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<sup>1</sup> For the "Technological resources  
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<sup>2</sup> For the "Business life" seminar

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## GOOGLE : THE SEARCH FOR INNOVATION

by

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(*Une révolution du management : le modèle Google*)

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### Overview

Google appeared on the Internet for the first time less than ten years ago. Its search engine, which is financed by advertising is very efficient and attracts an increasing number of Internet users and consequently advertisers. This powerful organisation has developed and been enhanced by an increasing number of sites which are sources of even more information and are used with increased frequency. Today, Google is the leading Internet search engine. It continues to grow due to the creativity of its engineers and the efficiency of its technology. Management relies on the comments and assessment by their staff in choosing the best projects and completing them successfully. This takes place very discretely because Internet users, via an informal network, spread the word about successful innovations. However, one must be very vigilant because there are ethical and legal issues, competition is rife, the market is changing and bureaucracy threatens. Will Google be able to maintain its course ?

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## TALK : Bernard Girard

When Google first appeared on the Internet, I knew immediately that this company would be successful because its search engine had an algorithm which was much more powerful than any other at the time. Its success was beyond expectation and I wondered why this was so. As a management consultant and author of an essay entitled *Une histoire des théories du management en France, de 1800 à 1940*<sup>1</sup> (A history of management theories in France from 1800 to 1940), I speculated that this success was the result of the implementation of original management methods : this theme became central to my book<sup>2</sup>. Like Toyota in the 1970s and Ford fifty years earlier, Google has invented and developed methods which will spread throughout the economic world.

The Google experience remains exceptional. The company was founded at the end of 1998 in Mountain View, California. Today, it employs more than 10,000 people in the United States and about thirty other centres around the world. It continues to grow. Its financial results in the first quarter of 2007 clearly show this : its turnover has increased by 63 % in one year and the number of 'hits' on the advertising space on its site by 52 %. This is considerable, because 99 % of Google's revenues come from advertising.

### Exceptional growth

Why has the growth been so rapid ? Firstly, it is because the Internet is constantly expanding. Every year, there are new Internet users especially in countries where, until recently, Internet use had not been very widespread, and also because there are new site contents which are regularly presented. For a long time, the emphasis was on the printed word but now there are more images and sound features. Growth is also rapid because of the changing use of the Google tool : initially, it was a documentary search engine for academic use, but its range of information retrieval has since become much broader and is now devoted to a large variety of specific applications with different versions, (such as Google News for information, Google Scholar for scholarly literature searches, Google Patents for patents, and Google Book Search for books, and so on).

There are other explanations for this growth, particularly because for a very long time it was only possible to consult the Internet using a micro-computer. It is now possible to access the Internet using a mobile phone which is a much cheaper alternative. This presages the advent of such great expansion that many people, including those at Google, think that the future of the Internet, especially in India and China, depends on the ability to consult the Internet directly from one's mobile phone. Consequently, all the companies in this sector are currently working on this prospect.

Another explanation for this rapid growth comes from the fact that Google has become a major way of accessing the Internet. If, for example, one looks for a plane to Berlin, he will find what he looks for on Google, in the answers and in the advertisements that appear on the right-hand-side of the screen.

### *The snowball effect*

Of course there are other aspects that should be taken into account, namely the snowball effect which economists refer to as 'the winner takes all' situation. This is when one leader in a market takes all the winnings. For example, when the first Microsoft operating system, 'DOS' (Disc Operating System) began to gain a following, all the software editors immediately invested in this system and abandoned the others.

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<sup>1</sup> <http://www.bernardgirard.com/Management/essai.html>

<sup>2</sup> Bernard Girard, *Une révolution du management : le modèle Google* (MM2 Éditions, 2006).

As a result, the more software packages which used DOS, the greater the number of Microsoft clients. Likewise, if I want to advertise something on the Internet, it would be to my advantage to use a service provider who has access to the greatest number of clients. This snowball phenomenon has an undoubted advantage for Google's advertising.

### *Removing the obstacles*

The reason that Google has grown as quickly as it has, is also because its managers were capable of removing obstacles to its growth, obstacles which are common to all companies but especially start-ups. Some obstacles are linked to distribution, others to production, and others to organisation and company governance.

### *The economic model and advertising*

The Google economic model is based on a solution borrowed from what some economists refer to as 'two-sided markets'. This is a solution which consists of providing free services actually financed by others. To demonstrate this one can take the example of TF1 (the French national television channel) or free newspapers : information is paid for by the advertisers. The same goes on with credit cards as it, in most cases, it is the retailer who pays.

The advertising, which allows Google to provide its services free of charge, is discrete (so that users are not put off) and relevant (because this advertising appears relevant to the search).

The most original aspect of Google is that the relationship with the advertisers' clientele is totally automated. When one buys advertising space on the Google website, one does so using one's own computer, taking one's own decisions without anyone else being involved. This automatically removes the obstacle to growth, namely the need to have a distribution network. At the same time, another obstacle, that of deciding on the price, is removed. The device which is in place is similar to a system of bidding in which each person is invited to state the price that he is prepared to pay, knowing that it is the person who makes the highest bid of course who wins, but only paying the second highest price in the bidding order. This is how the person who buys advertising space on Google announces the price he is ready to pay for each click and, in response, the system shows him the price he really has to pay according to the other bids. The prices are constantly being re-evaluated according to the same principle, namely that since the search engine is currently in a growth phase, the price of the click increases regularly while remaining economically 'fair'.

All of this was made possible because the founders of Google – two brilliant young male mathematicians who met at Stanford and had chosen document searches on the Internet as the subject of their theses – were brought up in a technological world where one puts more trust in machines than in human beings.

### *A well-oiled production tool*

When one is in a developing market, one has to have a suitable production tool available to respond to demand. If the tool is too powerful, it is underused and costs more than is necessary. If it is inadequate, it can result in prolonged delivery times or unsatisfactory delays. With respect to search engines, if the system is overloaded, waiting times are inevitable. This has never happened in the case of Google, despite ever increasing numbers of user searches. This is the result of a chance happening. When the company was launched, its founders did not have the necessary funds to buy large servers. In order to have a prototype, they made do with low-cost microcomputers, or even ones which were ready for the scrapheap. They developed specific tools to manage this network of mini-servers. They were able to increase the number of microcomputers progressively as demand grew. Many Google's patents are concerned in particular with these sorts of industrial questions. The secret of Google's technological success most likely lies in its ability to make a great number of servers work together. This is, of course, the area about which we have the least

information. Current estimates put Google's number of servers distributed throughout its many centres, or 'server farms', at about 450,000 machines.

### *Management aimed at growth*

In the 19<sup>th</sup> century, enlightened economists such as Jérôme-Adolphe Blanqui and Jules Dupuit thought that the size of companies was necessarily limited by their managers' ability to control their staff. All of them had in mind Jeremy Bentham's Panopticon, a kind of prison architecture which enabled prison wardens to see prisoners without being seen themselves. However, at this time, companies were in full flow especially railway companies such as the Paris-Orleans line which was managed by a one-eyed man. Therefore, it was not simply a question of seeing what people were doing but also organising them ! Today, it is well known that company organisations have all developed in order to encourage growth. For example, Alfred Chandler described multidivisional structures and in the 1970s, the practice of decentralisation emerged which enabled companies to build even bigger structures. At Google, coordination mechanisms were put in place to encourage this growth. These mechanisms were based on respect and esteem rather than hierarchical structures. As everyone knows, there are two sorts of esteem ; personal esteem ('I am pleased with myself for my good work') and esteem of others ('I am pleased that other people appreciate what I have done'). This is the founding ethic for management at Google.

Historically, management triumvirates have often led to catastrophe, from Roman times to more recently, the *Directoire* (the French régime from 1795 to 1799), Google has deliberately kept this form of governance, with three people at the head of the company ; Larry Page and Sergey Brin, its two founders, and Eric Schmidt, who is both president of the executive committee and CEO. This three-headed structure, which functions very well, reminds me of two characters from Greek mythology : Cerberus, who had three heads in order to see what was happening, and Hecate, the goddess who had three faces and was the goddess of crossroads. Both these functions, surveillance and guidance, are important aspects of modern management. Having three managers running Google removes one of the major obstacles to company growth, namely the limits of management's cognitive capacity, which a little-known British economist, Edith Penrose, introduced in her book published in 1959 concerning growth of the firm.<sup>3</sup>

If it is quite unusual for a company to be run by three people, there are numerous examples of companies which have grown very quickly and are managed by two people, including Apple, Microsoft, Sun, Hewlett-Packard, and many others.

### *A very original recruitment policy*

Google's recruitment policy is characterised by an extremely rigorous screening process. Google attaches great importance to this area : approximately 7 % of Google's staff in 2005 were employed in the recruitment area. Why ? Because the recruitment department does not only consider the 500,000 or so CVs they receive every year, but prefers to look for the candidates with the best degrees from the best institutions, in other words, candidates who are serious about their future, as opposed to young gifted people who tend to interrupt their studies and start working in companies once the computer market takes off. However, in order to assess technical competence, recruiters tend not to rely merely on the candidate's degree, but carry out tests and interviews on the candidates.

Google favours mathematicians not only because they are better versed in computer science than liberal arts students, but particularly because of their rigour and logic. Candidates who are recruited must be able to think with precision and discuss carefully imprecise topics. They have to know the importance of measurement and quantification : these are essentials

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<sup>3</sup> Edith Penrose, *The Theory of the Growth of the Firm* (Oxford University Press 1995, originally published in 1959).

for metrology which is widely used at Google. Google staff are people who derive the greatest pleasure from solving problems, which is what writing computer codes is all about.

### *Judgement by one's peers*

The pleasure derived from solving a difficult problem is clearly increased when one is congratulated by one's colleagues. At Google, peer esteem and constant judgement by ones colleagues, is part of company culture. Final decisions are clearly left to the hierarchy but great trust is put in the judgement made by one's peers. For example, co-workers meet from time to time to decide which projects should be abandoned and which should be developed further. This practice is vital and is a major part of Google's success.

One of the important threats to computer companies, especially as they grow, is Babel's Tower, in other words, the risk that if one develops one's own solution all by oneself with one's own computer language, then communication will become impossible. The logic behind judgement by one's peers implies mutual comprehension and permanent dialogue. It is also a wonderful tool for normalising techniques which naturally encourages one to use the same computer languages and to document what one does so that one can discuss it with colleagues.

### **An innovative machine**

Google's surprising capacity to innovate also contributes to its growth. Not a single week goes by without the appearance of a new product, which is greeted without any fanfare ; at most, one can read a few lines about the new product in the company blog. It is the Internet users themselves, Google 'fans', who spread the publicity about these innovations.

Why are these innovations so important ? The snowball effect explains the company's publicity, but it cannot explain Google's success with its users. If one decided not to use Google but a different search engine, one could easily find a rival search engine. The relationship between Google and its users is therefore extremely fragile. If its users continue to use Google, it is because they find it suitable for their needs and also because with its daily innovations, it convinces its users that it is the best.

Competition is rife and there are many people who try to do better than Google either by using other technologies, (especially technologies based on natural language which are said to be more efficient), or by playing on Google's weaknesses. Google is an excellent product in the English version, but it works less well in other languages, such as Chinese, Korean and French : Google cannot take into account French accents. Consequently, results are less accurate. This is an area where other rival companies can compete with Google.

### *The 80/20 rule*

If Google has managed to innovate as much as it has, it is thanks to very original methods for managing innovation. The most common of these methods is the 80/20 rule. Each engineer is encouraged to devote 20 % of his time to personal projects and 80 % to company projects. This often amuses people who immediately think of the potential problems, yet it has many advantages for Google. The most important is that engineers who have ideas or projects are less tempted to try to develop them elsewhere. This practice is common practice in Silicon Valley, especially as there are no regulations in California which forbid engineers to move easily to competition.

This 80/20 rule is also very efficient. Several products available today on the Internet are the result of these personal projects. Google News is one such example. It was developed by an Indian engineer who, after the September 11<sup>th</sup> attacks, wondered how his grandfather, living in a village in India, could possibly be kept informed about events in the United States. This gave him the idea of developing a search engine based on data extracted from newspaper articles.

The 80/20 rule could easily be applied elsewhere. For example, the owner of a two-starred Michelin restaurant in south-western France gave his twenty chefs a certain amount of time each month in order to invent a new dish. This dish was then tasted by all the restaurant staff. This is similar to Google's principle of judgement by one's peers. The dishes which passed this test became part of an experimental menu on offer to diners who were asked to judge them for their quality. Finally, the best dishes were put on the main restaurant menu. This approach was adapted from the Google model and applied to a totally different sector.

### *The diffusion of the beta version*

The systematic availability of new products in beta version is a second way of efficiently managing innovation. This is a method borrowed from the 'open source' movement. It entails marketing products very quickly, even if they are not completely finished, so that users can make their remarks or their desires known directly, whereas in traditional companies it is the marketing department which is in charge of carrying out customer surveys to monitor consumer reaction. This method of spreading information also has the advantage of motivating engineers who like to see their products functioning in real situations. It sometimes gives them the opportunity to discover whether consumers have dramatically different uses for the product from those which their innovators had originally imagined. They are able to take this information into account for future versions.

### *Small teams and short projects*

Working in small teams and carrying out short-term projects follows a similar logic. Google engineers work in small groups which have rarely more than six people. This allows very rapid communication, prevents the creation of an internal hierarchy within the project group, and avoids the risk of reconstructing – in a smaller version – the company each time that there is a project. For example, it is inconceivable that there is someone working on the project who is in charge of communication or is a management controller, etc.

Most projects last a short time, rarely more than six weeks. This means that at the end of six weeks, it is possible to assess if the project is viable or not. If not, then it is abandoned and the team dispersed. This allows talent to be spread widely, one of the best ways of disseminating talent and encouraging innovation.

This method also has the advantage of making people get to the heart of the problem quickly. When one has little time, one does not invent the wheel, but uses what is available. This is one of Google's important characteristics : Google does not hesitate to buy companies which have developed products and solutions which it finds interesting.

### *Metrology and the dissemination of information*

Metrology plays a very important role at Google where the measure of users' behaviour has been systematically developed. It is done almost in 'real time' and the results are widely communicated to engineers. This enables them to be proactive because they know immediately what works and what does not regarding their products.

Of course, Google has a deliberate company policy to work with universities and they have agreements with many university laboratories. However, Google has been even more innovative by posing or creating problems which are academically interesting. This is important because Google uses the potential talent of an academic environment.

This presupposes that Google employees are prepared to deal with subjects which economically have no immediate or short-term interest. This is not as easy as it may seem since companies are preoccupied with economic matters. Steve Jobs tells the story that it is because he took lessons in calligraphy at university that he was able to develop typography on Macintosh computers which allows one to read screens easily. This is no doubt a

reconstruction with the benefit of hindsight but whereas most companies are solely concerned with immediate results, Google was prepared to allow such research development to occur.

### *Open source logic*

One of the important characteristics at Google is its willingness to take on board what is happening in the outside world. We all know that the NIH (not invented here) syndrome can harm companies. At the beginning of their careers, the Google founders were looking for backers and contacted AltaVista about their search engine. AltaVista was one of the major search engines at that time and was owned by Digital. Louis Monier, who at the time was in charge of AltaVista and now works for Google, was enthusiastic but his bosses were opposed to buying technologies which were developed elsewhere. Therefore, they declined the Google offer. Digital is now in the elephants' graveyard alongside those who were also incapable of riding the technology wave.

Google's openness to the outside world is practised throughout the company, and can be seen particularly in its following of the open source movement. Google does this in various ways including financing the process of updating certain outdated software packages. The following is an example of this : recently, Google discretely announced the launch of its OCRopus project. This project brings together a German university laboratory specialising in optical character recognition (OCR), and a software package developed by Hewlett-Packard in the 1980s and subsequently abandoned in the 1990s as it was not successful. Google paid to clean it up and transform it into open source format. As a result, people who are interested in this product can use it, accessing it via Google or another search engine, and develop applications concerning this software.

With the OCRopus project, Google is in the process of creating a package of offers concerning optical text recognition, a technology which poses quite taxing technical problems – for example, the rate of residual errors of the best software packages is still about 2 % – but which is important for Google ever since it digitised huge libraries. It is also important in the anti-spam campaigns when keywords such as 'Viagra' arrive in users' inboxes and cannot be detected since they are not presented as a collection of standard characters, but as text included in pictures.

Google's desire for openness is also evident in the contact it has with its rivals. Google does not hesitate to buy companies, such as YouTube recently. In the case of YouTube, Google was more interested in what this company had learned from its users than in its technology, and it was also a way to put an end to competition : Google pays high prices, it can afford it and... it helps. DailyMotion, whose activity is similar to that of YouTube, is for sale but it is very expensive because they do not want to sell it for less than YouTube. As a result, no-one wants to buy it. This is an example of creating a monopoly by killing off one's rival with money.

### *The Swiss Army knife*

Google decided to develop its offer in the form of a Swiss army knife, in other words as various tools which all shared the same handle. In practical terms, the handle is research, to which one can add other tools as required. This is how we make our own Swiss army knife. This reasoning obviously encourages innovation at Google, since it can keep developing other tools as long as they can share the knife's handle. One can see that this is a logic which is radically different to that of Microsoft which is forced to update its entire set of software packages whenever it has to develop one of its components, which explains the very long waiting times necessary for the marketing of new Microsoft versions.

## Obstacles to overcome

What are the obstacles to Google's progress? The first is obviously its competitors. However, at the moment, Google is the world leader except in China where Baidu dominates the market.

The second is more delicate. To improve the accuracy of its search answers, Google chooses them according to the information which the user provides for the search, which is fine. However, I have noticed that if I search for my own name using Google, in France I appear at the top of the list of replies and that makes me proud, but in the United States, I figure below my American namesakes. This simple example demonstrates that the answers depend on the country site I use for my search. This is both very good and also very worrying. Is it healthy or legitimate, that a foreign company, even an honourable one, can store information on searches carried out, for example, by the laboratories of the French Atomic Energy Authority laboratories? In China, Yahoo! is accused at the moment of having given the authorities the IP addresses of dissidents who are now in prison. Who can be sure that Google will never transmit information it holds to a third party? This is a real concern of which Google is very well aware. In fact, Google announced that from now on, it would not keep any information on individuals which it collects for more than eighteen or twenty-four months: even this seems like a very long time! Google is also working on ways to personalise their answers without having to keep the information, but this is not very easy to do.

The other major problem is copyright. Copyright owners are in open conflict with Google, about books, films or other works. Google, like all search engines, has grown into areas where contents were not protected, such as research articles, or academic, administrative or commercial texts. The difficulty comes from the fact that the sound and the images arrived en bloc at the same time, with the difference that practically all the new contents are protected by copyright. Obviously, the important industrial groups which own the copyright are not going to allow this.

This complex problem concerns both the economic and the technical model. One of the solutions consists of developing contents which are not subject to such a copyright, as seen in the success of YouTube. However, is such a solution enough? Another solution would be to appease the owners of the content by paying them with revenues from the advertising of their products. However, this entails a commercial difficulty – is there a market which is sufficiently important to interest everyone? – and another difficulty: on a global market, is it really any advantage to have American advertising for clients from the rest of the world, or should one compartmentalise advertising? If this were the case, then those of us who are interested in American TV series would no longer have access to them! Therefore, one has to find other models which enable one to choose advertising according to the content of the images or the sound. In this situation, one is faced with technical problems to which the Google teams are trying to find solutions.

The last obstacle to the development not of Google but of the Internet is that of languages and the means to translate texts which already exist on websites. It is an extremely complex problem and the difficulties of overcoming it are huge.



## DISCUSSION

**Question :** *What sources of information did you use to carry out your study ?*

**Bernard Girard :** The Google communication department is expert in formal stereotyped language and is always available at every interview. However, one can get hold of a considerable amount of information which is usually accurate and which is produced by current or former employees of the company by the many observers who study it.

**Q. :** *How was your analysis received by Google ?*

**B. G. :** I presented it to the Google staff in Paris. I think that they approved of it because they recommend it to people who are interested in their company and how it works.

### A political constraint in France ?

**Q. :** *What do you think of the way in which Google was “demonised” following the intervention of Jean-Noël Jeanneney (president of the French National Library) who protested against Google’s proposition to digitise French literary heritage free of copyright.*

**B. G. :** When François Mitterrand launched the project for the library, I was one of those who suggested that everything be digitised, rather than to construct buildings ; however the BNF (*Bibliothèque nationale de France* : French National Library) had already been built. Much later, its managers decided to start digitising documents and to develop their own search engine, Gallica, which is useful but inaccessible using Google. If one does not use the number one search engine it means that one distances oneself from its users. This is why one sees books in French which come from foreign libraries where they are stored : this is ridiculous. As a result, when France is discussed with Google staff, they immediately think about what Jean-Noël Jeanneney said. He really tripped us up with this out-of-step patriotic reaction.

### Financial limits ?

**Q. :** *Behind every important entrepreneur, or a triumvirate of entrepreneurs, there is often an important financier. In this case it is the Sequoia Capital fund which not only financed Google, but also Yahoo! and YouTube. Currently Google has a market value of 165 billion dollars. This is peanuts in comparison to some pharmaceutical groups such as Johnson & Johnson or others whose value amounts to 1,800 billion dollars. But in five or ten years’ time, Google will undoubtedly siphon off a large part of the American market : will its growth then not run the risk of reaching financial limits ?*

**B. G. :** In financial terms, many people have questions about Google. Is it reasonable to make 99 % of its turnover from advertising ? The Google model works because it is free and without this model growth would never have been as rapid. But there is a second limit, namely the amount of publicity that the market can stand. Will this market continue to be able to support this type of company for much longer ? There is another important problem : the model of a global market, such as we know it, will probably not last very long. Today, Baidu is establishing itself in China and making in-roads in Korea and Japan. A large Asian market could be constructed around Baidu, starting with an Indian market based on new users, and later an Arab market even if the Arab world is still virtually non-existent on the web. With companies such as Google, it is as if we were at the beginning of the twentieth century with the advent of electricity, in other words we have companies which are creating a market at the same time as they develop. Obviously no-one knows where this will lead. Even though on many occasions Google has been able to change itself and escape bureaucracy, it is not immune from difficulties in the years to come.

## **A model which is still in gestation**

**Q. :** *At the beginning of your talk, you said that the Google model was exportable as were the well-known Ford and Toyota models. Why is it not yet being copied by Yahoo!, eBay or other big players ?*

**B. G. :** When Google appeared, Yahoo! was already up and running. This model, which is not yet ten years old, is in the process of emerging. Google has not yet devised a theory regarding its own model and not all its weaknesses have been declared.

There are many Internet markets. The fact that Google is gaining strength in the market for its searches on the Internet, does not mean that it is the leader in the email market. Google video, a search system for animated images, was launched at roughly the same time as YouTube, but it was YouTube that took the lead in the beginning before Google bought it. It is therefore by no means certain that Google will gain business in every market on the Internet. We are experiencing an economy which is in gestation and which will probably not resemble the personal computer market which Microsoft dominated.

## **Recognition by one's peers**

**Q. :** *Can you say more about recognition by one's peers ?*

**B. G. :** It is a system which consists of creating discussion groups. Originally, people met up every Friday afternoon with the person in charge of product development. The engineers came to present their projects. After an extremely frank discussion, the decision was taken either to continue with various projects or to put a stop to them. This was a drastic selection procedure which encouraged engineers to present only projects which were sound. Clearly, it has to be structured like this because it is no longer possible, with 10,000 employees, to continue in this way.

This same reasoning can be found in the recruitment process. Candidates are only recruited which after six to eight interviews, with not only those in charge but also with one's future colleagues, and even sometimes with one's future co-workers who are on a lower level.

## **Human resources**

**Q. :** *Is each centre autonomous in terms of recruitment ?*

**B. G. :** No. Recruitment is centralised and general management has a separate policy on the recruitment of engineers. An interview with senior management at Mountain View is part of the process for the appointment of engineers.

**Q. :** *In terms of their responsibilities, how are the 10,000 Google employees distributed ?*

**B. G. :** It is difficult to say because things change very quickly. Two years ago, there were only 5,000 employees. Engineers make up the largest sector in the group but there are increasing numbers of employees in the marketing department : the 120 Google employees in the Paris centre are part of this department.

## **Movement between teams**

**Q. :** *How are the teams made up and how do they work ?*

**B. G. :** Three to six people with the necessary skills come together for a project, but there is no division of work. They are allowed to move between projects so that they can benefit from the skills of others. Everything works on the basis of respect and reputation, a practice which does away with hierarchical structures but achieves efficiency. However, harmful effects may occur such as the emergence of a society which is class conscious. This already seems to be happening and consists of those who arrived at the right moment and who are extremely rich ; those who joined them later and have aspirations to become very rich ; and

finally those who are not engineers and who are paid the local market rate, as is the case in computer centres. Not everyone is necessarily happy at Google.

**Q. :** *I have talked with Google engineers from Mountain View. Contrary to what happens in France, no single employee is assigned only to one particular manager. An engineer who does not manage to convince his project manager of the need to improve the product, may be invited by the company chairman to launch a rival project with the following words 'if your ideas are relevant, you will naturally attract the good engineers and when it is obvious that your product is better, the other one will be abandoned. Go ahead ! Good luck ! If you need some machines, tell me !' At the same time, one should realise that at Mountain View, when one needs to test an idea, thousands of servers are mobilised !*

### **What changes ?**

**Q. :** *You mention Google's move to the area of the mobile phone. But how will it be possible to display information on such a small screen when information barely fits on a personal computer screen ?*

**B. G. :** It is likely that there will be other uses, for example the ability to localise services. In the United States, Google has just launched a new voice-recognition service : one says the word 'pizza' and Google displays a list of the closest pizzerias and their addresses. Similarly, if one wants to go to a particular place, Google displays a map on one's telephone to show the way. New uses will be developed with new back-ups.

**Q. :** *Will Google be able to evolve while conserving the model which aims to give more importance to man than to technology, while its model depends essentially on technological development ?*

**B. G. :** When I talked about co-ordination, I emphasised the human aspect, but technology is also a very important dimension : a wonderful communications machine enables information to circulate within a company. However, can this model stand up to bureaucracy over a long period of time ? Will they know how to change it ? To change is even more difficult because a psychological fatigue may set in. Today, many multi-millionaires do not know what to do with their money.

**Q. :** *A Google director once said to me 'we are a very restrained company. For example, we do not have a company jet for our directors, but it's not a problem – they all have their own private jets !'*

**B. G. :** So they invest and many become business angels, some more successful than others. How does one avoid the temptation of allowing Google to buy companies which it finances and which are not very successful, thereby avoiding the potential risk of a peculiar conflict of interests. In time, Google will come across such new problems.

Presentation of the speaker :

Bernard Girard : management consultant, author of several articles and books on management, especially in the area of human resources. He is the author of the book *Une révolution du management, le modèle Google* (A management revolution : the Google model, published by M21 Éditions, Paris).

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