the missions of central training unit, the training manager thinks that they should emphasise on the development of teaching materials for trainers, offering the required training information.

- **Only on-the-job training and mentorship for technical specialists**

Generally speaking, Acer emphasises training, but mostly on managerial courses rather than those technical skills. How about the training for technical staff since Acer is a science-based company? Technical specialists should play an essential role in the company. Mr. Chang said that it relies on on-the-job training and mentorship. As discussed earlier, on-the-job training is usually the most effective way to train technical staff and meets their practical needs most. But it must be supplemented by the formal training as well, as formal training has its own value and it contributes a lot to building up the learning climate. Acer has worked hard to make a learning environment but it ignores this point, which is a pity for its technical staff's development. But it is a common failing for many, many companies in Taiwan. Training technical staff is usually the task of each working unit, the central training division is not involved much. As a result, the working units neglect training as they feel it does not seem to be important to train and they have no technical support to train their people (such as the teaching skills support, the knowledge about to conduct training and the evaluation afterwards and so on). There will be similar cases discussed later. One cannot say companies do not value training, there are just some problems about how they see and conduct it.

4-5. The case study of a group of Taiwanese electronic companies.

The next case will be a group of electronic and semiconductor companies. They are all companies making the same product - semiconductor chips, and all located Hsin-Chu Science-Based Park. Besides, they have similar systems and executions in training aspect, I then analysed them together. They are: Winbond Electronics Corp., United Semiconductor Corp., Vanguard International Semiconductor Corp., UMC Corp., Texas Instrument Corp. and Holtek Microelectronics Inc..

Again, a fixed set of questions have been used for the interviews and all the interviewees are training managers of the companies. As usual, here only a few interesting points are highlighted.

• A mix of western and Chinese style business culture

First of all, I would like to specify those companies' business cultures, as training must be considered in relation to a company's business culture. It is common knowledge in Taiwan that the companies in Hsin-Chu Science-Based Park have adopted western management styles more than other businesses in Taiwan. Perhaps it is because many of those companies were founded by people who came from Silicon Valley. Those people are Taiwanese, who studied in the USA and worked in the USA for a long while. They therefore brought western management methods back home.

However, the impressions I got from the interviews with many of those companies, apart from TSMC, which has a very westernised business culture, the others retain certain more or less Chinese management styles - the Confucianism-influenced style, which remains conservative in many ways. But those companies are still more westernised than companies like Company C (Company C. is very centralised in its management). For instance, those managers were not willing to give me the training-related documents or some of them insisted on remaining anonymous. On the other hand, they would like to claim they have an open-minded climate. Employees are given more space to think and develop themselves.

Another thing worth mentioning here is this: Hsin-Chu Science Park is a special place

to work and for people to do research. Because all the companies are closely located and employees themselves like to make comparisons between them. For example, because TSMC has an exciting culture - the employer wants to squeeze as much contribution from employees as they can; employees equally seek a lot from the company - TSMC takes very good care of its employees. The company invests in many non-monetary items such as stock sharing, employees' welfare and training and so on. In other companies, the cultures are not so individualistic. There is more respect inside the company. Then, how does this kind of business culture influence the company' training? Too much respect and mild methods of personnel management sometimes would be the obstacles to conduct training. Here we would see how those training managers talked about their companies' training.

● **The lack of a foresighted training policy**

Most of the training managers think that the companies training policies are to train people to be quickly employable in their jobs. There is one company which even does not have a training policy. Sadly, this reflects many Taiwanese companies' short-sighted views about training. A good training policy should cover the long-term plan to train people to meet the company's future needs in order to make the company capable of responding to any sudden environmental change in the business world.

● **In-house training is preferred**

Secondly, they were asked about their ideas that how they see training should be provided, by in-suppliers or external training? There was an identical answer here. It is the combination of both. But in those science-based companies, the training managers claimed that there are problems for those training programmes provided by outsiders. Engineers think those training courses cannot 'scratch the itchy parts'. It means those courses are either at a too basic level or cannot match the realities in the factories. Hence, companies would like to provide training themselves. They assigned the senior engineers to be the trainers to deliver training. When those managers were further asked whether those trainers accepted pre-job training or not, the answers were all negative. Some of those managers agreed that trainers should receive training in order to more skillfully deliver training. The others think that there is no need to train those trainers as they are only expected to have good knowledge in those technical areas, not

how to deliver training.

Since companies rely more on in-house training, questions were asked about how the training is conducted ~~has been asked~~. Seminars, lecturing, and mentoring are the methods used most often. And mentoring is considered the most effective way to train people. But technical training is mainly conducted by each working unit because people would know better what they really need they then can arrange the training courses. The defect of this method has been mentioned in the case of Acer. It would easily become no training at all at the end!

Next, those training mangers were asked to talk about their ideas about successful training. Some mangers answered from the angle of company's performance, the others answered in the aspect of training's quality. Those managers who possess the former answer think that if companies' performance is improved, then the training is successful. Those who think training's quality is the factor to decide whether the training is successful or not, think a successful training should cover a four steps procedure: the training needs investigation; systematic teaching methods and good teaching materials; evaluation; and then improvement.

4-6. Conclusion

It is obvious that national cultures do affect the training and development systems in organisations. TSMC, the one company which has the best training and development systems and plans among all the interviewed Taiwanese science-based companies, is in fact a very westernised company. The owner is American Chinese, and most of the top managers are either Americans or Europeans. They definitely brought in western management concepts to the company. As a result, the company's climate is dynamic, so is the training and development. Let us take another look at Company C.. It is a company full of traditional values really. It is hierarchical, seniority-respected, and pragmatic. But Company C. still has a good training and development system compared with other Taiwanese companies in this research. Why? The founder of C Company valued the importance of human resources a lot. He emphasised training and development as an expression of the Chinese value of respecting the relationship

between the monarch and his subjects, (employers and employees). As a result, Company C has had a good foundation for training and development since the beginning. Looking at the rest of the interviewed companies, a western HRD concept seems not to be so successfully developed. Western concepts are somehow against key elements of the work ethic of the Chinese.

Of course the labour supply structure has a meaningful influence on training and development too. The sufficient engineers supply makes the needs for training and development not as urgent as it should be in Taiwan. This is in contrast to the situation in the UK where there a real shortage in the supply of highly qualified technical staff. Government policy is another reason, there are no related regulations to regulate or assist companies to develop their HRD/training and development in Taiwan. The UK is different though it can be debated whether UK policies on training are as effective as they need to be.

From those interviews with high technology companies in Taiwan, we can get an idea about how training is being seen and implemented here in Taiwan from the point of view of three key parties in a company responsible for training. They are: the top manager, the training manager and the trainees. The top manager is the person who makes the decision for everything in a company in Taiwan. That is the Chinese monarch-subjects relationship concept that informs management thinking in Taiwan. As for the training manager, of course he or she is the soul of the whole training system; they have to be responsible for every single thing related to training and create a learning culture in companies. And then employees have to have the ideas that training is important and to consider training as part of their jobs. Unfortunately, many of the employees endorse the traditional Chinese values, which are pragmatic, money-oriented, and collective. Because of this, employees are likely to think of training as employer responsibility and not an individual one.

The top manager emphasis on training in Taiwan is not as great as that of western managers. Taiwanese managers usually stress profitable things such as marketing, production expanding, and so forth. This does not generate a learning climate in Taiwan's companies comparable to that of successful western companies.

The Fortune magazine's cover story in December, 1997 - "Asia's Wealth Creators

Confront A New Reality" has a record of the words of Malaysia's successful businessman - Ananda Krishnan, who owns companies in the oil industry, real estate and now business in telecommunications, media and entertainment. Now this man is trying to create a model of Asian organisation that depends more on knowledge than on what made him grow wealthy in the first place, natural resources and labour. Krishnan is aiming for what in the U.S. would be called a learning organisation and he thinks knowledge is power. (http://www.acer.com.tw/ai/press/fort1297.htm: 1997) We hope this will be a concept accepted by more and more CEOs in Taiwan.

Training managers and specialists are not valued staff in companies. People usually consider them as administrative staff. Many people see those training jobs as: arranging training courses, finding teachers and making lots of paper reports afterwards. No body cares about whether the training has its own beneficial effect or not. This frustrates training managers a lot. They themselves would even devalue their own jobs, not mention to improve themselves to get more knowledge about how to do a better job. Wu S.H. has even done a survey among 500 top manufacturing firms in Taiwan about this phenomenon. She found:

1. About 88% of the firms had a formal personnel department.
2. In 80% of the firms, the head of the personnel department bears the title of manager or lower. Only 20% have the title of vice president or assistant vice president. In comparison with the heads of other functional areas such as marketing, finance, and production, the head of the personnel department has a significantly lower (less prestigious) title.
3. Only about 25% of personnel managers participate frequently in overall business planning; 60% participate occasionally, and 14% do not participate at all.
4. The personnel department in most companies is generally small, with 47% of them employing fewer than 6 employees. Only 19% of the departments employ 20 or more people.
5. About 42% of the heads of personnel lack professional degrees or expertise in the personnel area. In contrast, only 11% of the heads of other functional areas lack a degree or expertise in their respective areas.

6. In terms of overall performance, the personnel department was ranked lower than other functional areas.

In terms of the order of importance of various HR activities, external staffing was ranked highest, followed by compensation and benefits (2), training and development (3), performance appraisal (4), communication (5), occupational safety and hygiene (6), labour relations (7), counselling and guidance (8), career management (9), and human resource planning (10) (Wu, S.H., 1990).

This survey was about HR departments and since training is part of the HR function, then the training they deliver can only be the same or worse.

Technical staffs do not have high expectations for themselves in the same way as western people do. Taiwanese technical specialists are more money-oriented. Money is the most important thing they work for. They do not have a strong commitment to training in order to become more employable as long as they are still employed for their jobs.

Another discovery from these interviews is this: training in many companies is focused on managerial levels. For those people, there is direct support from the central training unit. People care about training quality (including the training materials and trainers' training skills) and quantity. But with regard to technical specialists' training, there is less emphasis. Usually the training is conducted by the technical working unit itself. This is because the nature of technical specialists' training which is more specialised and only those technical people know what they really need. However, without the central integration of training, it is very easy to end up with nothing.

Taiwan's businesses place a high emphasis on their competitiveness. They seek cheaper labour cost, cheaper materials, hard-working employees and talented employees. But as the economy grows, the cheaper labour force and materials will not be true anymore and the hard-working nature may fade as time passes. Talented employees need companies to work hard to keep them up to date or make them willing to contribute more. Taiwan' managers have less inclination to invest in training since they think it is non-monetary investment. They cannot see the immediate reward or indeed, any reward at all. Secondly, they are afraid that employee's turnover would

represent a waste of the money spent to train them. This is a vicious circle; the less training, higher the turnover rates are.

These case studies indicate, however, that the situation in Taiwan is both changing and complex. They westernisation of business is leading some companies away from older, Chinese model of management. The continued commercial success of some older companies, however, masks the importance of the need to make such changes.

Chapter 5. Taiwan's engineers' voices - Interview with engineers in Hsin-Chu Science Park in Taiwan

The purpose behind interviewing the engineers in Taiwan is to see how training and development is being seen from the trainees' points of view. These interviews with Taiwan's engineers plus case studies of Taiwanese companies are the means the researcher used to assess the validity of her early assumption that Taiwan's training and development systems are less mature than those in the UK. In line with the theoretical approach of the study, it is important to examine the interaction between company policies towards training and employee motivation to develop themselves further. Both sets of factors are influential in shaping the learning climate of a company. In this chapter, interviews with individuals are set out to enable the researcher to understand more of the organisational realities in which they work. Such individual interview highlights a different aspect of the organisational and cultural influences on HRD strategies and individual learning experiences.

For the interview with Taiwanese engineers, I chose a group of engineers who work in the Hsin-Chu Science Park, as computer clone manufacturing is the most representative high-tech industry in Taiwan. Almost all the companies in the science park have more than 60 - 70% employees who are technical staff and among those staff, more than 30% of them have a master's degree in science or engineering (Source: Hsin-Chu Science Park integration office). This particular group of engineers are young and in my experience more open-minded, which is one of the reasons I chose them as the interviewees. They have a more open attitude to answer the questions I prepared to ask them compared with those who are older or working in the traditional industries. They are people whose experience is central to my research. They are the fresh troops to build up Taiwan's economic power and to lead Taiwan toward becoming an even stronger high-tech island.

The technology which has been used in semi-conductors (used for computer clones) manufacturing changes very fast. In the past they produced 8μm micro chips, then 3.5μm micro chips, and now they are trying to develop the techniques to produce 2.5μm

micro chips. Because of the speed of product changes, the machinery and knowledge have to change too. The average longevity for each product is about 10 years, and it will decrease as the technology develops. It means that once a company decides to produce a new product, it has to buy new machines. All the employees have to work very hard to make profit for company and for themselves since the machines are very costly and will be out of date in a few years. Therefore, both the company itself and engineers - the population who contribute directly to the production most - are under very great pressure to change what they do.

When a company decides to introduce a new product, engineers have to learn entirely different techniques in order to meet the changing trend. Because high-tech specialists have to keep on learning, this tremendous pressure usually pushes them go towards to management positions or even to other occupations. However, engineers have varied points of view about training. These views were explored in the course of 10 interviewees with representative engineers from different companies. Here are the interviewing records with them. 7 respondents were men aged between 28 and 32 years, and three were female aged from 27 to 30. They were at the beginning if these careers with just over 2 1/2 years working experience (Women engineers have more working experience than men). (See table 5-1) There is something to be explained here: Taiwanese engineers have only a few years working experience compared to UK's engineers. The reasons for those engineers who are at their late twenties and only have about 2 or 3 years working experience are: a) the education system in Taiwan is different from the British one. People need four years to complete their first degrees, two years to finish a master's degree and at least four years to get a Ph.D. Those interviewees all have a master's degree and Mr. Chang even has a Ph.D. b) In Taiwan, men have to serve in the military for two years before they start to work. It is a citizen's compulsory duty. That is why, usually, engineers who possesses master's degrees will be around 25 or 26 when they start work. The people in this group were close enough to their initial training to feel technically competent but strongly aware of the change taking place in their working environment which require them to engage in further training.

The topics in the interview covered the training they received, their views on the quality of their training and their hopes for their future careers. The aim was to try and understand from the engineers' points of view, the effectiveness of technical career

developments in Taiwan. Individual interviews which reflect the unique experience of people in different companies, add up to a composite picture of current training issues in Taiwan.

Table 5-1. Interviewees' (Taiwan's engineers) personal data

Interviewees	Age	Working experience
Mr. Peng	29	1.5
Mr. Lin	28	2
Mr. Chen	28	2
Mr. Huang	30	4
Miss Tsai	27	3
Mr. Kuo	28	2
Miss Yang	30	5
Mr. Lo	30	4
Mr. Chang	31	1
Miss Chen	27	3

During the interview, I used a semi-structured format to conduct the questioning. (Please see the appendix for the questions list.)

Each engineer has pointed out one or few specific points of view about the training he or she should cover. And their answers also revealed the problems of the present training system in Taiwan.

5-1. Mr. Peng: Emotional Control

The first engineer - Mr. Peng - works in Taiwan Semiconductor Manufacturing Company Ltd., and has some interesting points to make about training. The first

Both, but mostly the training courses are provided by company itself. Company will show the course list to us, then engineers can choose the courses they need or they want. The policy for attending is not compulsory, it is up to the engineers themselves.

In this company, it seems as if training is offered on a cafeteria model in which staff chose courses from a predetermined menu. Their choice is a personal one not tightly governed by assessments of what the training needs of personnel actually are. He then turned to the question of the quality of the training provided. Mr. Peng explained:

I will judge the trainers' qualities by the factor of how much I can understand the content of what he or she said. I would think that in my company the trainers' performance is about the middle standard, because they are not the full-time trainers. They still have to do their originally assigned work tasks. It is hard to expect too much from them. I personally think that asking questions during the courses will be more important then just listening to what the teachers have said, because every engineer's expertise is not the same. Teachers cannot cover all trainees' needs. Therefore asking the questions you want to know is the most practical way to gain the knowledge you want. My general point of views for those training programmes is: it's always useful to attend those training programmes. Maybe it cannot be used immediately, but I believe our behaviour and working performance would be improved through a silent transforming influence.

His comments here point to an important issue of policy and the need to make a crucial analytical distinction. The policy issue is whether trainers should be full time or not. The other issue is how to judge the effectiveness of training. Should programmes be judged over the short term or the long term? Mr. Peng implies that the long term criterion is important but he is also saying more: he is suggesting, too, that the beneficial effect of training may not be those a particular course intended to achieve. The effects are perhaps much less direct - "silent" is the word he used.

We talked about the questions like the quality of training he has received and how he believes he has to learn to remain employable, his career plan and etc.. Basically Mr.

Peng believes that experience is important, as experience accumulates, he then can handle things better. Mr. Peng does expect his company to train him but he would not consider training quality as a factor to attach importance to if he is thinking of changing jobs. Instead, salary and career development would be more important items. In this way, Mr. Peng is revealing many aspects of the cultural background of Chinese employees (discussed in Chapter 2) especially the strong orientation to money. And actually Mr. Peng does not think there will be many training programmes conducted in the middle or small size enterprises in Taiwan. He thinks those employers would rather spend money in buying new machines which they can see the immediate profits from than investing in training. Mr. Peng was asked 'what advice you would give to young specialists at the start of their careers?' His reply was:

> I would ask them to think clearly what they really want from this job, then go
> for it.

A few interesting points have been brought out from the conversation with Mr. Peng. Firstly, Mr. Peng is aware of the speed of knowledge change. He therefore thinks training is necessary. But he brought out a new point of view. Mr. Peng thinks courses on 'emotional control' are very important for engineers who work in the high-tech industry because technical knowledge changes too fast and management styles have not adopted to this well enough. Besides, Mr. Peng also points out that 'technical report writing skills' are important too. He thinks that through writing up technical reports engineers can understand what their weaknesses are. Secondly, Mr. Peng thinks that salary and career development would be the two factors to consider if he was thinking of changing jobs. Actually this is a general point of view among Taiwanese engineers. They are quite money oriented. Thirdly, Mr. Peng is not aware of what the training system is like in other developed countries such as the UK or the US, which is the same with all the engineers I have interviewed. This is a dangerous signal actually. Taiwan's training system is not as developed as the one in the West which is a fact that everybody knows. But Taiwan's engineers do not want to fight for changes in this with their employers in order to promote their own knowledge and skills. This is a pity because in the absence of such pressure from below, employers will be slow to change their practices. But in some ways, it is a typical consequence of some elements of Chinese culture and society. The prevailing sense of where responsibility for decision lies, is that it is a matter for the company and not the individual.

5-2. Mr. Lin: Training Quality

The interview with Mr. Lin from United Semiconductor Corporation covered the same ground as that with Mr. Peng but a number of new issues emerged concerning the learning climate of companies and the need for continuous training. The first point came out when Mr. Lin was asked: What kind of training do you have? And Mr. Lin's answer was:

> The training programmes in my company can be classified into compulsory courses and not compulsory courses. For the compulsory ones, every engineer has to attend such programmes. For the not compulsory ones, people can follow their own wishes to register the courses they want. But there is a restriction for the latter one, once you register for one of the programmes, you have to make sure you can attend it otherwise company will deduct some money from your salary. I think the reason for company to do so is to prevent the phenomenon that people often register the courses but do not appear in the courses which would cause money and man power waste. The original intention for setting up this law is good, because it is difficult indeed for trainers to control the situation if they even cannot know how many people are going to attend the course. However, doing this brings a very big side effect: people don't want to register for training courses since they cannot make 100% sure that if they can be in the courses when the day comes. I think it has very bad influence for the learning climate. The learning desires decrease obviously compared with two years ago, when this regulation had not been carried out.

Mr. Lin revealed feeling unsatisfied about his company's new training policy. He thinks the new training policy has some negative influences on the company's learning climate because of those restrictions. Actually, it is a dilemma for the company's training division itself. The company has to make a choice between being a learning company or controlling its budget. But in this case, this company seems that it is trying to save a little only to lose a lot.

The next point came out when Mr. Lin was talking about how he believes he needs to

learn to remain employable. His reply was:

> I really feel the heavy pressure for learning since the knowledge and skills change so fast in semiconductor field. The size of the micro chips changes from before 8μm to now 2.5μm, now even 1.8μm chip is going to appear in the market. The fast changing rate of machines, knowledge and skills force we engineers continually to learn new things. I would think that to keep on learning to enrich my expertise and promote my English ability is very important to remain employable myself. And I also think attending those training courses can make me have clearer concepts for my job. Of course, I also have to analyse the trends of my own work field, and realise my own weakness then I will have clearer ideas about how can I improve myself.

To the question - 'If you are looking for a new job, would you consider what kind of training quality the new company can offer' as a valuing item for changing jobs?' Mr. Lin's answer is unique among all the interviewees. His answer is:

> Yes, I think that through a good training system can make myself more competitive and knowledgeable.

Mr. Lin stresses continuous training and learning very much. He realises that he is in a situation that he needs continuous learning to keep himself employable. But the training policy in his company does not make him feel very confident.

If we summarise the conversation with Mr. Lin, there are three points worth highlighting. First, Mr. Lin would think about the training quality as the first priority when he considers changing a job, which is a good sign for Taiwan's HRD development. If more and more engineers had the same thoughts as Mr. Lin does, the HRD in Taiwan will be forced to change towards a better direction sooner rather than later. Secondly, Mr. Lin is like other engineers in that he does not have plans for his career development, but he definitely wants to move in other directions as well. This will be a dormant crisis for Taiwan in the future, as most of the engineers seem not to want to stick to their profession in the long term. There might be a shortage of technical specialists in the future or at least companies would face the crisis of a technical experience gap when the more experienced engineers have left. Thirdly, Mr. Lin does

not know about how training is conducted in other companies and other countries either. Again, this reveals that Taiwanese engineers have not yet come to the stage to fight for their own interests to get better training.

5-3. Mr. Chen: Trainers' Training.

The third interviewee - Mr. Chen - 28, works as a process engineer in an American company - American Applied Material - for 2 years. Unlike most of the Taiwanese companies, an American company has a different training style. Not only does the company itself place more emphasis on training, but employees such as Mr. Chen also have more awareness about the importance of training. This can be proved from Mr. Chen's answer to the question 'What kind of training do you have?' His reply is as follows:

> The headquarters of my company is in the United States, therefore all the new engineers will be sent to the USA to receive one-month training in order to be familiar with the functions of machines which are going to be sold to our customers. Apart from the training offered by the headquarters in the USA, of course we also received on-site training in Taiwan. The content included safety training, customer service training, and how to operate machines in the laboratory, computers skills and so on. Besides those training programmes for promoting our expertise, we also have some training programmes for relaxing purpose such as health education, aerobic, tai-chi, and so on. Overall, I think the training programmes provided in my company are varied and good.

From the interview, some of Mr. Chen's points of view are worth comment here: First, Mr. Chen agrees that trainers should have the knowledge about how to deliver training more professionally, but he thinks that trainees have to co-operate as well. A good training is not only the trainers' responsibilities, but trainees also have to digest the knowledge they have gained and apply it to their job duties and then improve their working performance. Secondly, unlike the other interviewees, Mr. Chen is quite aware

of the training style in those developed countries in the West. He also pointed out the weakness of Taiwan's HRD system - less emphasis on training. Training is always the lower priority in a company's budget plan. It is sad that Taiwan's HRD is still at the stage that stresses on recruiting new people and evaluating employees' performance. But the interesting thing is: even through Mr. Chen quite values the importance of training he still would not consider the training quality as the new company can offer as the decisive factor if he was thinking of changing jobs, just like other engineers. Again, this reveals the Chinese's money-oriented cultural orientation. It suggests, too, that even when company training policies are well-formulated and in tune with western ideas, it is the border, deeply-rooted patterns of the culture of a society that many be the most decisive influence on people's motivation to train and develop.

5-4. Mr. Huang: On-the-Job Training

The next interviewee - Mr. Huang, 30 - has been working as a senior production process engineer, for 4 years in the Industrial Technology Research Institute. There is an interesting discovery when the researcher asked the question 'What kind of training do you have?' Mr. Huang replied:

> The training programmes in my company are mainly provided to new comers or junior engineers because most of those training programmes are at very basic level. They are more suitable to those engineers who just joined in. With regards to us senior engineers, there are not many formal training programmes for us. The main ways for us to gain new knowledge and technique are through attending academic conferences or through presenting dissertations. We are expected to bring back new ideas about the new research direction and what we can do in the future by attending those conferences.

Mr. Huang is working in the 'Industrial Technology Research Institute', which is called 'the cradle of industrial specialists' cultivation' in Taiwan. They have the most industrial research cases undertaken inside the organisation and they also conduct many training programmes in response to the needs of Taiwan's industry. But, surprisingly, those high-tech specialists only received training at the beginning stage of their careers. When they became senior, the training they have is informal training such as on-the-job training, conferences and so on. In my Chapter 1, knowledge productivity section, there is an argument about the functions of formal and informal training. It is risky for a company to rely on on-the-job training totally although on-the-job training is usually the most effective way to train employees. However, successful on-the-job training depends on the learning atmosphere, the interpersonal relationship and employees' motivation towards learning and other factors as well.

5-5. Miss Tsai: Training Attitudes

The next interviewee is a female engineer - Miss Tsai, 27. She is an industry hygiene engineer and has 2 years working experience in Industrial Technology Research Institute, which is the same with the former interviewee, Mr. Huang, but they work in different divisions. She said she has to propose to her boss the training programmes she would like to attend otherwise she would have no chance to attend any training. Again, it reveals the weak training system in the organisation.

Apart from that, Miss Tsai has a fairly surprising answer for the question - 'Do you expect your company to train you?' Her reply is:

> No. I think learning new things is employees' responsibility. If I were an employer, I would not spend money to train the staff, how about if they leave for other companies after becoming well-trained staff? It is going to be a company's big loss. I could just hire those people with good knowledge and skills to work for me then I do not have to train them.

Actually Miss Tsai is the first one and the only two among 10 interviewees having such an answer. But the researcher wonders how many Taiwan's engineers have the same way of thinking with Miss Tsai for this question? She does not think that the company has to be responsible for training its employees because it is a waste of money if the well-trained staff leave for work in other companies. And she thinks that employers can hire those highly skilful engineers as an alternative of delivering training to employees.

This is exactly the majority of employer's thoughts about training in Taiwan actually. Unfortunately, Taiwanese employers have no long-term views about developing their staff. How about a few years later when those 'highly skilful' staff will become good-for-nothing if they do not accept any training? It is indeed a resistance within Taiwan's HRD development that those highly talented working forces think in this way. If they do not take the lead to put pressure on employers to promote the HRD system, who else in Taiwan's HRD development system will do so?

It would be "the snow plus the frost" that both the employers and the employees sides do not think training is important in promoting industrial and success. It is not difficult

to understand the reason for Miss Tsai to think like that. It is because her company does not nurture a strong learning atmosphere. The company might have high expectations for employees' performance quality, but meanwhile the company does not provide sufficient support for employees to develop the required abilities. The economic environment is changing at an amazing speed. Those companies that neglect training and developing their employees will soon encounter the crisis of being out of date in the high technology world.

However, Miss Tsai herself does continuously learn new things and she has planned her future career. We can see this from her answer to the question 'How do you hope your careers in the future will develop?' Miss Tsai answered:

> If there is an opportunity for me to move to a management position, I would very much like to work as a manager. I am myself reading some management books and preparing myself to move my career to be a manager in the future. Because it is rather competitive to become a manager, since there are more applicants than vacancies, I have to prepare myself to be suitable for this job. Then I can catch the chance when it comes.

Actually almost all the engineers would like to change their career directions from being engineers to being managers. This implies a crisis for those high-technology industries; there will either be a shortage of qualified engineers or there will be a knowledge gap when those senior engineers all move to managing positions.

5-6. Mr. Kuo: Training Awareness

The following interviewee - Mr. Kuo, 29 - is a process Engineer and has 3 years working experience in Texas Instruments - Acer Incorporated. We can see Mr. Kuo's attitude towards training from his reply to the question 'What kind of training do you have?'

courses held by outsiders, but this way does not work out well because those outside training courses do not meet their needs well and engineers themselves are usually not highly motivated to go for those courses either. Mr. Lo clearly pointed out that the learning and training climate in his company is very weak. From the top down to the bottom of the personnel ladder, training is hardly emphasised at all. He thinks part of the reason comes from the heavy workload. Engineers cannot squeeze their time to attend the training courses, and the training department cannot put the training programmes into the engineers' time schedule either. As a consequence, both employees and training staff sides feel frustrated and unmotivated to attend or to hold the training courses. In Mr. Lo's company, the main way for employees to learn new things is through mentoring or learning from experience. But as we discussed earlier, it is risky for a company totally relies on informal training. Although informal training such as on-the-job training or mentoring are usually the most effective ways for employees to learn new things, a perfect training should be supplemented with formal training programmes.

5-9. Miss Chen: Values of Training

The next interviewee - Miss Chen - comes from the same company with Mr. Lo. She is 27, with 4 years working experience as a process engineer in Mosel Vitelic INC./ Miss Chen has a surprising point of view about training. She does not think training is an important for a technology company at all. She certainly does not believe that she has to learn to remain employable. She said that there are only a few training courses in her company and it is not compulsory to attend those courses therefore she does not want to go at all. She seldom goes to the training courses held by outsiders either, because she does not think those courses are really useful to her job. What a shocking comment for training! And what a negative voice about Taiwan's HRD development too. Perhaps Miss Chen cannot represent all the engineers but there must be people who are like her.

The reasons for Miss Chen's passive and negative attitude towards training and development are probably due to the company's failure to create a strong training and learning environment, as Mr. Lo mentioned before. Therefore, they are left with only routine daily work without the inspiration of absorbing new knowledge. Miss Chen was

a bit fed up with her work and she could not see the delightful part of her future. Miss Chen's confusion about her future development is actually a common doubt among engineers. Creating a learning company in fact benefits the two parties of employees and employers. For employers, they have the talented staff work for them; for the employees, they can see their personal growth by doing their jobs. It is a question of killing two birds with one stone. Miss Chen and MR. Lo remind us, however, that the motivation to train and seek new knowledge and skills, is strongly influenced by the structure of opportunities for doing so in a given company. Company training policies can promote a positive climate of learning, or they can stifle it.

5-10. Mr. Chang: Learning Styles

The last interviewee - Mr. Chang, 31 - is the only interviewee who possesses a Ph.D. degree, with only one year working experience. He is working as a technology development engineer in Winbond Electronic Corp.. Mr. Chang brought out one new point, that is, every engineer has his or her own learning style. Some would like to learn from formal lectures; some think they prefer to learn by doing things or through mentoring and others might like to find out the new knowledge through private studies. Based on this, every company should make available good learning resources such as courses, mentoring, and computer software programmes and books and so on for each employee's unique needs. However, in a free and open learning environment, the learning climate is a critical factor to influence the effects of delivering new knowledge and skills. Therefore, forming a learning company should be an important issue for every company which would like to continually develop its own people.

5-11. Conclusion

From the interviews with Taiwan's young engineers, there are some points to highlight here:

For question 1 'What kind of training do you have?', most of the engineers would have received similar training, mainly related to their expertise. Some of the companies provide some leisure courses as well. Most of the engineers think on-the-job training is the most effective way to learn new things. For question 2 'Who provides? (Company itself or outsiders)', it seems most of the companies use both in-house training and outsiders' training programmes and engineers go for both, depending on the circumstances. Some engineers complained that training courses from outsiders are at very basic levels or they are theoretical rather than practical. For question 3 'What do you think of those training programmes?', sadly most of the engineers did not have a clear view about this point. They expressed the view that usually training quality (in terms of trainers' lecturing abilities or the teaching materials) is not excellent. But as long as they can learn something useful for their jobs, they do not mind it too much. However, those engineers probably have never thought they could gain more if the training quality was better. If the delivery of training in areas such as teaching material, teaching methods, question inspiration, etc. can be all pre-organised, not only the training itself would be better for the participants but it would also help the company build up a good learning environment. For the question 4 'What do you believe you need to learn to remain employable?', most of the engineers believe that they have to continue to learn to remain to be employable. However, they are not highly motivated to learn although they believe they should keep learning new things. For example, they do not usually initiate suggestions to companies to hold those courses they believe they need or want to attend. Consequently, they have quite passive attitude to learning. They learn what has been offered to them to learn. For the question 5 'Do you expect your company to train you?', most of the engineers said yes except two female engineers. It is perhaps a coincidence that the only two people who said no to this question are female. One thinks that learning is the responsibility of individuals. The other one thinks training is not important at all. For the question 6 'How do you find the trainers' qualities? Do you think it would be better if those trainers receive pre-job training?', most of the engineers have positive answers towards this question. But again, they have not very firm attitudes about it because nearly none of the Taiwanese companies have such programmes to train the trainers. If engineers emphasise training enough and have louder voices to force their employers to value this problem, there would be better quality HRD in Taiwan. For question 7 'If you are looking for a new job, would you consider 'what kind of training quality the new company can offer' as a critical item for changing jobs'?, most of the engineers answer 'no'. They think of the

training quality of the new company as having only very low priority. I think there are reasons for this phenomenon: one is that the Chinese are money oriented; the other is that the learning and training atmosphere in Taiwan is still not strong, therefore it is easy for employees to ignore this issue entirely. For question 8 'How do you hope your careers in the future will develop?', well, very few engineers would like to stay in the engineering profession forever. Most of them would like to move to manager positions in the future. This result brings out three issues: First, actually this is a not bad phenomenon, because once those engineers become managers, they would have engineering knowledge plus real working experience in the factory, which would help them to get involved in situations quicker and maybe make better decisions. But the premise is companies should help those engineers organise their career plans and deliver training to them, then they can prepare themselves to possess the knowledge and skills they need before they actually become managers. Otherwise there would be a knowledge gap there. Secondly, if most of the engineers want to move to other positions or even other professions, will there be an engineer's shortage in the future? If the Taiwanese government has a long-term view about this problem, what should the government do about this to prevent the shortage from happening? Thirdly, there would be only a few vacancies for managers in one company. It must will be fairly competitive among all of those engineers. How can engineers make themselves stand out? What about those who want to become managers but can not? I think these three issues show the importance of learning and training, and engineers should know how to achieve their goals by using learning and training opportunities.

For question 9 'How do you perceive the training given to specialists in other companies or other organisations or even other countries?', most of the engineers have no ideas about this question or some of them have only vague ideas about training in countries other than Taiwan. I think most of the Taiwanese engineers still have no concept in their minds that they should fight for their own welfare such as training, holidays and so on with the result that they do not value training sufficiently. For question 10, the last question of my interview 'What advice you would give to young specialists at the start of their careers?', most of the engineers would ask the new engineers to learn things as much as they can in whatever way suited them. It is difficult, however, to take this too seriously for in their own companies, this is not what they do. In this sense, their advice to others, which is really another way of talking about themselves, is a bit unrealistic. This is not surprising given the climate of attitudes

to training in Taiwan.

It was a great experience to talk to high-tech engineers who have such an important contribution to make to Taiwan's economic growth and to get to know their ideas about training and development. They work hard and are a group of people to respect. However, unfortunately, they are not yet very much aware of the importance of training and it seems that there is not an advantageous business environment to facilitate their learning process or lead them to learn more. Actually those interviews with those Taiwanese engineers reveal the training and development situation in Taiwan allows a very Taiwanese (Chinese) style. People are money-oriented, pragmatic, obeying the employers, etc. As a result, there is not a strong demand from the bottom up pushing HRD/training and development. Unlike the situation in England, where HRD/training and development has a higher profile in companies and is well-supported, at least in progressive companies, and through government programmes like Investors in People (IIP), the situation in Taiwan has much room for improvement.

Chapter 6. The case studies in Britain - Interview with training managers in 4 British science-based companies

The aim of this chapter is to present the findings of four case studies undertaken in the UK. In each case, an attempt has been made to learn about how training and development is seen and executed in British science-based companies. We hope to see in what ways the training and development factors associated with arrangements within these companies are affected by the national culture, government policies and labour structure factors.

The four companies all operate with high technology and employ technical specialists. They differ significantly from one another in several ways: some are very successful in business terms, others are less so. They all emphasise a strong commitment to training but do so in different ways and with different degrees of success.

The business profile and development of the case study companies can be seen in the following table:

Table 6-1 (Adopted from published company financial accounts, 1998)

Item	Company/year	1992	1993	1994	1995	1996
Turnover	**Cummins Engine**	337,623	430,602	455,410	527,516	531,052
	Tallent Engineering	46,138	55,381	61,152	107,294	78,973
	Rolls-Royce	3,562,000	3,518,000	3,163,000	3,597,000	4,291,000
	Hydro Polymer	87,679	97,684	123,290	137,518	N/A
Profit (after tax) **(Th. GBP)**	**Cummins Engine**	7,813	27,034	10,936	-16,276	1,660
	Tallent Engineering	2,001	3,167	3,256	5,384	4,240
	Rolls-Royce	-184,000	76,000	101,000	175,000	-28,000
	Hydro Polymer	2,097	1,425	7,195	10,454	N/A
Number of employees	**Cummins Engine**	2,409	2,519	2,666	2,743	2,339
	Tallent Engineering	762	805	779	829	826
	Rolls-Royce	55,000	49,000	43,500	43,200	42,600
	Hydro Polymer	473	473	475	493	N/A
Return on employed (%)	**Cummins Engine**	6.27	20.59	7.96	-23.66	-0.33
	Tallent Engineering	19.40	28.29	36.93	47.85	44.35
	Rolls-Royce	-10.98	3.69	5.24	7.71	-1.23
	Hydro Polymer	3.70	5.81	21.54	27.96	N/A

It can be seen from the data that these companies are under intense but different commercial pressure. Rolls-Royce and Cummins struggle to remain profitable whereas Hydro Polymer and Tallent Engineering manage to be profitable and to grow. This background is important in the interpretation of the companies' approach to training and development. For all of them, with the exception, perhaps, of Hydro Polymer, training is vital to their attempts to improve productivity and business performance.

6-1. A case study: Cummins Engines

Cummins Engines is a successful U.S. multi-national company which produces in its key British plants, diesel engines for a variety of world markets. Cummins maybe successful but its international competitive position is difficult. Employees are made aware of the fact that company wishes to increase its rate of return on capital and reduce costs. This explains the company's interest in flexible working methods, higher levels of quality and productivity and why their aims must be supported by effective training. The business goals of Cummins Engines are firstly, to meet all of the customers' requirements and, secondly, to improve how they do it. And Cummins understands that only people can help company to achieve its goals. Everyone who goes to visit the plants has always been told: 'People make the difference'; 'We are in it for the long haul'; 'Continuous improvement is a way of life'. 'Education and training are vital', 'Empowerment' is one of the buzz words in widespread use and the common approach to problem-solving engineers into all working practices a standard method of detecting and solving production problems so that they can be put right systematically. Actually one would believe it is true not only because Cummins is awarded the Investors in People Award (IIP), but also one can see how much emphasis they put on training and educating people by seeing those charts, diagrams everywhere in the shop floors or offices showing to people that Cummins's promise to train people and how training influences their productivity and quality.

Information about how this company trains its staffs was gained through an interview with a training manager from the personnel department. The company is very willing to discuss its policies and procedures because they believe that their reputation will improve the more visible their operations. During the interview we discussed a wide range of issues and problems in the Cummins Training system.

The general impressions I gained from this case study are that:

- **the company itself has strong beliefs that good quality people are the key factor to lead them to success;**
- **the company itself has a strong commitment to training;**
- **the company measures its performance in training as carefully as it measures all other aspects of its performance.**

In addition to the interview with the training manager a range of company documents were examined which set out policies, plans, and objectives in the company's training programmes. A number of interesting points stand out:

- **'Fool the people policy'**

There is a very important point to be mentioned here: In Cummins, there is a system called CPS (Cummins Production System) which regulates everything employees do. It defines the organisational culture of the company. All employees at every level are given training around CPS principles. One of the problems, however, which plants have to cope with is the contradiction between a growing requirement that people should work flexibly in teams and show initiative, and also work strictly to the rules and CPS. The danger here, can also be seen in some large and bureaucratic companies in Taiwan, is that employees will not work enthusiastically because they are not really allowed to think. In Taiwan there is an expression which describes management policies in some companies which can be translated as: 'Fool the People Policies'. These are firms in which employees are merely expected to follow standard procedures and not to think for themselves.

During the interview with the training manager, we discussed the following points:

1. Strategies and plans and courses for employees' training

The training manager, who had first showed me around the plant to explain its production process, set out the company's plans as follows:

Cummins believes that if we do not train and develop people, there is no way

we are going to succeed and we cannot achieve the other company's objectives as well, therefor 'attract, train, challenge and fully utilise outstanding people at all levels in order to achieve these objectives' is one of the five company objectives. Cummins thinks that employees think that 'employees in healthy organisations participate in training and related activities approximately 5% of their time. Cummins supports a 5% individual as a minimum. So there is a CPS measure to measure the amount of time employees dedicate to training relates to productivity and the figure was 5% this year and will be increased till 7.5% next year.

His comments reflect the company's policies and procedures. CPS is a system which requires the measurement of all activity. Training has to be justified in business terms; it has to be seen to contribute directly to commercial goals.

About the training for technical staffs was explained it as follows:

The training covers not only various technical aspects of production, but also the whole CPS system itself. Training opportunities will be available to further explain the techniques and concepts of production, maintenance, and material flow required by the Cummins Production System. There will be training on the common approach to problem solving. Specific technical training will be provided by resource support people. There will be technical instruction in 'gauge design', 'procurement' and 'calibration'. Product related training would include: reliability, blueprint reading, productivity, and our Failure Mode Effects and Analysis (FMEA) process. The quality function is expected to lead training in statistical process control (SPC), machine capability, and process capability. Nationally recognised certification will be strongly encouraged for each member of the quality organisation. As part of individual's training and development plan, there are things related to business objectives, annual performance, etc. Behind that, we also try to create functional excellence which means to make sure that people with the individual function have the right skills, the right attributes, and would be able to operate within that group effectively. As part of CPS there is a 'functional skill matrix' idea that is identifying the skill requirement someone in a particular job should have, for example, for a production engineer or a quality

engineer, what kind of skills they should have when people are in that role and these are all recorded in the 'Employee Manual'.

The comments of the training manager are interesting. They illustrate the company's whole approach to its work. There is a high degree of corporate planning. Even the language used is that of engineering. The emphasis on systems, plans, objectives, functional skills is revealing of a corporate culture which is centralised and well regulated.

As part of the interview, we discussed the company's view of successful training.

2. Ideas in companies about successful training

Cummins has installed an internal customer system as well as an external customer system. The ideas are to encourage Cummins employees to consider their colleagues from downstream divisions as their customers as well as the real external customers. It means that they have to make sure their products can satisfy customers' needs and quality requirements. For example, the training department's internal customers are those employees who attend the training courses. The training department sells training programmes and employees buy the training courses.

The training manager thinks that successful training should be to:

> Make sure the delivery of training is at the right time and the right quality.
> Therefore we investigate training results beforehand and evaluate the effect
> afterwards and we do all those measures by using 'CPS'. For example, after
> the training, trainees have to fill out the so called 'course evaluation form',
> there are questions such as 'will this course help you improve your job
> performance?', 'overall, how effective were the instructors in helping you
> learn?' therefore we can know how effective the training is.

From the course evaluation form, I also saw there are some questions like 'how much of what was taught in this course do you expect to use back on your job?' and 'when do you expect to use what was learned in this course back on the job?'; and employees are expected to select the answers from the range 0% to 100% and from never to immediately or so. But, how can employees be able to know how much they benefit

from the training? The effect of training is an intangible thing, sometimes it influences one in an unnoticed way or sometimes it does not seem to be helpful right now but it does in the future. Cummins likes to measures everything, they think a training programme with good result figures is a successful training.

3. Ideas about how training should be provided (in-house or by outsiders)

Cummins uses both training sources. But because of the time constraint factor, Cummins gradually uses more outsiders' training programmes to compensate the insufficiency of in-house training.

Among the practice of training they employ, are private consultancy firms and staff from university departments in the North East of England. The company has a close working partnership with the University of Teesside in the provision of management training for supervisors and middle managers.

4. Recruitment and training of trainers

The training manager put it in this way:

> In the training function, Cummins recruits trainers by utilising the people within the factory such as functional excellence leaders, who are people possess some particular skills as we saw in the skills matrix, and Cummins use them to deliver training to others. Those trainers need to achieve some certain standards of skills and knowledge and we also give them some training skills, and use them to deliver training in some pacific areas where they are particularly strong.

Cummins does train the trainers. They use both in-house staff and outsiders to train their trainers. They have to make sure those trainers have the skills for delivering training that Cummins require them to possess.

5. The effectiveness and evaluation of training

Cummins evaluates all its activities. They see the evaluation of training as an important

component of the learning process itself. It, too, is specified by the CPS system to include the following phases:

Identification of needs ➧ Set objectives ➧ Briefing ➧ Learning activities ➧
Review of action plan ➧ Debrief ➧ Identification of needs (loop)

A summary for this case study

Cummins has an excellent frame work for the design and delivery of training. Its policies derive from American corporate practice and many of its detailed management methods are taken from Japan e.g. KAIZEN. A British labour force has adapted well to both these influences. Cummins is considered a good company to work for. Despite the stress on training, the company struggles to be profitable in its global market place. We can only speculate about the difficulties it would face if its training was not as good as it is. Commercial pressures might well have led to closure.

There are contradictions in the company, however. And Cummins is a company in which everything is regulated. They measure their every activity. Anything which cannot be measured seems not to exist in the company. Of course it has the advantages to do so. It shows the performance of all the activities clearly to the employer and customers. It is very good for things which are tangible, such as measuring the things like product yield rate, defect product rate and it is indeed an easy and excellent way for managers or supervisors to manage the production line. However, for the things which can not be easily measured it may disguise failure. Training is a good example. It does not mean the employees are more knowledgeable than before if the figures show that the training hours relates to the standards or targets planned for. Nevertheless, staff in the company do feel that the emphasis on training is important and worthwhile. Training is related directly to measures of productivity and the company is very committed, as it has to be, given the commercial pressures and its poor rate of return on capital, to improving productivity and profitability.

6-2: A case study: Tallent Engineering LTD.

Tallent Engineering is a successful company. The company was re-established in 1989 after a management buy-out and since 1992 has been owned by the German company, Thyssen. It was founded in 1948 to manufacture a range of fancy goods including cigarette powder compact cases and lipstick cases, and now Tallent is a manufacturer of niche-market chassis structural and suspension products, for small and medium cars and light commercial vehicles. The company employees 700 employees directly in production and a further 200 indirectly in maintenance, tool-making and in administration. The company works from a designated trading estate in County Durham, but it is not a 'green field site' company. It is recent expansion had to take place against a background of an existing labour force with strong local roots in the area. The company pays well, its salaries are in the upper rank for the region and it operates a profit-related paying system. In 1996 the company won an award as the Northern Barclays Company of the Year. There is over capacity in the market place in Europe and the company is seeking to expand into emerging markets in Brazil, Mexico and China. The company itself has a very strong commitment to training and educating its employees. The company believes that its ability to increase its competitive advantage on a global basis depends more upon the quality of its education, training and development than on any other single factor. In the company's document about training, the point is made clear as:

> Although of great complexity, new technologies may be easily and quickly transferred from one country to another. The speed and simplicity of this technology transfer means that further competition between manufacturing nations will not be a competition of technologies but of people. We therefore recognise that our ability to maintain and increase our competitive advantage and hence guarantee our future and economic prosperity, depends more upon the quality of or education and training than on any other single factor.
> (Tallent Engineering Limited, *Investor in People, Indicators* Issue 2, 1996, section 10)

The following points were found during a long interview with the company training manager which can show Tallent's strong training climate.

- **Effectiveness of people development is seen in people being headhunted from the company;**
- **They keep finding ways to transform training types and create an interesting learning environment;**
- **They train their trainers;**
- **Employees are keen to be trainers;**
- **They think the critical, single factor for Tallent Engineering Ltd. to remain competitive is 'people';**
- **The company itself has a strong commitment to training;**
- **Tallent is not a bureaucratic company, every employee can express his/her feeling and opinions without difficulties.**

• A climate of consistent innovation.

Tallent is successful, but the big changes which have made the company successful now actually happened in the late 1980s, within the past ten years. The elements of the corporate culture such as team working, flat hierarchy, quality, benchmarking, focus on people, etc., are coming together very well. But, what is the reason for keeping it going? Mr. Leng, the Training Manager, thinks that is because of the style of their managing director-Bernard Robinson. He described Bernard Robinson in this way:

> The managing director-Bernard Robinson is an extraordinary person. He does not have a narrow view. He is very much a global player. He is prepared to look at what other people are doing and he listens. Obviously he is an entrepreneur; he has the feel for individuals, because he came from the tool shop. He has always had this drive and ambition to put the industry forward, certainly through the automotive sector. He is not afraid to lock at what other companies do, and thinks that is it is good, we should be doing that, we should have some of that and why are we doing that?

All of these elements form Tallent's internal atmosphere, and its climate of consistent innovation.

• Open-minded atmosphere

Employees are always welcomed to talk to their managers or supervisors, to express their opinions about their jobs and work. The managers are also aware that it is one of their responsibilities to listen to what people want to express.

• Business goals-oriented training

The company's training plan is set up according to business goals and targets. The company believes that its ability to increase competitive advantage on a global basis depends more upon the quality of its education, training and development than on any other single factor. The company is an 'Investors in people' company and has spelled out its training philosophy in writing. I only pick up the key points here, they are:

1. There is a public commitment from the most senior level within the organisation to develop people.
2. Employees at all levels are also aware of the broad aims or visions of the organisation.
3. There is a written but flexible plan which sets out business goals and targets.
4. The plan identifies broad development needs and specifies how they will be assessed and met.
5. The employer has considers what employees at all levels will contribute to the success of the organisation and has communicated this effectively to them.
6. Where representative structures exist management communicates with employee representatives a vision of where the organisation is going and the contribution employees (and that representative) will make to its success.
7. The written plan identifies the resources that will be used to meet training and development needs.
8. Training and development needs are regularly reviewed against business objectives.
9. A process exists for regularly reviewing the training and development needs of all employees.
10. Responsibility for developing people is clearly identified throughout the organisation, starting at the top.
11. Managers are competent to carry out their responsibilities for developing people.
12. All new employees are introduced effectively to the organisation and are given the training and development they need to do their job.
13. The skills of existing employers are developed in line with business objectives.

14. All employees are made aware of the development opportunities open to them.

15. All employees are encouraged to help identify and meet their job-related development needs.

16. Effective action takes place to achieve the training and development of individuals and the organisation.

17. Managers are actively involved in supporting employees to meet their development needs.

18. The organisation evaluates its development of people is contributing to business goals and its targets.

19. The organisation evaluates whether its development actions achieved their objectives.

20. The outcomes of training and development are evaluated at individual, team and organisational level.

21. Top management understand the broad costs and benefits of developing people.

22. The containing commitment of top management to developing people is communicated to all employees. (Tallent Engineering Limited, *Investor in People, Indicators.* Issue 2, 1996)

For their engineers' training, they have put the ideas and rules in the document as follows:

> Engineers' development will be identified via the Employee Development Scheme, with programmes identified to enable the individual to become extremely broad based and capable of undertaking any engineering activity relevant to the needs of the business. Engineers usually are keen to attend training or do part-time degrees. The majority of engineers Mr. Leng pointed out are originally from the toolmakers which give them a very good grounding about what the company does, so they know the process. Some of them would like to see themselves as engineers. They do that though doing part-time degrees.

Mr. Leng explained that there are four focuses on training and development in the company and explained them as follows:

1. Strategies and plans and courses for employees' training

Mr. Leng said:

> Technology is worldwide, is available to everybody. Our employees are the
> single, critical factor to make Tallent more competitive. We have an
> employee's development scheme, which give employees the opportunity to
> discuss their training and development needs with their supervisors. We
> have a further education sponsorship procedure. If any employee applies for
> a programme which is directly linked to business subject, then it is 100%
> sponsorship. If it is indirectly linked to business subject, then it depends on
> the employee's working performance and attitude, if they are good
> employees, then it is usually 100% sponsorship as well.

This commitment to people is strongly emphasised in this company. They have
specially designated training areas well-equipped with demonstration machines and
teaching materials. Training is a key feature of the corporate culture of this organisation
and it is developing, in Joseph Kessel (1996) terms, it has a strong corporate curriculum.
The optimism and commitment of the training manager to these goals was obvious.

2. Ideas in companies about successful training

During the interview we discussed how training should be provided. Mr. Leng
explained:

> We try to define the training in Tallent. We give training to our employees
> and let them learn new skills and expect they would do something different
> from before. To give them more confidence about their own ability.
> There is a clear sense of the need to tie training to business improvement.
> This company is not interested in training for the sake of training.

3. Recruitment and training of trainers

Mr. Leng explained:

> We have qualified in-house instructors in the shop floor, they have

instructions in training themselves and how to train others. That is critically important, especially in engineering. We give them the training tools, explain to them how you should treat individuals when they are in the training environment, how to use open questions, how to explain by asking a question. You are not only testing them, but you are also testing that you have imparted the information correctly. We give them training teaching skills, we also try to involve them in whole methods rather then in parts. We have task analysis. We get the trainers to break down the tasks, emphasises the key points. It ensures consistency, ensures the learners learn at the right pace, at the right time, the learners must know the key points. We have what it is the learners could know, should know and must know, and we do not get the three mixed up. You concentrate on what they must know, when they are confident, you add some more skills. We use an open approach. They do not criticise and we let them learn for themselves.

It is worth noting that Mr. Leng's views on training reflect progressive HRM practice. They are based on a conception of how people learn and are consistent with modern ideas of learning and motivation. Using Thomson and Mabey's (1994) terminology, Tallent expects trainers to approach training on an experiential basis where trainers are expected to be facilitators who can 'help the learners discover their talents and realise their potential in order to achieve their own learning goals' (1994:53). It is not clear whether Tallent trainers have read in detail the modern psychological literature of learning, but it is clear that they are tuned in to contemporary approaches to training.

4. The effectiveness and evaluation of training

There is a serious problem for any successful training organisation. It is to retain highly trained staff when often organisations are likely to head-hunted them. Tallent's response to this is to strive to be more successful and to offer more opportunities to its staff than other organisations in the region.

A summary of this case study

Tallent believes that people are the critical factor to help them to face the competitive

environment. Therefore they emphasise training very much. They do not only have a commitment to training, but also to quality training. They train their trainers. They do form a good learning environment and climate. Employees there are glad to learn and willing to learn and willing to be teachers to teach others. Tallent's training manager - Mr. Leng - has very clear ideas about how training should be done and how to continually improve the training system they have now. He himself has engineering background, and has been as an engineer before he became a training manager. This probably helps him a lot to know what engineers' needs are and how training should be done in order to benefit engineers the most.

The Tallent case highlights the ways in which a company can tie in its training policies to business objectives. It is interesting to note that the changes which Tallent has made over the past decade - major growth, new product development - have been made with substantially the same labour force. What made it all possible, the company believes, is the effectiveness of their training. Through training, employees have been able to do new things.

Again, the labour supply structure pushes the HRD/training and development to grow in this company. And with the IIP system, it is like a logo thing, deeply planted in everybody's mind. Particularly, in this company, the top manager values training a lot. And also the employees are very self-interested in developing themselves, which reflects a key element of the national culture (at least in comparison with Taiwan) – the need to take responsibility for oneself. Tallent also shows that a positive climate of learning strengthens individual's motivation to train. And those factors are the factors to make the UK have better training and development systems compared to Taiwan.

6-3: A case study: Rolls-Royce

Rolls-Royce, undoubtedly is a company with a high global reputation which was found in 1906 for the manufacture of motor cars and quickly gained the reputation for making 'the best car in the world', with its Silver Ghost model. Aero engines were first produced at the outbreak of war in 1914, when Henry Royce designed the 'Eagle'.

Thereafter, motors cars, including the Bentley from 1931 onwards, were produced side by side with aero engines in the Derby factory. Rolls-Royce was once owned by the government in 1971, the motor car division being floated as a separate company, but it has being returned to the private sector in 1987. Since then Rolls-Royce has broadened its product base and presence in the industrial power market with the acquisition of Northern Engineering industries in 1989 and, more recently, through the acquisition of the Allision Engine Company in the United States (http://www.rolls-royce.com/history/history001.htm. 1998). During the interview with the training manager in the company, I was impressed by the training manager's confidence about Rolls-Royce. He said Rolls-Royce means quality. And moreover, he thinks training and CPD (Continuous Professional Development) are the key element which contributes to Rolls-Royce's good reputation.

The company is highly willing to discuss its policies and procedures because they believe that their reputation will improve the more visible their operations. This openness is an important element of the company's concern to be seen as a successful organisation. Committed to training and employee development, it is a policy which strengthens the outside world's perception of the quality of what Rolls-Royce produces. It also helps it the recruitment and retention of highly qualified staff.

The general impressions I gained from the talk with the manager - Mr. Collingwood - are that:

- **There is a very strong emphasis on training;**
- **Every new employee has to take two years training. New employees shift to different divisions in order to understand the whole organisation;**
- **Rolls-Royce believes it is hard to get good engineers; if they get them, they must work hard to keep them;**
- **Rolls-Royce has strong sense of a global market place and a perception that the distinctive asset/commodity of the company is expertise, i.e., expertise about electrical control systems, design and so on. They have R&D in Britain, and have manufacturing abroad.**

It is really impressive to know that Rolls-Royce has such a strong commitment to training and development. Moreover, the training manager believes that they have to work hard in order to keep qualified engineers, so they invest a lot on training the new

comers and their continuous professional development afterwards.

This concept is quite different from most of the training managers in Taiwan. In Taiwan, due to the seemingly sufficient supply of engineering graduates, most of the managers have not sensed the difficulties of recruiting new people to work for them. Moreover, many top managers have the idea that if employees leave the companies, then the training investment will have being a waste. They therefore care less about how to retain good staff. But this is a dangerous concept. If Taiwan's managers always think so, the crisis of recruitment or the loss of talents will soon arise.

- **Engineer's job natures have changed, training therefore becomes more important**

Mr. Collingwood also pointed out the training is becoming more important than the past. He said:

> Graduates are facing a more competitive working environment than in previous years. There is an increased emphasis on empowerment and greater responsibility within early appointments. The days are past when personnel attained experience in several posts before achieving a position with widespread responsibilities. Hence the training programme and the type of graduate recruited must have the appropriate ability for these appointments.

This is an interesting point of view. It seems that engineers have to be multi-skilled from the beginning stages of their employment in order to make themselves capable of further development. It means the training programmes have to help those new comers meet the new trends.

- **Formal training has to be supplemented with informal training and individual's commitment to continuous learning**

Mr. Collingwood also pointed out some of his views about training and development. He thinks that there are various forms that training take. Formal training is usually the key element of all those training but it has limits. He said:

Formal training certainly plays a key part in effective training practice. However, in practice this only plays a relatively small role in developing the competence of most individuals. The problem, all too often, is that such formal and often expensive training is not integrated with much more practical approaches to the development of personnel. It therefore tends to be far less effective than it should be.

If what Mr. Collingwood said is true, then there must be a way to supplement the formal training. He said again that he thinks the key is the commitment to personal continuing professional development. Mr. Collingwood put it in this way:

Effective continuing professional development leads to quality products and services. It is an investment for both individuals and the company which is not necessarily expensive and can be implemented largely through learning structured around the job itself. So, there is a need for commitment by everyone to continuous self improvement, both individuals and companies must commit time.

This reference to the need for individual commitment to training is interesting. The "psychological contract" between employees and companies is changing. Employees increasingly expect firms to show a commitment to training. Companies increasingly value employees who are committed to their own professional development.

Mr. Collingwood thinks the following activities are the activities associated with continuing professional development:

- Personal development planning
- Career counselling
- Coaching
- Mentoring
- Integration of appraisal with CPD
- Learning through the job itself
- Formal training courses
- Continuing education and distance learning
- In-house training
- Reading
- Lifelong development

- Activity in professional institutions

The model of employee development they seek in Rolls-Royce is a comprehensive one and displays all the hallmarks of contemporary discussion in the field of HRD.

- **A successful training needs both employers and employees' commitments to training.**

This is again an interesting point. Both employees and employers have to make a commitment to training. It then can produce continuous professional development, and then can lead to better product and benefits. Comparing the researcher's interviews with the training managers and engineers in both the UK and Taiwan, I found this is still a weak concept in Taiwan, especially on the part of Taiwan's engineers. There are few of them would think they should continuously develop and to spend extra time to the learn things.

In addition to the interview with the training manager, a range of company documents were examined which set out policies, plans, and objectives in the company's training programmes. There is a document called - 'Rolls-Royce Transmission and Distribution' concerned with the professional engineering programme. This document clearly shows every single detail about Rolls-Royce's training programme, including the manpower plan, training policy, training programme elements and so on. It seems that Rolls-Royce does have very complete plan for training their people.

In Taiwan, there are only a few companies have completed plans about training. Some of them even do not have the paper documents to regulate their training.

During the interview with the training manager - Mr. Collingwood, we discussed the company's strategies planning of training and development.

1. Strategies and plans and courses for employees' training

In Rolls-Royce, the training programmes for new comers take at least 104 weeks. During the programme year 1, new engineers go to every department, including those not directly related to engineering departments such as finance, purchasing and so on in order to understand whole cycle of business. From the second year, the programme is

much more individualised and is designed to ensure that the trainee is integrated into the business. Year 2 will prepare them for their first position of responsibility and take the form of two six months projects to utilise the skills and talents of the trainee while at the same time maximising their contribution back into the business. A major contributor to the objective, design and location of the projects is the Business Unit in which they will be employed in their first appointment. This is to ensure that the trainee acquires the maximum knowledge and experience most meaningful in their preparation for this position. (Collingwood B., *Transmission and Distribution, professional engineering programme,* 1997:9)

Mr. Collingwood continued to say:

> Besides the training programmes for the trainees, the CPD concept is deeply implemented inside the company. The CPD has been undertaken through varied forms of training such as learning through the job itself, and formal training courses and so on. The CPD never stops, as CPD is the only way to lead quality product and then make companies successful. So the employees can continually learn and develop themselves to become more skilful and capable for their job positions. More, in Rolls-Royce, when engineers reach the age 35, they will be considered as the general managers of the small business units. And Rolls-Royce also run its own business courses in Newcastle University. After attending the courses, there will be degrees issued called Rolls-Royce MBA.

This particular feature of the training programme shows a high level of co-operation between the company and higher education. It has been government policy for the past decade in Britain to strengthen links between employers and higher education. Rolls-Royce on Tyneside is keen to maintain link with its local university. Rolls Royce can be compared in this respect with Cummins Engines and many other large engineering companies in the UK. There is a strong link between companies and further and higher education.

From the 'Transmission and Distribution' document, the company's training policy, methods, the training-related duties of the managers, trainers and trainees are all well regulated. And this document is an international one, it means that all the Rolls-Royce

employees all will follow this document no matter which part of the world they are in. It again shows Rolls-Royce does has strong commitment to training. As part of the interview, we discussed the company's view of successful training.

2. Ideas in companies about successful training

Mr. Collingwood thinks that training has to be needs-oriented, has to be tied to specific purposes. Unlike the knowledge-based purposes of education, training should be something new, different and better and can actually provide companies the practical help. So he thinks the effect of training can definitely be measured and successful training should be measured by evaluating trainers' efficiency and employees' working performance. And managers are the people who have to do those measuring jobs.

We discussed about how training should be provided (in-house or outsiders). In Rolls-Royce, the training has been provided by both in-house and through outsiders resources. For in-house training, there are varied kinds of facilities provided, such as computer-based training and so on. For the outsiders ones, the training mainly rely on the training provided by the six universities co-operating in CPD programmes in the North East England.

In Taiwan, in the Hsin-Chu Science Park, there are a few companies and universities co-operating programmes but those programmes are usually designed for new engineers and are not consistent.

In Rolls-Royce, even just for making a formal presentation, people have to be trained. They therefore train every trainer too. This is an important acknowledgement that training requires specialists; that the quality if training can be improved if the trainees themselves are well trained.

More, Rolls-Royce evaluates its training. Mr. Collingwood divided the evaluation into two kinds: the immediate evaluation and the long-term one. The immediate impressions may be assessed in a number of ways, ranging in formality from questionnaires and written reports completed by participants shortly after the secondment, to discussions between the participants and their mentor and superiors. In the long term, the enduring success of any training can only be evaluated meaningfully by observing, monitoring

and reviewing on-the-job performance.

It is extremely difficult to evaluate the training programmes training is initially experiential and the knowledge gained will be unable to really be evaluated until objective training for the trainee's first appointment has been determined, though undoubtedly evaluation to a certain degree may take place. And after a long period of time, a fuller behavioural evaluation will be able to take place too see how the trainees have applied their learning and applied the knowledge gained earlier. Hence in the short term their behaviour and attitude to work can be evaluated yet it is the longer term added value to the department concerned which will have to be evaluated against organisation and company goals. (Collingwood B., *Transmission and Distribution, professional engineering programme,* 1997:55)

A summary of this case study

Rolls-Royce places a surprising emphasis on and an enormous investment in and commitment to training. Not many companies are willing to train their new employees for two years. Everybody knows it costs a lot to do so. But on the other hand, two years training for an engineer will be a thorough training, especially the shift to different divisions provides engineers a whole understanding for the job tasks they are going to deal with. Engineers' behaviour and attitude will change after two years. They will become qualified engineers rather than inexperienced ones.

Rolls-Royce also believes that it is hard to keep good engineers so they therefore have to work hard to keep them. Hence, there is a CPD programme conducted continually in the company. Engineers feel that they can continually gain new knowledge and develop themselves. More, they would feel Rolls-Royce will be a place where they can have better prospects for their future. It's a win-win situation for both Rolls-Royce and its employees.

The Rolls-Royce's case reflects a very successful case in terms of employees' training and development. Like the previous case – the Commin Engines – it is possible to see the ways in which cultural factors interact with training policies. Rolls Royce, however, has had to respond to great pressures in the labour market for engineers. Without good

training and development, Rolls Royce would not be able to recruit its staff. Working in a global market where the trends are to re-locate production overseas and retain R&D at the home base, Rolls Royce needs to take a broad, international view of its graduate induction programmes. It builds close relationships to university students in the hope they will be encouraged to seek jobs in Rolls Royces. The message is clear: labour market factors shape training and development programmes. Rolls Royce has a clear strategic approach to these matters. Without such an approach the company would falter.

6-4. A case study: Hydro Polymer

Whereas the market operating conditions of the three companies discussed so far are dynamic and challenging, those of Hydro Polymers are much more stable and predictable. This has significant implications for their training and development systems. Hydro was founded in 1905 to utilise Norway's large resources if hydro-electric power in the first industrial manufacture of nitrogen-based mineral fertiliser. In 1965, the company was granted one of the first licenses for oil and gas exploration on the Norwegian continental shelf. Hydro and its partners found oil and gas in the Ekofisk field in 1971. Those formed the basis for the company's development - going on to enjoy strong international growth during the 1970s and 1980s. Employing 32,000 people - about half of whom work outside Norway -Hydro is now the world's leading manufacturer of mineral fertilizer, and also a leading producer of aluminum and magnesium. The plant I has visited is one of the branches of Hydro called Hydro Polymer, has operated since 1940s. Hydro Polymer is a major player in the PVC Industry (Hydro Polymer brochure, 1997).

Information about how this company trains its technical employees was gained through an interview with an engineering manager instead of a training manager - Mr. Twaddle from the production department.

The general impressions I gained from the talk with the engineering manager are that:

- **There is not such emphasis on training, the R&D is not in Britain;**
- **There is only a small training department. It is a function led by only one manager;**
- **The emphasis on training in the plant is on operator training. This is important for safety reasons. There is much less training for specialists staff;**
- **The technology which Hydro Polymer uses is a stable technology which means the skill requirements of technical staff are not changing very quickly;**
- **The big challenges for the company are in management and marketing, not in engineering.**

In Hydro Polymer, training is only delivered for the new comers. The new comers'

training programmes include: a week's induction training which is nothing to do with engineering, mainly courses like safety or some administration regulations; two weeks' training in the specific field the individual is going to be specialised in. Apart from this formal training, there are no other formal training sessions provided in Hydro-Polymer. In Hydro-Polymer, the stress is on on-the-job training and learning by doing. Mr. Twaddle believes hands-on training is the most effective and cheap way to train people. He also mentioned the cost factor. He thinks it does not have an economic effect to train the engineers since there are only a few engineers in the company. Engineers can if they wish to become chartered engineers. The chartered state is issued by IME (Institute of Mechanical Engineering) which specifies a number of topics and a number of areas, engineers have to prove their competence to become chartered. There are 2 chartered engineers out of the 15 engineers in Hydro Polymer.

During the interview, we discussed the following points:

1. Strategies and plans and courses for employees' training

In Hydro Polymer, hands-on training is highly valued. Apart from the three-week induction training for new people, learning by doing happens all the time. There is not yet a clear plan or strategy for the formal training of employees.

2. Ideas in the company about successful training

Mr. Twaddle thinks successful training is to make sure everybody can complete his or her own job task and achieve the company's business goals. Thus he believes hands-on training can do it.

3. Ideas about how training should be provided (in-house or by outsiders)

In Hydro-Polymer, training is designed for new comers. Only when the company buys new technology, a few engineers will be selected to attend the packaged training courses. In such a manufacturing industry, with highly developed technical skills, engineers are expected to make sure the production lines keeping going on. Those skills needed are delivered by mentoring. Formal training is less important in this kind of industry.

4. Recruitment and training of trainers

The trainers are selected from the senior engineers. There is no training being delivered to those trainers before they go to train new comers.

A summary for this case study

The Hydro Polymer case study is interesting.

Most of the UK's companies stress training very much and do invest a lot on training too, no matter if the training is formal or informal. But in Hydro Polymer, a successful international company, does not have training plans and programmes which are developed to the same degree as others. This is surprising at first since the company does rely on complete process engineering and must meet strict standards of safety. On closer inspection, however, it seems the company has a thorough truing programme for operatives for plant safety is such a major problem in the chemical industry. The training programmes for engineers are not so well planned. The company remains successful because it occupies a strong market position. There are no obvious problems of poor recruitment of technical staff so the perceived need for employee development is not high.

Training should make a contribution to the company and improve its performance. As long as this goal can be achieved, what form the training takes does not seem to be too important. PVC is a high technology, but the part Hydro Polymer uses has developed to a stable stage, and the company is using this technology to manufacture products. Because of the nature of the plant, the techniques the engineers need for their tasks are things like engineering trouble shooting, line management, and so on. Those skills can be definitely delivered by mentors or be acquired "on the job".

Hrdro Polymer, lacks a dynamic climate for training and development. Labour supply factors have some influence here as Hydro does not suffer the engineer's shortage problem at the moment. There is also a lack of professional staff to plan and conduct training and development. The plant visited as part of this research is an overseas

production plant. Perhaps strategic HRD policies are different at company headquarters in Norway. This question opens up many others that cannot be discussed here but which nevertheless touch on matters of government economic policies. The UK government actively encourages inward investment from overseas. This means that it actively encourages, too, the importation of foreign HRD policies into plants sited in the UK. If these are well designed, as in the case of Cummins Engines, then all is well. If not, or if branch plants of overseas parent companies do not require well developed HRD strategies, then long term hopes for economic growth and revival may not be realised. Government policies to support HRD can be just as decisive in their absence as when they are being actively encouraged.

6-5. Conclusion

This chapter gave us an idea how training is perceived in British companies. Generally speaking, there is a more lively and dynamic climate for training and development in the companies of this country in comparison to Taiwan. The three factors that we have discussed in chapter 2 do play important roles on the development of HRD/Training and development. Basically, the nature of British culture and the policies such as IIP system, make it and easier and better environment for HRD/training and development to develop. The serious shortage of technical specialists serves to prioritize training and development in those companies using complex high technologies.

In Taiwan, many so-called high technology companies are like Hydro Polymer, hands-on training and learning by doing are the main training methods used. What kind of different results would be produced in these companies with a different emphasis on training? For example, in Rolls-Royce, a company which has enormous investment and commitment to training, the training manager still thinks that on-the-job training is a more practical way to train people and is a way to deliver the skills engineers would actually need. But, although OJT is considered as an efficient way of training, formal training is still conducted in Rolls-Royce. As a result, it creates a strong business climate. All the people, from the bottom to the top, are all talking about training and learning. For the company side, Rolls-Royce is a learning company and the knowledge productivity is always in progress. For the employee's side, they benefit from the

company's good business performance (either in terms of economic benefits or company's good reputation) and they can have continuous personal growth and life long learning. In companies like Hydro Polymer, in the short-term, the company's business is seemingly achieved. But in the long-term view, employees might feel frustrated about not learning new knowledge. It then will have a negative influence on the company.

At the moment, the company relies on its ability to buy in expertise and people when needed. Hydro's R&D resources are in Norway. There is a feeling in the Aycliffe plant that, below the engineering level, training for operators is 'second to none', but that much more could be done for the engineers. Despite this, the company, nevertheless, is seen as having an innovative culture with an emphasis on total quality, and an up to date control system, which retains its competitive edge on price, supply and quality.

In contrast to Rolls-Royce or Cummins Engines, Hydro Polymer is in a relatively stable market position. This indicates a wider phenomenon: the relationship between training systems and market stability. Not only is there a link between the two, but companies which wish to remain successful must look ahead beyond their current commitments to anticipate the changes they will face in their operating environment.

Rolls Royce does this and is trying to re-position itself as a knowledge intensive company rather than a manufacturing organisation. Cummins Engines trains to improve productivity. Tallent Engineering has achieved great commercial success through effective training. Hydro Polymer is a successful company that probably could be more successful in its training policy at branch plant level.

Chapter 7: Engineers' "Voices" in Britain

The aim of this chapter is to examine aspects of training and development of specialists from the points of view of specialists themselves. It is important to have a view of this because individual perceptions of their own training needs and their evaluations of thee training they receive, affect the ways in which they structure their careers and the native of their commitment to work in particular organisations.

How the technical specialists are given post-qualifying education and training in the UK was looked for from the GTI Careers Journals (GTI was founded by two students in 1988 to produce careers journals which would provide readers with an honest view of working life). Those young engineers in Britain illustrate their points of view about what they think about working in the real world. Time constraints made it impossible to carry out in-depth interviews with engineers and other technical specialists in the UK companies studied. The work done in the UK is not therefore identical to that in Taiwan. The views of the young engineers set out in the GTI journal can to some extent be taken as representative, however. They are engineering specialists. Their views have been given professional endorsement by their publication in this journal. In this respect they can be taken to be reasonably representative of professional opinion in the UK. What they write draws heavily on the prevailing professional discourse about CPD in Britain. In this way, it provides insight into the climate of learning among technical specialists in the UK.

7-1. Andrew Dixon: Continuous professional development

Andrew Dixon sets out his points of view about 'Continuous Professional Development' (CPD). He wrote:

> Finals have ended, celebrations are over and you've managed to land

yourself a job in industry. Congratulations. You may be thinking, 'no more study', never again', but how do you intend to keep your newly proven knowledge up to date? How will you learn new techniques or disciplines in industry?

Employers have generally recognised that they cannot stand still in their chosen market place-especially in engineering and high technology companies, where the pace of change can seem daunting. Consequently, there is a need to update and develop employee skills constantly. This concept of lifelong learning can be split into personal and professional development. Most companies now have some form of personal development planning process, but professional development varies from place to place.

A number of important issues stand out from this account. The first concerns the speed of change in the knowledge base of modern engineering practice. Companies that do not maintain a technically competent staff are unlikely to remain competitive and successful. This young engineer is clearly aware of this. But he also notes that companies do in fact vary in the training they provide. Some firms are more committed to training than others and this has major implications for career choice and planning for engineers.

Dixon then turns to the topic of professional development. He wrote:

Continuous Professional Development (CPD) is an essential tool to maintain your expertise in your chosen field. In engineering, the most usual mechanism is through registration with the Engineering Council via one of the professional institutions, such as the IMechE, the IEE or the RAeS, which are affiliated to the council. They are able to facilitate your development through the provision of learning opportunities and guidance towards professional qualifications. In addition, they will provide a forum for networking with fellow professional engineers, providing an invaluable source of information about new developments.

Here is a major difference between Britain and Taiwan. In Taiwan professional accreditation is not the same as in Britain. Professional engineering bodies do exist in

Taiwan but they do not have the importance of their British counterparts. Taiwanese engineers can practice without professional accreditation. Certainly the professional bodies do not have the same significance for engineers in the two countries.

We use the following diagram to show the importance of professional bodies in both UK and Taiwan:

Diagram 7-1

**Importance of Professional
Body to Practice**

High

UK

**Role of
Professional
Body**   **Information
giving**   **Accreditation**

Taiwan

Low
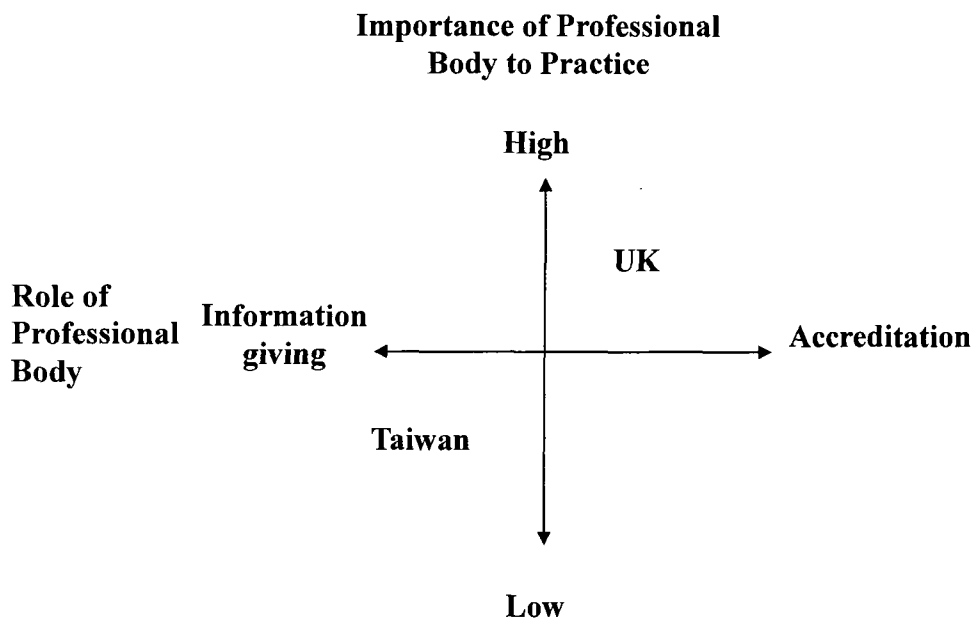
In UK Professional specialists are well regulated. The professional body defines standards of entry, achievement and training. Firms are organised to provide CPD along the lines recommended by the professional bodies. In Taiwan, in contrast, there is much less regulation. The difference is partly explained by the fact that HRD ideas are fairly recently introduced into Taiwan. Companies have only recently begun to develop their employees. They have not yet developed modern systems of HRD. They train to try and show others that they do so; so far training itself is not so well-organised or successful.

Another factor is that since Taiwanese companies have been successful economically, they have not felt the need to emphasise training. It must be noted also that the

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professional bodies of the UK have a long history. This is not the case in Taiwan. An important feature of that history (discussed also in Chapter 4) is that the supply of engineers from the educational system of the two countries has been different. Taiwan produces far more graduate engineers than Britain. This has the effect of reducing the pressure on companies to train in-house. They can always buy the expertise they need.

Dixon continues to examine access to professional development as follows:

> Forward-looking companies have recognised that professional development of their engineers has considerable benefit, provided they enable their employees access to such development. This may be through the provision of a network of professional mentors or access to institution events. Once you have achieved chartered status, you are then able to become a professional mentor for new engineers, and in this way, the system can self-perpetuate. Mentoring young engineers is of course an excellent development opportunity in itself, and provides a new and enhanced view of the profession, whilst bringing new thinking into your own knowledge base. Chartered engineer status is not however, the only development mechanism. Many companies are now investing in other learning opportunities for their engineers, ranging from internal seminar programmes to full engineering training and development centres. Graduate placements during initial development programmes into other engineering teams are another mechanism which deliver breadth of the company, and of engineering practices. However, it is achieved, successful self-managed lifelong learning can be enjoyable and is an essential part of a successful engineering career. (1997:53)

Dixon has highlighted that professional development covers more than technical skills. It involves the whole person and in companies with good programmes it involves HRM techniques such as mentoring. But, does it exist in Taiwan?

In Chinese society people value the group. People will emphasise how much they can contribute to the group. If the group is developing well they themselves will benefit. For this reason, there is not in Taiwan the same climate of support for individualised

training plans and personal development. Engineers are much more likely interested in group goals, like the profitability of the company. If the company does well, they believe they will benefit. They do not believe the well being of the company is a product of their individual well being.

The following diagram shows both UK and Taiwan's engineers' ideas about how their personal development related to companies' success.

Diagram 7-2

Companies' Success

High

Taiwan's engineers
(evaluate group)

UK's engineers
(evaluate individual)

The awareness
of personal
development
Low ← → High

Low
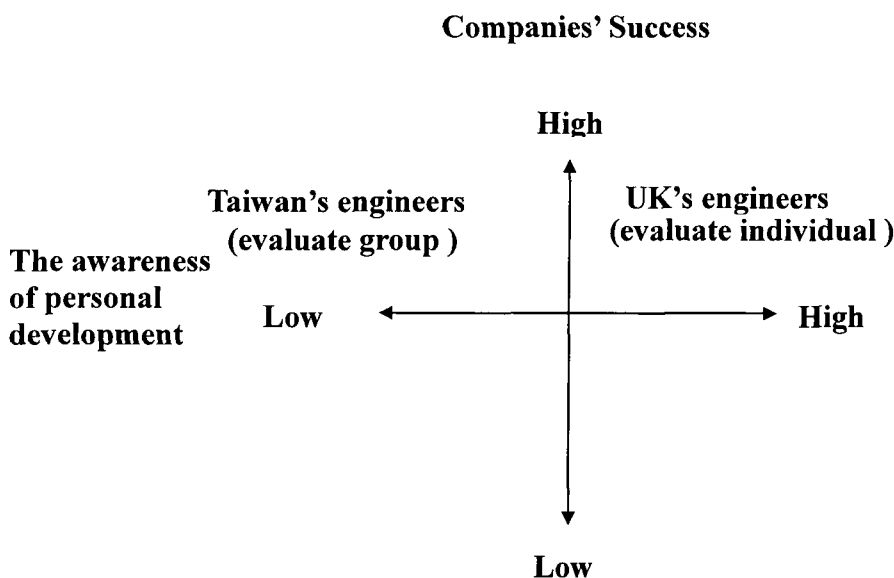
Besides, another reason for Taiwanese engineers not to pay much attention to their personal development is because companies do not form (as indicated in chapters 4 and 5) a strong training and learning atmosphere.

In the same publication, young graduates reflect on their experience of CPD, each are highlighting different aspects of the overall modern approach. Their comments reveal additional aspects of the nature and scope of the prevailing professional discourse about training.

7-2. Jennifer Inglis: Reflective practice

Another example is, Jennifer Inglis, a graduate of Strathclyde University currently employed as a development engineer with British Sugar. She wrote about her training very positively:

Training was excellent, not least because I had the opportunity to use skills learnt on training courses immediately (whether I liked it or not). There are relatively small numbers at each site so the more skills and flexibility the better. A significant period of the six months was spent on hands-on training and I was forced to consider not only how things work but also why they are done. The regular training reviews involved a cross-section of management, so I started to build relationships with the people who would be involved in decision-making about my future. My training programme was completely revised for my second year after I pointed out it no longer met my requirements.

Two points stand out here: the first is the value she attributes, to direct hand-on experience which showed her the relevance of the training to her work. In some of the company's studied as part of this project, especially in Taiwan training has not been seen by trainees as relevant to their work.

The second point concerns training reviews. Her comments here underline the importance of reflective practice in professional development. Specialists need the opportunity to think about their work, to reflect on it, to share their ideas with and to learn from others. In the more successful programmes of CPD, these features are always in evidence.

7-3. Joanne Baker: Management skills

Take another example, Joanne Baker, a physics graduate from Northumbria, employed by Fujitsu, a Japanese company. She writes about the learning curve:

My company makes 16 megabyte DRAM, used in many applications,

including PCs. Over 600 people work here and around 10 per cent are engineers. I began as a process engineer in the ion implantation department. Process engineering revolves around the product itself, continually trying to improve yields, throughput, equipment, materials and sorting out problems. My degree was not specifically designed for semiconductor engineering so I spent one night a week in training with the other graduates. I do have to recall information from my degree, for example vacuum theory and gas flows in a pipe. Further training has been diverse, an outward bound team building exercise, equipment training in America, conferences in Sicily and Texas, and visiting sister plants in Japan.

Two points deserve highlighting. She is clear that her degree, though helpful to her, was not a successful basis in which to work. This is a good example of the inevitable discrepancy between education and the operational need of particular companies. Secondly, some of her training was not technical at all but concerns the company itself and such aspect of its organisation like team-working. She continues:

After two years I started to develop my management skills and obtained a certificate in management studies. Later that year I was promoted to thin films group leader. I am currently the group leader of bulk films with four engineers and four technicians. Long term, I am involved in interviewing, appraising and trying to keep up with industry developments. I still try to get involved in hands-on engineering, usually to the annoyance of others. I have been involved in some global projects and enjoy the difference in perspective. Less enjoyable aspects of work are sitting down with the managing director explaining why product is going to be scrapped. Too many of those meetings and a stress management course may be required.

What her comments here stress in that technical specialists often become involved in problems of management and do so because their technical roles require it. There is, however, a tension between the two and specialists clearly do need further help in the management disciplines to enable them to develop successfully. They UK awareness of

this need is much greater than that which exists in many Taiwanese companies.

7-4. Philip Atkins: Language skills

The fourth example, Philip Atkins, a graduate from Southampton University, is currently a trainee at Rolls-Royce Commercial Aeroengineers Ltd. He describes the training he receives as follows:

> I joined my current employer as a graduate engineer. Nearly all engineering graduates are put on the training scheme, which involves working in different departments for about ten weeks at a time. This can last for anything up to two years and also involves a three-month design-and-make group project. The chance to work in different areas of the company, from engine design to customer support, or powerplant development to marketing and contracts, provides all graduate engineers with a unique opportunity to have a good look at all areas of the company's business. Then you can decide where you'd prefer to work. People with an engineering background are employed in nearly every department.

There are two points worth to pointing out here too. Firstly, there is a very broad range for engineering. New graduates often do not have very clear ideas about which kind of engineering they would like to do or is suitable to do. Rolls-Royce offers every new engineer a work-travelling opportunity, therefore, by the end of the training programme, engineers would be able to choose a most suitable department for them to work in. Besides, engineers can feel more confidant if they know what it is going on in other departments and how their departments interact with others. Secondly, Philip also points out that language skills are important in nowadays, especially in an internationalised company. He said:

> The ability of an engineer to operate in a foreign country is becoming more

and more important, and employers are on the lookout for graduates with these skills. The opportunity to learn a foreign language should definitely more employable than a standard engineer. As more engineers are conceived as joint projects with foreign companies, engineers who can work with their foreign counterparts are highly sought after.

What he means here is an engineer who can speak more then one language will make him/herself more employable and competitive. This is perhaps a feature of the UK professional discourse on training. Specialists are encouraged to think beyond they immediate requirements of their own company and to look beyond the shores of their own country. In Taiwan, Chinese values of loyalty to a particular firm and the English-dominated languages of international business make it difficult for Taiwanese specialists to take the same view of their careers.

7-5. Chris Munn: Learning by doing

The fifth example is Chris Munn, a graduate from Bath University, currently working as a design of electrical services engineer for buildings in Roger Preston & Partners. Chris writes about his training experience as follows:

> Our training programmes are accredited by CIBSE (Chartered Institution of Building Services Engineers). The training programme is structured and usually lasts two years. But my industrial placements were of sufficient standard to reduce the training programme to one year. The most valuable training is on the job. Colleagues are a vast source of information and they assist the transition between the theory of a degree course and the practice of the construction industry. Training also consists of seminars, professional reviews, reading journals and continuing professional development (CPD). After the training is completed, a further two years of experience is required

before corporate membership of a professional institution can be considered.

There are three points stand out here. The first one is that he has to attend the training programme conducted by CIBSE plus two years working experience in order to become a chartered engineer. This is a very different system from Taiwan's. In Taiwan, for certain types of engineers such as civil engineers and environmental engineers and so on, they can pass some exams to get certificates to make them more employable, but for most of the engineers, there is no professional body to qualify them. Secondly, Chris considers 'learning by doing' is the most valuable training way. 'Learning by doing' is a spontaneous training and learning process. In this case, every employee is a trainer and learner at the same time, which is why the training happens most frequently. Thirdly, Chris also mentioned the training types he has experienced: seminars, professional reviews, reading journals all are part of training in companies. Training happens all the time but people are not very much aware about it.

The distinction between formal and informal learning training at work is informal learning and training happens all the time. The effect of informal learning and training is related to the interpersonal relationship among employees and the companies' structures. Some organisations will nurture a climate of good working relationships among members of staffs. Others will be less successful in doing so. In Taiwan, in those new and successful science companies, the structures are flat instead of bureaucratic, people are more open-minded rather than conservative. Engineers are usually glad to tell new comers the things they should know if new comers ask for helps. In bureaucratic companies, people do not have too many opportunities to interact each other, employees probably have not too many motivations to learn and probably are not too willing to teach others. But, mentoring is a thing/depends on the environment and circumstance very much. If one feels threatened about his/hers promotion will become more competitive by teaching others, I do not think people are willing to help others in this case, no matter where it is in the world. Therefore, it is risky to reply too much on informal learning although informal learning can be very powerful effective, formal training is still necessary.

7-6. Richard Porter: Theoretical and practical knowledge

The sixth example is Richard Porter, a graduate from Plymouth University, is currently working as a product engineer in GCE Plessey, Semiconductors Limited. He describes the training he received as follows:

> My degree has been useful preparation for my career, but not just in terms of technical knowledge, other disciplines such as business management have been extremely useful as I have a basic understanding of what production planners and others do. Other aspects that university encouraged such as teamworking and general communication skills have proved vital. It does not matter how good an engineer you are unless you can get your ideas across to other people. The semiconductor industry is so specialised that, while my degree gave me a good general grounding in electronics, the technical aspect of my degree did not prepare me fully the job I am now doing. This is, however, expected and the company has an excellent training scheme which involves spending a series of short placements in each of the key departments, learning what they do and how your own job affects them.

Two points come out here as well. Firstly, as already been emphasised, engineers very often need more other than technical knowledge, for example, management, communication with people are both important for their jobs too because most of the time, engineers work as a team, therefore how to make other people understand your ideas or agree with your ideas is also vital. Secondly, training is always the only way to fill the gap between the theoretical and practical knowledge.

7-7. Conclusion

From the six young engineers' points of view, we get some ideas about how engineers think about training in Britain. British engineers believe that they have to keep on learning to keep themselves up to date and more employable. And they also expect companies should have good training programmes and plans to train them in order to fill the gap between the academic knowledge they gained from universities and the practical working skills they need in the real working world. Besides, British engineers are aware that learning is a process and is happening all the time. For example, learning from doing the job, from seeing how old colleagues do their jobs, reading journals and so on.

Compared with British engineers' awareness of learning, Taiwanese engineers are a bit different. They are very money and profit oriented. As long as the product can be produced on time and meets the quality requirement, then they can get good pay and bonuses. They do not care about other things too much. Plus the factor which has been mentioned earlier, Chinese employees value the group; engineers emphasise the achievement of companies' goals more than individualised plans and personal development. This makes things more difficult for building up a good training and learning environment. In fact they are learning all the time, just like British engineers. They learn from doing their jobs, they learn from their colleagues, they learn from errors, etc., but, they do not know learning actually happens all the time in their daily work and that it influences them a lot. The other reason that explains the Taiwanese engineers lessened emphasis on learning and training is that companies themselves do not form a strong learning atmosphere although there are a few very successful companies which do. It has been argued in this study that these differences between the two countries can be explained. To recapitulate the reasons are approached from three angles:

• From the cultural angle: Whether or not employees consider training as one of the top things in their career lives, it is another problem for them to let their employers know.

It is only a very recent development for Taiwanese to protest about work or politics and to strive to promote their personal well being. In the UK, the culture is different. It is much more supportive of people taking initiatives about their career development.

- From the government angle: Unlike the British government, the Taiwanese government does not yet have coherent policies for human resource training and development. Training in industry is voluntary. It is left up to the individual in the company. Consequently, there is not a well-developed and debated public discourse about the importance of HRD to Taiwan's continued economic success.

- From the labour supply structure aspect: Taiwanese companies are still at the stage of taking advantage of Taiwan's economic success and its sufficient supply of engineers, so companies are paying less attentions to training. As Taiwanese specialists embrace western ideas of training and this is happening in those companies with close contracts with western, particularly US business, - they will demand more of their employees. The companies which do not respond to these changing expectations may encounter labour supply and labour retention problems in the future.

Chapter 8: Comparisons and Conclusion

This chapter tries to summarise and compare those case studies in both the U.K. and Taiwan, hoping to highlight the factors which lead to the differences between the two countries as well as those which distinguish one company from another. A brief discussion about the linkage between training and development and company's performance improvement is also included. Finally, this chapter defines the directions for future research.

8-1: The comparison

In the background to this study there are a number of social and economic changes which impact equally on both the UK and Taiwan. In both countries the pace of technological change is rapid. The economies of both countries are subject to intense, global competitive pressures. There are global cultural influences on management which affect companies in both societies. All organisations must demonstrate a commitment to high quality standards. Economic survival means all high-tech companies especially must innovate continuously with the help of their staff, especially technical specialists. All companies must invest in training.

It is clear from the 14 case studies, however, (4 in the U.K. and 10 in Taiwan), there are significant differences in the training and development of high technology specialists. The differences can be usefully classified into three kinds and discussed separately although they are closely inter-related. They are:

- National differences (8-1-1)
- Inter-industry differences (8-1-2)
- Intra-company differences (8-1-3)

8-1-1: The national differences

Three main elements can be highlighted which explain the differences in the training and development of high technology specialists between the two countries at the national level. They can be visualised using the following formula:

Differences $= f$ **(culture + labour structure + government policies)**

• From the angle of culture and history

Historical and cultural differences between the two societies are profound and have a necessary impact on patterns of HRD. The key contrasts highlighted in this study reflect differences in the industrial development of the two societies and state policies towards the economy and training. British attitudes towards HRD have matured over a long period of time. They reflect the political checks and balances of a society based on democratic politics and the private ownership of capital. Taiwan is a recently industrialised society in which the state has played a strong role in guiding economic growth and planning manpower development. British policies towards the promotion of continued professional development have been much more clearly developed, however, than those in Taiwan. In Taiwan, the state does not seek to interfere directly in the management of companies.

Cultural factors play their part. A long tradition of individualism encourages people in the UK, in contrast to those in Taiwan, to take their own personal and professional development seriously. As Chinese, Taiwanese employees are much more likely to place their fate in the hands of management. Under such circumstances those in firms with a commitment to training will receive it, others will be denied good training opportunities but will not feel too bad about this. In this way, it is possible to see that the cultural patterns – values and beliefs – of a society greatly influence the aspect of the attitudes and motivations of people at work. They have a great influence on the attitude of people towards training and development.

• From the aspect of the labour structure

The structure of the labour market for specialists has to be considered. The lack of

engineers and the fact that more and more people are less willing to study science and engineering subjects which makes for a shortage of engineers in the UK and a sense that the government has to solve the crisis.

There are regular press reports in the UK about this. A recent article in *The Guardian* (July 2nd, 1998) noted: "British industry is running seriously short of graduates with the right combination of technical skills and commercial attitudes" (Carvel, 1998). Carvel continued to say that "Britain was producing too few high caliber graduates in IT, food science, chemistry and some types of engineering. Despite rapid expansion of the universities over the last ten years, they were not keeping pace with companies' demand for these specialists" (1998).

One aspect of this is that many graduates prefer employment in other more highly paid, high status occupations in the older professions or in finance.

In Taiwan, in contrast, the history of being an industrialised country is very short. There is sufficient supply of engineers. The government therefore has not yet had a complete and long-term plan and strategy for the training of high technology specialists and their development. The Taiwanese government seems to only put emphasis on producing more science and engineering graduates rather than continuously training and developing those in employment. However, as we mentioned before (see the engineers' voices in both chapter 5 and chapter 7), the knowledge people gained from universities is definitely not enough for the real working world. New engineers need to learn how to do their jobs. Besides, a nation or a company's R&D power is certainly decided by its people's knowledge and knowledge productivity needs the continuous training and development of specialists. If Taiwan wants to remain a technology island and the U.K. would like to be a high technology country, both need to do more than simply assert that 'people makes the difference'. How to help the people to make the difference should be a more important matter.

• From the aspect of government policy

As discussed in chapter 2-2, we can understand that neither the UK nor Taiwan has well developed policies focusing on the training and development of highly qualified technical specialists. The main concerns of the two governments are vocational

education and training in their general aspects.

In Britain there has been a long standing debate since the end of the nineteenth century about how best to train more engineers and scientists. There have been many policy initiatives - such as the setting up of technological universities in the 1960s - to encourage more students into science and engineering. The UK government's recent green paper 'The Learning Age' (DfEE, 1998) stresses the importance of learning. The report claims that lifelong learning "develops the intellectual capital which is now at the centre of a nations competitive strength" (1998:2:11).

Because of the history and political culture of the society, however, no government can directly influence the subject choice of students. Nor can governments exercise real influence on the training policies of the professional engineering bodies or of private companies.

In contrast to Britain, governments in Taiwan have hardly acknowledged there is a problem in the further development of specialists. In any case, there has been until recently no problem in the supply of scientifically trained graduates.

8-1-2. The inter-industry differences

At the level of inter-industry companies, there are differences too. The UK's industries seem to have greater interest in training than in Taiwan. Again, we can visualise these through the use of a formula which explains the differences:

Differences = f (cultural difference in the value placed on training managers and their departments + stability and change in the market)

• **Different value for the training manager's role and training department**

From my observation on the training and development in these two countries, one thing struck me strongly: the very different status of training managers and training departments. In the UK, training managers are usually considered as managerial staff. They play important roles in the companies' management, and so do their training departments.

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In Britain, training management is well organised professionally. There are strong links between professional bodies like the Institute for Personnel Development (IPD) and higher education, especially through university business schools. These links enhance the technical status of HRD staff in British companies.

However, in Taiwan, the training managers and departments do not have the same good fortune. As we mentioned earlier in the chapter 4, Wu (1990) has done 500 surveys on Taiwanese manufacturing firms. The major findings were summarised in chapter 4. Farh J. interpreted Wu's findings and made several conclusions which can be drawn from items:

> First of all, personnel departments in general hold a lower rank among all the functional areas in the managerial hierarchy of these manufacturing firms. Not only does the department head lack an impressive job title, but also the performance of his or her department is considered less positively by line managers. From a strategic contingency perspective, a functional department is powerful only to the extent that it can help the firm cope with critical environmental uncertainty. The current macro environment in Taiwan does not seem to impose powerful constrains that can be addressed effectively only by the personnel function. Secondly, the Taiwan's labour laws have not been vigorously enforced. Its labour union movement, although revitalised after 1987, is still disorganised and too weak to assert itself. As a result, there is a lack of force to the employers to emphasise the developing of the HRD agenda, including training and development. More disturbing is the fact that many of the heads of personnel do not have a professional degree of expertise in the personnel area. This lack of professionalization makes it even more difficult to deliver superior performance and win respect from line managers (Farh J., 1995: 289-290).

• The stability and change of market

The stability and change of market are also the two factors to lead different emphasis and development on training. For example, a maturely-developed technology might not require specialists to continue to learn as the techniques are stable already. One of my case studies in the U.K. - Hydro Polymer - is one such case. The PVC technology

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Hydro is using has been developed to a fairly stable state. The company does not need to hire many technical specialists and most of the people working in the plant are the line operators. Therefore the training is mainly delivered to those operators and the content of training stresses safety issues more than anything else. In respect of the other factor - the change of market, - Hydro Polymer stands as an example again. The company occupies most of the markets for its kind of products. It therefore has been used to earning good profits all the time without the worries of having many competitors. One of the Taiwanese case studies - Chunghwa Picture Tube Co. is similar. Hence, companies like these would not be sensitive to the importance of knowledge productivity and then training would have a lower priority for them. However, there is a danger for those companies which are used to being successful in terms of earning profit. Their unawareness of HRD issues will cause enormous impacts for their survival in the future. For instance, when there are more competitors appearing and sharing the markets or when there are new products produced in the market which would replace the old ones, those companies then would suffer from technology gaps or other problems.

Will Hutton (1995) has argued that British companies have to surrender market share to competitors whose financial structure allows a lower cost of capital and who can set their prices accordingly. Hutton quotes John Muellbauer and Anthony Murphy to show that the more British industry was exposed to international competition in the 1980s, the lower the investment. Investment in the motor, mechanical engineering and mineral oil processing industries have all lagged; while domestic banking, communications and distribution sectors enjoyed an investment boom. Hutton then pointed out that the British economy, as in the decades before the First World War, is again suffering from a financial structure that prevents it from exploiting a new generation of technologies. He said that:

> There is a scant to non-existent British presence of many high technologies;
> the few exceptions have some unique technology or innovation allows them
> to charge higher prices. (Hutton W. 1995: 151-152)

Competition is something that will increase sooner or later. When there is vicious competition, the only way to overcome it is to have new technology in order to produce new products then to open new markets. But all of these actions have to be done very

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quickly. There is no instant R&D. A company's knowledge productivity has to be accumulated day by day and this relies on continuous training.

Here we use a diagram to show this situation:

Diagram 8-1

```
   ┌─────────────────┐              ┌──────────────────────┐
   │ Market competitors │  ──────►  │ Pressure to innovate and │
   │                    │            │        change         │
   └─────────────────┘              └──────────────────────┘
           ▲                                    │
           │                                    ▼
   ┌─────────────────┐              ┌──────────────────────┐
   │ Improves performance │          │   New training needs   │
   │                    │            │                       │
   └─────────────────┘              └──────────────────────┘
           ▲          ┌─────────────┐          │
           └──────────│ New training │◄─────────┘
                      └─────────────┘
```
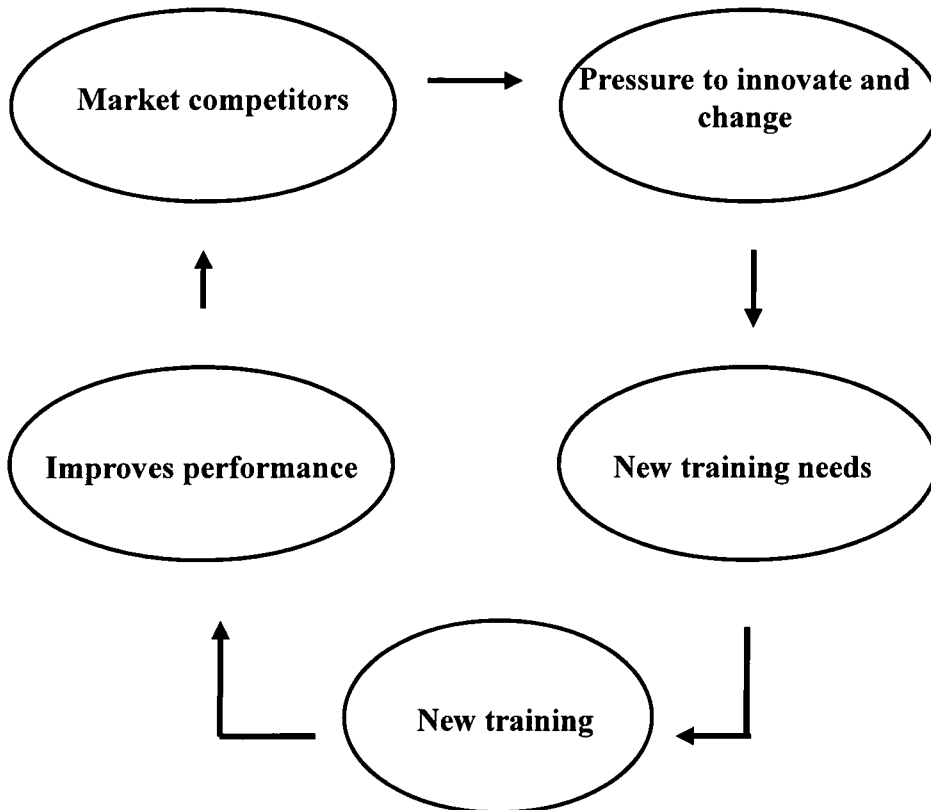
This diagram shows that market competition generates pressure to innovate and change. Then there will be training needs and new training must be done. This then improves the company's performance. However, new kinds of competition would inevitably appear. The cycle would begin again and never end.

This description highlights a number of issues which have to be addressed within individual organisations. They are more likely to be considered in those companies which value training and have well-organised training developments. These factors are, of course, related to the organisational culture of the firm, its leadership and its market

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success.

8-1-3: The intra-company difference

There are differences inside companies too. The differences are caused by people's different expectations and values about training and the degree of professionalism of the training managers and the departments. Again, we use a formula to express it:

Differences = f **(expectation and value about training + the degree of professionalism of training managers and departments)**

• Expectation and value about training

This includes employers' expectations and employees' expectations towards training. From the employers' side, some think training is an investment but others think training is a cost. These different attitudes lead to significantly different training atmospheres inside companies. Those who consider training is an investment would emphasise training more. As a result, training will be better developed in those companies. The companies in my case studies such as Rolls-Royce, Tallent Engineering, TSMC, and so on, are in this category. From the employees' side, there are different expectations and values for training among individuals. These differences are especially obvious when we are talking about people from different countries. For instance, British engineers in general value training more compared with Taiwanese ones. This phenomenon is very often influenced by the employers' attitudes. In Taiwan, as has been claimed consistently in this study, training is not as well developed as in the UK. Taiwanese employers have not yet had equal emphasis on training, and this leads to passive attitudes towards training among employees.
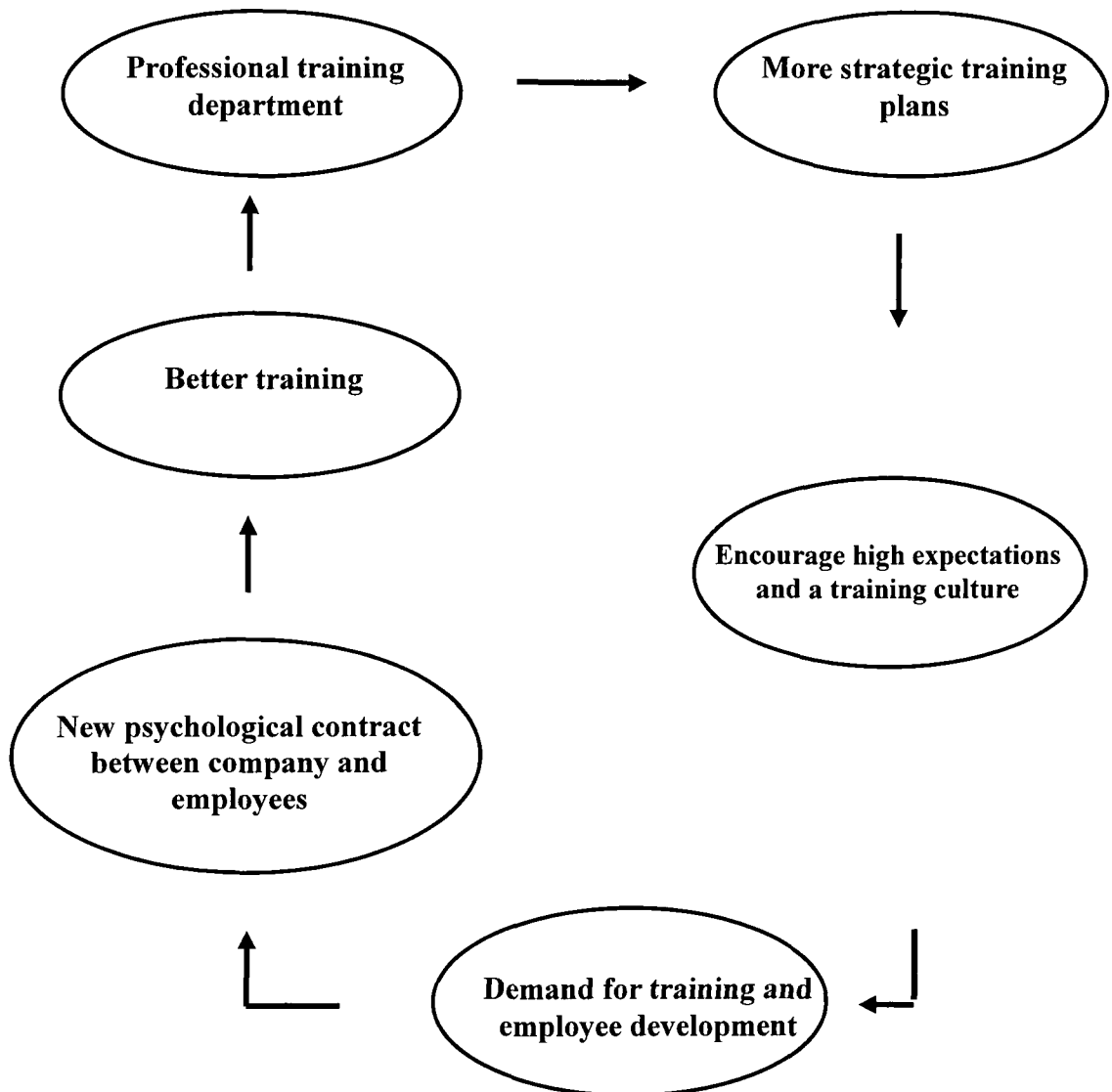
Besides, differences among employees sometimes have consequences for training going on in the company. Rainbird and Maguire (1993) pointed out that 'much of the training reported was for organisational rather individual development, suggesting that many employees would not regard the training they received as training at all, since it neither imparts transferable skills nor contributes to personal and educational development'. (Transferable skills here mean that skills which can be used anywhere in the economy.)

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(Rainbird and Maquire, 1993: 34-37)

• The degree of professionalism of training managers and departments

Training managers have to perform professionally in order to convince both the employers and employees that training is not just a formality and training's influence on companies is deep and positive. In Taiwan, as it has been mentioned earlier, many of the training managers do not have a degree in HRD or related areas. The worse part is that there is not even a professional body to integrate the information and offer the resource for those HRD or training managers to use. The professionalism of training managers certainly has a significant influence on training quality. The following diagram shows the idea. The diagram captures the way in which the degree of professionalism of a training department influences the internal training climate of a company. The basic idea – and this leads credibility to the observations made in the case studies, - is that good training departments help develop high expectations and a new contract between employers and employees. In return for better training employees are prepared to work more creatively and to remain committed to the company.

Diagram 8-2

Professional training department

More strategic training plans

Better training

Encourage high expectations and a training culture

New psychological contract between company and employees

Demand for training and employee development

8-2. Relationship between training and development and company's performance improvement

8-2-1. Successful training generates the strength for companies

From my observations of companies in both the UK and Taiwan, it is not difficult to understand that companies like Rolls-Royce, Tallent Engineering and TSMC will continue to grow because the successful businesses and successful training would support each other. The successful training helps companies become more competitive in the global market and helps companies adopt changes quickly.

The other companies in my case studies which do not posses strong training cultures might seem to be successful for some time but not necessarily for the long term.

As we discussed earlier, it is difficult and controversial to say there is a absolute link between good training and company performance improvement. But, successful training will produce good employees and strong business cultures and this generates strength for both the companies and countries in terms of economic power. In contrast, a weak training climate could become a source of great potential weaknesses among companies and countries.

With regards to whether a company's training culture is strong or not, the reasons have been explained in the previous chapters. There are influential factors like culture, government policy, labour structure and company's management to consider. These interact with one another in complex ways. It is important to identify these interactions so that they can be controlled for.

8-2-2. A danger: High-tech or low-tech?

Apart from the strength and weaknesses of the training policies, there is still a danger worth mentioning at the end of this study.

If we look at the UK's industrial ecology, foreign investment occupies a significant place. In 1995, 25% of British manufacturing industries were owned by foreigners who

employed 16% of British employees (Hutton W, 1995:8). And this figure is increasingly going up because the top UK's businesses are overwhelmingly focused in the financial area. For example, there are Japanese investments such as Sony, Fujitsu, Mitsubishi, etc., and there are American investment like IBM, General Instrument and so on although there are still local businesses such as ICI and Rolls-Royce which have strong R&D inside Britain and have shifted the manufacturing and other low technology productions to countries such as China, South Korea, Malaysia and Taiwan where the labour costs are cheaper. These multinational companies would surely leave their R&D departments in the headquarters countries and have the low technology manufacturing done in other countries. This is a global tendency, even in countries like Taiwan and South Korea which used to be countries which manufactured products for western or Japanese companies. But nowadays some of the businesses in these two countries are also shifting their lower-skills-level manufacturing parts to Southeast Asian countries where the labour costs are even cheaper. For countries like the UK, and Taiwan is the same in terms of having many foreign investments, these developments present dangers. The danger is the dependence on foreign R&D. Because those foreign investments would keep the R&D and high level skills manufacturing inside the countries, and as a result, skills in the UK and Taiwan would remain low level. This is an important factor which threatens the dreams of these two countries to become high technology countries.

In the UK's case, there is a vicious circle to make the situation difficult. The more there is a national emphasis on financial businesses, the less students want to study science and engineering subjects and the shortage of engineers make the development of high technology industry more difficult.

In Taiwan, the situation is slightly different but the same crisis is still there. In Taiwan, it is obvious to see the government's decision and strong will to develop industry from its science and engineering-emphasised education policy. There are many science and engineering graduates flowing into the job market every year. Unlike the situation in the U.K., Taiwan's engineer's salaries are usually in the top rank. However, the majority of so-called high technology industries are the OEM (Original Equipment Manufacturing) factories of the foreign countries. For instance, almost those semi-conductors in the Hsin-Chu Science Park are making IC chips for companies like IBM, Motorola and so on. Although the manufacturing of semi-conductors itself needs high technology skills, the names of the high technology companies' in Taiwan remain

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anonymous on the international stage. And those engineers who are working for such companies have restricted career opportunities.

Governments need to have complete plans and strategies to develop powerful R&D inside their countries. Of course developing R&D requires many things to be done, but the training and development of the specialists will certainly have to be the very first priority.

Encouragingly, recent surveys in the early 1990s reveal that British companies seem to be taking training more seriously. The Price Waterhouse Cranfield Project Survey indicates that training and staff development is the leading issue for most personnel departments across Europe, including the UK (Brewster and Hegewisch, 1993). In Taiwan, the HRD and the training and development issues are definitely valued more than before. However, Farh J. (1995) still thinks that the HRD in Taiwan is still emphasising recruitment and performance evaluation. With regards to training and human resource development, not many companies are doing what they should (Farh J., 1995:290). Fortunately, there is new research about the future emphasis on HRD issues. Training and development is becoming more of a priority. So, too is investment in human resource planning, recruitment and selection (Lin Y. 1997:33). As Taiwan becomes an ever more important centre of high-tech production with closer links to western and Asian multi-national companies, these trends will continue.

8-3. Conclusion

The main conclusions of this study have been set out: the further training of technical specialists is widely believed to be a pre-condition of sustained business success in high-technology industries. The relationship between HRD practices and business success however, is complex and very difficult to establish in a precise and quantifiable way. In the longer term, however, especially in the case of high technology companies, good HRD practices are likely to be crucial. If highly qualified specialists are to be recruited, well motivated, up to date in their knowledge, keen to remain in scientific and technical work (as opposed to management), then their distinctive training needs must be acknowledged.

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The study has also shown that the kind of training which takes place in organisations is related to a number of factors which interact with one another in subtle ways. Some of these reflect the policies of governments. Others relate to the patterns of development and culture of different societies. Some come into view only at the level of the individual firm and touch on such issues as the status of training departments in a company's management structure and the learning climate of a particular organisation. The study of the interaction of these factors requires a case study approach and particular attention must be paid to the attitudes, values and opinions - what was referred to in this study as 'the voice' - of technical specialists themselves.

One thing needs to be highlighted here is that although in this study we are talking about how far national differences influence the way training and development present in the two countries, those national difference factors are becoming more complicated to define. Because the internationalised business trend, for instance, UK companies import USA and Japanese methods into their business management. Taiwan has more and more foreign employees in its companies. These developments make it harder to precisely indicate how a country's culture impacts its HRD.

Further work along these lines is strongly recommended for future researchers. In the course of this study, more questions emerged than there was time to try and answer. Global business investment is something which will have an impact on the training culture of companies. Several of the companies studied here are foreign-owned multi-nationals. It would be interesting to keep under review the ways in which business attitudes and training are changing under the influence of foreign management. Some companies are clearly open to such influence. There is a lot of evidence in Britain that companies have taken up many Japanese-inspired systems of management. This is less so for Taiwan, but for how long?

It is clear from this study that the management structure of an organisation has a direct influence on its training programmes and learning climate. Are there any clear guidelines to follow to change management structures to improve the effectiveness of training? Can training be improved by improving the training and understanding of HRD specialists themselves? British companies do seem to attach more importance to the professional standing of HRD staff than companies in Taiwan. Would a strategy to enhance the professional status of trainers in Taiwan have a significant effect on the

volume and quality of training undertaken in Taiwanese companies?

This study cannot answer these questions. The limits of time, inadequacies in its own research design and a lack of data on many important issues - especially about the training of technical specialists themselves - means that the observations and findings of this study can only be regarded as indicative of what really needs to be achieved. More work is needed on a wider range of firms. Carefully controlled comparative studies are needed of companies within the same industrial sectors. Far more work is needed based on interviews with technical specialists themselves. If this study has pointed to some of the ways forward for this work to be carried out then it will have been worthwhile.

It has taken nearly two years to complete my research and thesis. During this time Taiwan's HRD field has altered becoming much more positive, fortunately. It is because of the increasing awareness of global competitiveness that, more and more people realise that quality employees will be companies' most powerful weapons to fight and win in the competitive business world. Besides, there are more HRD specialists than before flowing into Taiwan's companies, which helps Taiwan's HRD develop too. Until recently, there was not an HRD academic department in Taiwan' universities but now there is one and it has started to produce graduates.

Moreover, according to my search in Taiwan's business journals, I found there are more concerns now about HRD issues, which is exciting news. However, those articles are mostly translated articles and are aimed to introduce HRD ideas from foreign western companies' experience in recruiting and training personnel managers. For example, there are magazines like "Learning and development", "Common", and "World Manager's Digest" and so on which would occasionally have articles concerning with HRD issues. The business climate is therefore changing in Taiwan.

However, we still lack read debate concerning the development of HRD managers, their experience and difficulties when implementing HRD and training.

Above all, there is still a gap in the business literature concerning the specific needs of those high technology specialists on whose further training the long term success of Taiwan depends. I hope this study will contribute in a small way to promote this important area of debate, research and policy development.

Appendices

Appendix I. The question list for the interviews with the training managers in Taiwan

Q1. What is the name of the training unit in your company? When was it set up?

Q2. What is the training policy in your company? Do you have written policy statements about that?

Q3. What are the strategies for employees' training? Do you have short-term, medium-term and long-term plans respectively? What courses have you arranged for employees?

Q4. Which training ways are used at this stage in your company? Are they effective? Have you ever evaluated the result? How?

Q5. What is your company's expectation for the training programmes?

Q6. What is the employees' on-the-job training budget per year in your company? What is the proportion to the whole budget?

Q7. What kind of training resources do you have in your company?

Q8. What are your ideas about successful training?

Q9. What are your ideas about how training should be provided? (in-house or outsiders)? Do you think your company has a good policy for training? If now, how can you improve it?

Q10. Where do those trainers come from? Do they accpet professional training before they teach the employees? Do you think it is necessary that those trainers should receive pre-job training?

Q11. As a training manager, have you ever talked to the trainees to know what they want to obtain from the training (get promotion or gain advanced professional knowledge)?

Appendix II. The question list for the interviews with the engineers in Taiwan

Q1. What kind of training do you have?

Q2. Who provide? (Company itself or outsiders)

Q3. What do you think of those training programmes? (Could you please answer this question in those aspects such as teachers' qualities, are they useful for your job or yourself? And your general points of views for the qualities of those training programmes.)

Q4. What do you believe you need to learn to remain employable?

Q5. Do you expect your company to train you?

Q6. How do you find the trainers' qualities? Do you think it would be better if those trainers receive pre-job training (e.g. communication skills, adult psychology, etc.)?

Q7. If you are looking for a new job, would you consider 'what kind of training quality the new company can offer as a valuing item for changing jobs?

Q8. How do you hope your careers in the future will develop?

Q9. How do you perceive the training given to specialists?
a) in other companies or other organisations
b) other countries

Q10. What advice would you give to young specialists at the start of their careers?

Appendix III. The question list for the interviews with the training managers in the UK

1. Strategies and plans for employees' training.

2. Ideas in companies for successful training.

3. Ideas about how training should be provided (in-house or outsiders).

4. Recruitment and training for trainers.

5. The effectiveness and evaluation of training.

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