

THE SWISS WATCHMAKING INDUSTRY FACED WITH GLOBALISATION IN THE 1970S

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INTRODUCTION

The Swiss watchmaking industry, which exports most of its production due to the limited size of the home market, gives the appearance of an economic field which has known nothing other than globalisation of exchanges. The title of this article could give the impression that the phenomenon in the 1960s is unique. However, this is, of course, not the case. Moreover, journalists, historians, engineers and other commentators will recall the resemblances between the situation experienced by the Swiss watchmaking industry confronted with American competition in the 1870s¹ and 1970s. . . .

However, the globalisation which started to appear in the 1960s changes its face: not only concerned are sales and foreign markets to win over and then keep, but also production. New competitors, who are unknown to some, or who have been regarded with condescension by others up till then, join the "traditional" competitors. The history and values of these new manufacturers are different from those of the Swiss watchmakers who, confronted with these, do not know how to react. The behaviour of the buyers also changes.

At the end of the 1960s, Switzerland is the world's leading watch producer. At the beginning of the 1980s, the watchmaking sector is considered dead, having lost two-thirds of its jobs in an interval of 10 years. During the fifteen years studied (1968–1983), from the first quartz watch (developed in Switzerland, even if the first quartz watch to be marketed was Japanese), until the Swatch®, this industry faces major changes.

A few months before the start of what is commonly known as the "quartz crisis", the manufacturers were complaining of a lack of personnel.² At the beginning of the 1970s, most of them claimed that the electronic wristwatch could not be a success. The

quartz begins to be taken seriously with the launch of American electronic watches, which make more of an impression than the Japanese products. After a crisis of unprecedented size and the intervention of the banks to save the leading watch companies, new methods of production and management are introduced. The Swatch® becomes the symbol of the recovery of the image of watchmaking in Switzerland, as well as abroad.

The Swiss watchmaking industry of the 1970s is simultaneously confronted with technological change, with monetary³ then economic crises, with transformations of the production and sales networks and with new concepts in the field of company management. The Swiss watchmakers endure these different violent shocks and have to call themselves seriously into question. After a period of lost identity and values, they go on to rebuild new relations with the world.

The origin of this article is an oral thesis for a degree in 2003 at Neuchâtel University, in which I studied how the watchmaking crisis of the 1970s was reported by the press.⁴ I had recourse to corpora of articles from the Swiss-German and Swiss-French press, as well as to accounts gathered from interviews with people involved at the time. It is therefore not a detailed reconstruction of the events of this period, but rather a reflection of the way in which they were experienced. Also, it only portrays the impressions of some of the people involved, mainly managers of watch companies. In actual fact, because of the structure of the press, the contact between employers and press representatives and also because of the specificity of the situation in the watchmaking industry, the picture given is very much influenced by the employers' point of view. For a certain time, l'Agence télégraphique Suisse (ATS) (The Swiss Telegraphic Agency) is financed by the Fédération horlogère (FH) (The Federation of the Swiss Watch Industry),⁵ whereas the Correspondance politique suisse (CPS) (the Swiss political Correspondence), another press agency, is also dependent on capital coming from employers. The watchmaking managers of that period have access to newspapers, are interviewed by them and even edit articles themselves for them. Even when they are placed under examination and accused of a lack of foresight, overcaution and bad management, the causes given to the crisis are globally the same from one press organ to another, from *La Lutte syndicale*⁶ to the *Neue Zürcher Zeitung*.⁷

Furthermore, the people I was able to question all had fairly high-level jobs, some even managerial, whether in politics, in press or in watchmaking companies or organisations. The people who worked in production are extremely reluctant to bring up this period, they "don't feel like talking about that" and generally insist on the fact that they were able to find work quickly elsewhere.⁸

This article therefore mainly presents how the Swiss watchmaking managers experience the transformation of their industry's relations with the rest of the world in a technical, commercial and psychological way.

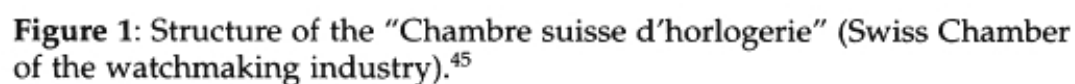
THE WATCHMAKING PUZZLE

In the 1960s, the structure of the Swiss watchmaking industry is extremely divided. The majority of the companies are small and produce different watch parts without any real co-ordination. The production chain (from the gear-trains to the complete watch) is extremely long. To make a watch, there are up to 150 different companies involved. The time necessary to react to economic incidents is very long, without even talking about the reaction time to structural changes.

Figure 1 shows the different levels of employers' associations gives an overview of the complexity of the organisation of the Swiss watchmaking industry.

Ébauches SA is the main firm of the ASUAG holding company which groups together the production of blanks and assortments, elements which constitute the skeleton and the heart of the watch. Up till the end of the 1960s, ASUAG did not sell finished watches. The main member of the Fédération Horlogère Suisse is the holding company SSIH which brings together Omega and Tissot. The members of the Fédération Horlogère Suisse manufacture and sell finished watches but not their components. However there has been more and more overlapping of the two since the end of the 1960s and the traditional borders of their fields of production are less and less clear.

There are other professional associations, like the Convention patronale (Employers' convention) which mainly deals with relations between employees and employers and which is the authorities' privileged speaker for social questions. The Fédération horlogère principally takes care of questions concerning the



The watch production process is extremely complex. No manufacturer masters the retail sales network. Swiss watchmakers are dependent on wholesalers and do not have direct access to the market. There is an overabundance of companies, but no unity against competitors such as the Japanese watchmaking industry, whose main production comes almost from one firm only: Seiko. Moreover, in the 1970s, you can read that not only the Swiss watchmaking industry experiences problems due to monetary problems, but also Seiko.⁹ That seems strange and it is typical that the whole Swiss watchmaking industry compares itself to a single company, in a way feeling reassured when the latter meets difficulties.

The Swiss watchmaking industry relies on numerous small companies. These multiple foundations are however not very stable and the collapse of only one has a serious effect on the whole building.

The management aspect is also taken into account. In the small companies, the managerial staff is often trained on the job. They do not have a real vision of the global market. Moreover, these companies are often family businesses, passed on from father to son. That does not guarantee a competent business management. Furthermore, at each inheritance, the company can see its capital divided. In this way, decision-making is slowed down and the capital available diminishes, thus preventing the implementation of heavy investments, like those involved when changing the production method, applying increasing standardisation rules etc . . . As far as management is concerned, it should be recalled that the question of training the managerial staff of companies arose at all levels and in all fields. There is no management training in Switzerland before the 1960s. The only management school was the Swiss Army. Advancement in the army guaranteed promotion within the company. The Army may allow certain aptitudes in staff management to be acquired, but no knowledge of the economic and financial mechanisms is provided.

We have mentioned the shock experienced by the Swiss watchmaking world in the 1870s–1880s, caused in particular by the presentation of the American watch production at the Universal Exhibition in Philadelphia in 1876. Here we are discussing the watchmaking crisis of the 1970s. In the period between, the Swiss watchmakers experienced other difficulties, after the First World War, then particularly at the beginning of the 1930s. The Federal State Government intervenes by introducing the Statut horloger (Watchmaking statute), a very rare act in Switzerland. These terms “Watchmaking statute” set down the federal legislative measures introduced in 1934 to put an end to the crisis caused by the world economic situation in the 1930s. This was, amongst other things, to prevent the transplantation of the watchmaking industry abroad and the disorganized development of means of production.¹⁰ The Statute reached the targets fixed but, at the same time, led to a kind of petrification in the obsolete structures which we have mentioned above.

It is finally repealed in 1971. There is a lot of animated discussion then to find out how things will carry on after that, as well as to establish a legislation which sets down some protective limits, with regard to the “Swiss made” label in particular. Echoes of these discussions can be found in the press and numerous written works of that period. One of the most often quoted is the

prospective study published by the Fédération Horlogère in 1967.¹¹ The president at that time is Gérard Bauer. He is then one of the key figures. He seems to realise very soon that the watchmaking industry should be regrouped and particularly that the distribution channels should be controlled. He is even regarded as someone who, for the sake of general interest, worked against his own interest, as the liberalisation of the profession weakened the FH.¹²

He is a brilliant man, a former diplomat¹³ and in close contact with the principle political and economic figures of the country. Under his influence are launched many prospective studies, a firm encouraging the companies to draw together (with sometimes rather mixed results . . .) as well as the Centre Electronique Horloger (CEH) (Electronic watchmaking Centre), the origin of the world's first quartz watch. He very quickly realises the need for structural change in the watchmaking industry (concentrations, mergers, control of the distribution network) as well as technological change (changeover to quartz). In spite of his many standpoints, he seems to have little support. At least, there are few echoes of his propositions in reality. They were however listened to and respected by certain watchmakers who did not have the means to put them into practice, though. Many others could simply not see the interest of investing in new production means or new products, while the products they offered were selling without any difficulty.

NEW MANUFACTURERS FOR NEW PRODUCTS

The first quartz watch was born in Switzerland. It was the Bêta 21, developed by the Centre Électronique Horloger (CEH), in Neuchâtel.¹⁴ It was the first one to be fitted with an integrated circuit. Moreover, it was the result of joint research. Competing companies united their efforts to develop a Swiss made quartz watch. However, the manufacturers did not have confidence in the researchers and were not convinced in the need for this new product. For them it was more a matter of prestige than a calculated step to develop the industry. The commercialisation of the Bêta 21 was, in actual fact, chaotic, only 6'000 pieces were produced and finally delivered in 1972, whereas Seiko, on their part, had already brought out three different models of quartz watches. Here, the Swiss perfectionism should no doubt be called

into question, as watchmakers wanted to bring out only products which worked perfectly, at the risk of having delays. The manufacturers who put the Bêta 21 in their catalogue did so to show that they were able to offer them but without real conviction, so much the more since it was still a rather heavy and bulky product.¹⁵ The fact also that the first Bêta models were successful as luxury watches did not encourage the manufacturers to launch into low-price quartz watches, which was to be a reproach subsequently.

The end of the 1960s is not a favourable time to introduce new products into the Swiss watchmaking industry, which rests on a position acquired over more than 20 years. After the Second World War, the Swiss system of production is intact. The Swiss watchmaking industry can easily become world leader. This will be a handicap subsequently, as the watchmakers did not think it necessary to make any investments to develop new products at a moment when there was a great demand for their own products.¹⁶

The first electric watches come out on the market at the end of the 1950s, followed by the first tuning fork watches. At the same time, research is carried out in Japan as well as in Switzerland with an aim to producing quartz watches. For the engineers who experienced this period,¹⁷ the quartz watch was not a new product as far as the concept was concerned, but simply a miniaturisation of the principles already existing for quartz clocks used as from the 1930s. It is actually in 1927 that a quartz crystal is used for the first time as a timekeeper. Warren Marrison, a communications engineer at Bell Telephone Laboratories, develops a clock almost as big as a room, which counts the time by using a crystal vibrating 100'000 times a second when it is connected to electric current. Marrison's aim was not to invent a clock. He was looking for means of controlling and maintaining accurate electromagnetic frequencies which carry radio and telephone messages. However, he very quickly realises the potential of his invention for the improvement of time measurement and proposes that quartz clocks be used in the astronomic observatories to act as time standards.¹⁸ To my mind, here the telephone has the same role as the telegraph in the mid-19th century, with the first electric clocks: it requires and allows at the same time a more accurate and steady time network.

Going from a clock which is kept in a room to a wristwatch is not done from one day to the next. It only became possible due to progress carried out in the field of electronic components. In the late 19th C. and early 20th C., scientists had identified new materials such as liquid crystals (which ended up being used to form watch dials 70 years later!) and discovered properties such as the piezoelectricity, the phenomenon which allows a piece of quartz to vibrate regularly when submitted to an electric current. During the Cold War, researchers in defence and aerospace technologies laid down the bases for the miniaturisation of electronic circuits. In the 1960s manufacturers applied the latest research to the first electronic consumer products: televisions, calculators, hearing aids and watches. . . . It is the conjunction of these two technical advances (the use of quartz and the miniaturisation of electronic circuits) which makes the breakthrough of the quartz watch possible.

In fact, for the electronic watch, the integrated circuit is almost as important as the quartz. Without small circuits portable quartz timekeepers are not conceivable. The role of the circuit is similar to that of the sprung balance in the mechanical watch: it maintains the oscillations of the quartz crystal, divides the frequency into second beats and activates the display.

Designed in 1952 by G. W. A. Dummer at the Royal Radar Establishment at Malvern and produced in 1959 independently by Jack Kilby at Texas Instruments and Bob Noyce at Fairchild, the first integrated circuit solves a problem which the computer industry was concerned about then, but its use for watches was limited. The watchmaking engineers needed integrated circuits with a much lower consumption than these first circuits. At the end of the 1960s, while the first electronic watches were being developed, the C-MOS (Complimentary metal oxide semiconductor) circuits became available. These C-MOS circuits were developed at the RCA under the supervision of Gerald Herzog, who was searching for a means of amplifying audio signals. The Herzog's team, financed by the Air Force and the NASA, had prototypes in 1964 and RCA started to sell these first C-MOS circuits in 1967. The quartz watch engineers of the laboratories all around the world realised, when they learnt of the existence of these new low energy circuits, that they had the perfect solution for electronic watches requiring small batteries.

The first quartz watch was Swiss, but the first to be put on the market was Japanese, manufactured by Seiko. Both were equipped with an analogue display, i.e. which displays time by means of hands. They were very similar in appearance to mechanical watches, apart from their bulkier shape and their less elaborate design . . .

Now, at the same time, new performers appear on the scene. They are American electronic manufacturers who are trying to convert their production, which had till then been limited particularly to the NASA and the American Army. As space and military credits are drying up, they have to fight for survival by selling their products to a much wider range of clients. They control the entire manufacture of components necessary to put on the market a product which is really new in the eyes of the consumer : the electronic watch with digital display.

The first of these watches, the Hamilton Pulsar, is moreover called "Time Computer" and not "watch".¹⁹ It does not have hands and is the first watch in the world without any moving pieces. It shows the time thanks to light-emitting diodes activated by pushing a button. The display is therefore digital. The energy consumption is such that the battery has to be changed every six months and, during the press conference for the launch in May 1970, the Hamilton Watch Company from Lancaster (Pennsylvania) has only three prototypes which work! This does not matter, as a lasting impression is made. The innovative product is the digital display watch. It is above all a luxury article: the first Pulsar watches are offered with a gold case and bracelet. Sean Connery in the role of James Bond wears one in one of his movies. The consumer who is a lover of innovative technologies is then quite prepared to buy an electronic digital display watch, as soon as the prices become affordable. At this point, they go down very rapidly, all the more so since technology with liquid crystal screens (LCD for light crystal display) has been developed and can be applied to watches as from 1972. The decrease in energy consumption allows a continuous display and a less frequent change of battery. At the same time, the prices of the electronic components go down dramatically: electronic watches can now flood the market.

It should be kept in mind that the Swiss mastered these technologies. In 1975, they have the following creations to add to

their list of achievements: the first quartz watches, the establishment of an integrated circuit factory and a quartz factory, this "through effort only and, up till now, without any support from a Pentagon or from a Swiss NASA".²⁰ The Swiss watchmaking industry often mentions the lack of government support to explain the fact that it took longer for them to master the technologies of the quartz.²¹ It should be avoided to hold the Swiss technological delay only responsible for the crisis. Above we mentioned the structure of Swiss production, which is also confronted with the over-evaluation of the Swiss Franc and protectionism.

So, in 1972, consumers have five kinds of watches available: the mechanical watch, the electric watch with balance (or electric watch), the tuning-fork watch, the quartz watch with analogue display and the quartz with digital display. They differ mainly because of their driving power: spring or battery, and of their resonator: sprung-balance, tuning-fork or quartz. It should be pointed out that Ebauches SA offer the complete range of these products to their clients as from 1972.²²

The accuracy of a watch depends mainly on the frequency of its resonator: the higher the frequency of the resonator, the more accurate the watch. The classic mechanical watch has a frequency of 3–4 Hz, the tuning-fork watch of 360 Hz. The first quartz watches oscillate at 8192 Hz, the ordinary frequency was then to become 36000 Hz, with some watches oscillating at 2 MHz. In just a few years, the quartz outdates all the efforts of improvement of the mechanical watch made during the last 300 years.

However, contrary to forecasts, the mechanical watch does not disappear. Whereas the experts foresaw that it would remain in the low-price range, it actually became the symbol of high-class watches. Both kinds of quartz watches (digital and analogue) continued to exist, with the Swiss watchmakers producing mainly quartz analogue watches, as the digital quartz watches were produced particularly in the Far East.

The selection from among the products and also from among the manufacturers is not yet made at the beginning of the 1970s. The Swiss, who have already known the Japanese competition for several years,²³ discover, with certain apprehension, the American manufacturers with methods of commercialisation completely new to them.

A COMMERCIAL REVOLUTION ...

The quartz watch brings about many upheavals to the market: new salesmen appear, the standards defining the high and low price ranges are modified, or even reversed. Advertising changes and takes a leading role, while the consumer changes his buying habits.

When they are put on the market, digital watches are treated with a certain contempt by the Swiss watchmakers, who think of them as gadgets. The early 1980s show that the Swiss watchmakers were right, to a certain extent, to join in the production of analogue quartz watches, but this confirmation has a bitter taste, given the number of jobs and companies lost in the storm.

With the end of the Watchmaking Statute on the 31st December 1971, the Swiss production of mechanical watches accelerates. The Swiss export inexpensive watches and movements to Hong Kong in huge quantities. The Swiss watchmakers, or at least many of them, anxious to catch up the time lost in the shackles of the Watchmaking Statute, are only concerned with sending their goods to the Far East.²⁴ It is in this context that in 1974, the Swiss watchmaking industry beats all export figures, in the number of pieces and in value.

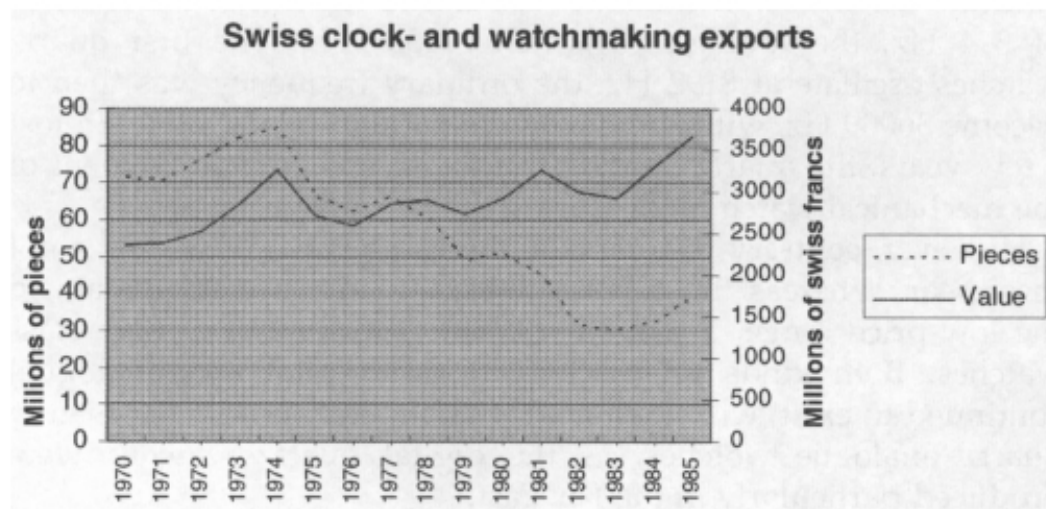


Figure 2: Swiss clock- and watchmaking exports from 1970 to 1985.⁴⁶

As far as the number of pieces is concerned, it is actually the peak of the Swiss production, which never reaches such a level again. As to the value, the progression picks up quite quickly, but

it should not be forgotten that the disruptions in the currency rates make comparisons very difficult.

The graph, showing the development of the Swiss share of watch exports on a world scale shows clearly that, even if the share in value of the Swiss exports remains relatively steady after quite a sharp drop, the number of pieces exported becomes insignificant compared to the rest of the world production.

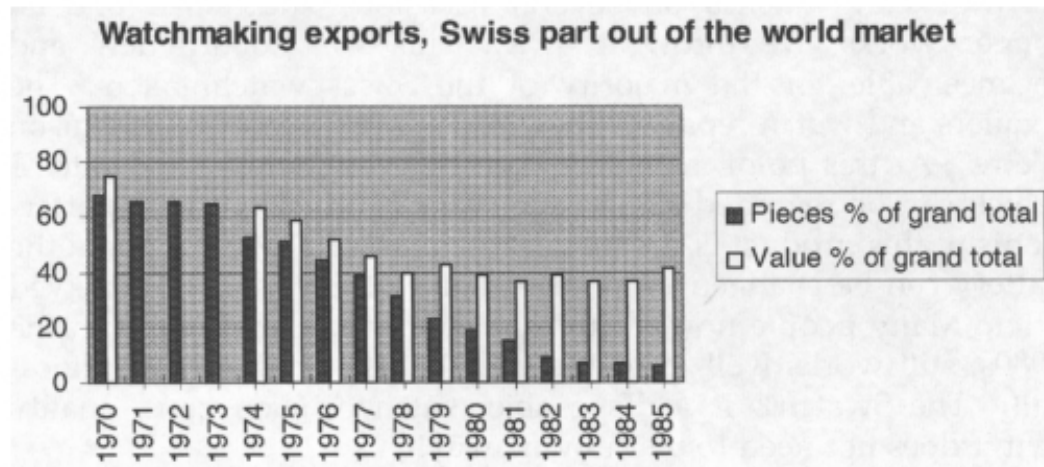


Figure 3: Proportion of Swiss watchmaking exports compared with the world market.⁴⁷

This is because of two main reasons. In fact, until the 1970s, 70 to 80% of the Swiss production of watches was made up of watches without brands (called "private label", the importer or the wholesaler placing their own brand on them) and/or so-called Roskopf watches.²⁵ At this point, after a brief start in the high-class range, the electronic watches tackle precisely the segment of market of watches in the middle and low price range. These new timekeepers are put on the market in an innovative way, not in jewellers', but, for example, in large superstores, like Timex watches.

Furthermore, accuracy having been acquired by then, it is no longer a sales argument and new methods in advertising are used to attract the client. The new watch manufacturers address the clients directly, whereas the Swiss control, in general, neither the distribution of their products nor the advertising, these being carried out by the wholesalers and retailers. The manufacturers therefore have no influence over their image, nor do they have direct contact with the markets except for some major brands like

Omega, Longines, Tissot for example, who maintain quite a dense network of sales outlets all over the world.

Moreover, the watch becomes a common consumer product. Our parents received their first watch for their communion, when they received a diploma, got married, or, for women, from their husband at the birth of a child. Often they only owned one. As from the 1970s, the watch loses part of this symbolic aura. We can have several watches on several occasions and when one no longer works, we throw it away. This was totally new and inconceivable for the majority of the Swiss watchmakers. The retailers and watch repairers thus lose a large part of their "raison d'être". At this point, may I deviate by mentioning the Swatch® which can be regarded as an exemplary product of Swiss perfectionism: this product is disposable (it cannot be repaired, only the battery can be changed), low-priced and designed to be renewed often. Many people now claim that their Swatch®, bought in the 1980s, still works well, providing the battery is changed periodically. The Swatch® is a disposable watch of such good quality that it does not need to be thrown away!

Another key factor is that brands become important. From then on, the consumer wishes to buy products with a brand which is well-known because of advertising. Before that, the certificate of origin of the watch was sufficient. The "Swiss made" label was considered as a guarantee of quality of the product. Since the 1960s, it has lost a lot of its value, namely because of the high number of bad quality Roskopf watches. This loss of confidence affects the whole Swiss production who, like this, finds itself in a very bad position.

The question of the "learning curve" should also be taken into consideration, mentioned by many people involved at the time as a factor to explain the reactions of the Swiss watchmakers.²⁶

Until the end of the 1960s, the structure of innovation and the prices of the products resulting from the innovation were well-known. When the manufacturers had invested in research, the new product could be sold at the highest price possible until a new product, more up-to-date, came onto the market. A product incorporating a new technology was expensive. Its price decreased slowly. The manufacturer recovered the investment of the research by selling the product at a high price. This is what happened right at the beginning of the quartz watch. The price was fixed according to the equipment bought, the cost of the

research, the applications of this research and the cost of introducing the new technologies to the staff.

In the U.S.A. the tendency was rather to spread the cost of paying off over several years, which allowed the selling price to be brought down quite quickly and the new product to be competitive. Switzerland, in general, and in particular the watchmakers, were rather "conservative" insofar as, knowing they had invested money, they wanted to pay it off as quickly as possible. With the quartz watch, they found themselves facing leading companies with considerable capital, and who needed to sell their components by every possible means. It was easier for them to sell "solid state" watches themselves than to wait for the watchmakers to buy their components. As it was question of well-known companies (like Texas Instruments, Fairchild, National Semiconductors), they did not have to create a brand image, as they already had one. Like this, they could sell their products at lower prices, the larger quantities making up for the loss of profit. This is what the American electronic manufacturers did round about 1975, and later, at the beginning of the 1980s, also the new manufacturers of the Far East.

Now, the Swiss, already in difficulty because of the high rate of the Swiss franc, could not lower their prices to this extent, even more so since the size of their companies did not allow them to have quantity discounts when buying components. On top of that, Swiss products, even if they integrate new technology, do not seem up-to-date and they are more expensive than the products which make a really innovative impression.

The Swiss finally concentrate on developing quartz analogue watches, even though they would have had enough capital to be independent in the production of liquid crystal displays. As the analogue watch is equipped with a micromotor to make the hands turn, this requires the need for microtechnics, which is part of watchmaking. It was the only way to use this technical knowledge, as well as the qualities of designers recognized by the Swiss watchmakers.

This proves to be a wise economic choice. However, we should be aware that in the mid-1970s it was often said that the Swiss watchmakers had missed the boat : their products did not appear to be new, even if they were. At the beginning, it is certain that the consumer was more attracted by digital watches which looked modern and which cost less. That could explain the fact

that quartz analogue watches did not sell as long as they were more expensive than mechanical watches, which looked the same.

A NEW MENTAL UNIVERSE

The watchmaking crisis of the 1970s brought about disruptions not only in the structure of production, but also in the mentality . . .

The first psychological shock, the Swiss watch is no longer the leading watch sold in the world, at least in quantity of pieces. Its quality is questioned. The accuracy, which had been a decisive selling-point for decades, suddenly loses all its importance, as this can now be acquired without any effort. We have already seen it, the competitors are new and in particular their methods are new. Last of all, the trade of watchmaker is no longer an esteemed nor reliable trade.

Also, new products arrive at a turning point in the Swiss watchmaking industry and emphasize the clash of generations. As we have already seen, all technologies used for the quartz watch were mastered in Switzerland. However, those who should have proposed investments at this period belonged to Boards of Directors where the average age fluctuated around 70. They knew their product perfectly and, all of a sudden, they saw a novelty arriving which they did not understand and which was in the hands of young engineers. They did not regard this product as a revolution but as a threat of competition to be destroyed. Accordingly, this reticence caused a delay in the launching of certain investments.²⁷

Swiss products are no longer references on a world scale and the existence itself of the Swiss watchmaking industry is called into question by new competitors, who are not watchmakers. It should be mentioned here what could be called "the *Business Week's* affair", from the name of the weekly magazine, which publishes an article which has the effect of a bomb on the Swiss watchmaking industry, causing reactions at the highest level.

This affair broke out in April 1972, with the publication of an article in the *Business Week* about the Swiss watchmaking industry predicting the loss of 50'000 jobs in the years to come. It was the opinion of Henry J. Boreen, the president of Solid State Scientific Devices Corporation (USA). He puts forward the fact that solid state watches are exclusively dependent on American parts and that the effort to carry out research is made in the U.S.A.

Tschudin, from Ebauches SA retorts that Ebauches SA has products and that the standpoint of the Swiss Chamber of the watchmaking industry indicates that the American forecasts are "hasty, at the very least": in actual fact, the mechanical watch is not dead and the Swiss watchmaking industry is carrying out active research in the mechanical watch field just as well as in the electronic watch field. Moreover, Swiss companies are taken over by American companies,²⁸ which is proof of their competence. Furthermore, Mr. Boreen knows nothing about the watch, its distribution channels and the needs of the public. For the CSH, "[...] to accept [...] this news without any comment would be to ignore the resources of our industry and the industrial genius of our populations".²⁹

The reactions aroused by this affair are significant. This article is often quoted in following years. Curiously, the gist of the article such as it is presented in the Swiss press is not so different from the gist of Swiss articles when it insists on the need for restructuring and mentions the fact that the Swiss watchmaking industry is still dependent on foreign countries for the supply of electronic components. What shocks is, of course, the announcement that so many jobs are to be lost, which, nevertheless, turns out to be quite right. Finally, it is surprising to see how the fact that, in this case, the takeover of Swiss companies by the Americans is no longer interpreted as a risk of loss of industrial sovereignty, but as proof that Swiss companies are the best, and that, after all, only the Swiss can manufacture good watches. Foreigners know it, that is why they take over Swiss companies, many seem to retort. Whereas the takeover of the fourth Swiss watch company group Movado-Zénith-Mondia in June 1971 by Zenith Radio Corporation, Chicago, Illinois, had aroused fears and embarrassment at the time,³⁰ one year later it was an argument in favour of the solidity of the Swiss watchmaking industry. The articles, which are not heated reactions, show all the same that the American forecasts are taken seriously, at least, on the level of the necessary adjustments to make, concerning technology and industrial organisation. However, the question of the loss of jobs is, in general, modestly put aside. It is more or less never mentioned. Moreover, one of the main arguments mentioned, in particular in the attitude of Ebauches SA, is the fact that "the mechanical watch still has a future, as to the electronic one, we will be ready when

it is necessary". In all events, it is made clear that electronic engineers should not interfere in watchmaking.

The disruptions brought about by the quartz watch have substantial effects: watchmakers can see new products, should invest in new production techniques, are confronted with new competitors. As far as the mental side is concerned, transformations are carried out at the same time. One of the most outstanding concerns accuracy, insatiable quest of mechanical watchmaking, which, from one day to the next, no longer has a "raison d'être". Before that, watches were regulated by "régleurs", who were regarded as the Lords of watchmaking, as they could regulate the watches exactly to pass the tests of the observatories.³¹ The certificates of the observatory and the prizes won during contests were excellent selling-points, appearing year after year in advertisements. The quartz removes the human intervention. Accuracy has been achieved, it is no longer something to conquer. The know-how, the secrets, the dexterity acquired over generations and transmitted in the workshops suddenly become obsolete. As to the watch retailer, he is now only there to change batteries not to repair anymore. It is a whole culture which collapses: the employers in the watch companies see their technological choices and their management called into question, but also, and this is a common factor with the workers in the whole field, they see their values disappearing. An industry, which was the pride of a whole region and which was representative for the identity of a country, loses its aura.

The industrial restructuring steps are, in actual fact, drastic. Many factories close and the whole industry has a bad image from then on, the image of an industry in crisis which was not able to adapt in time to new technologies and new market conditions. It was a difficult experience for the population of the regions affected.

The watchmaking industry was a very important activity in the Swiss Jura belt. In the canton of Neuchâtel, 50% of the industry was linked to watchmaking. It is only in 2002 that the population of the canton again reaches the level of 1974.

Over a period of 10 years, two-thirds of the jobs in the watchmaking industry disappeared, going from 90'000 to 30'000 people at the beginning of the 1980s. The watchmaking industry exceeds the 40'000 job barrier only in 2001.³²

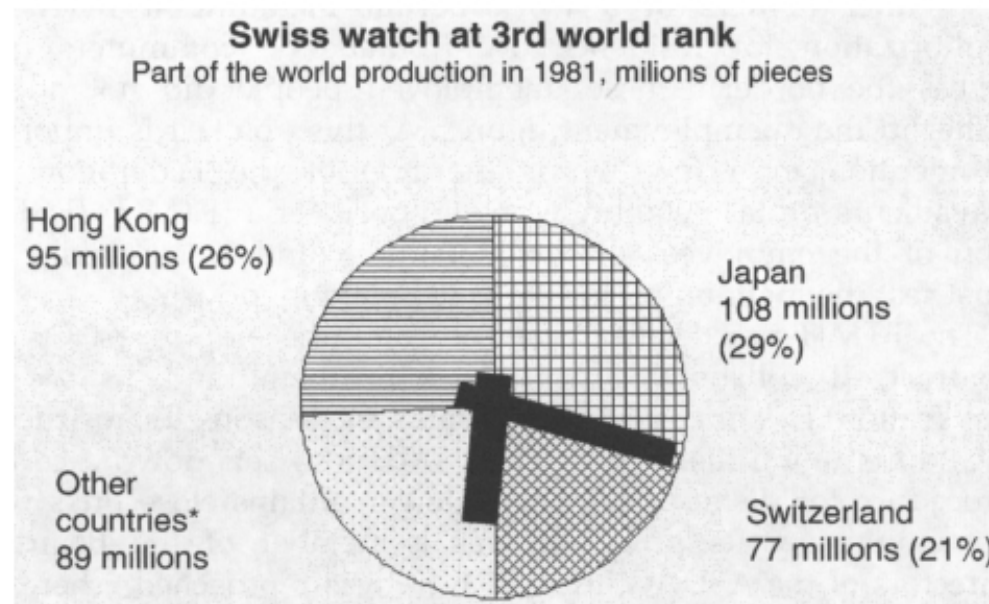
However, in spite of the impressive character of the figures, the loss was absorbed relatively well. As the watchmaking crisis happened at a time when the rest of the Swiss economy was in a favourable position, the people who were unemployed were able to find work relatively easily in other sectors. 60'000 people did not suddenly find themselves unemployed. Furthermore, the particular character of the manpower in the watchmaking industry permitted a certain evaporation between the number of jobs lost and the number of workers actually unemployed. Indeed, many of the jobs lost were in fact jobs at home, occupied by women working part-time. They did not return on the employment market after that. A lot of employees were foreigners, either holders of a work permit including a renewable authorization for residence or "frontaliers" (commuters from across the border). These unemployed people did not appear either in the unemployment figures. At this point, it is important to mention in a few words the role of the Fédération des travailleurs de la métallurgie et de l'horlogerie (FTMH) (Federation of the employees of the metallurgy and watchmaking industries) the main union for the watchmaking industry.

The FTMH practically never confronts the employers. On the contrary, it collaborates actively with them, and its weekly publication, *La Lutte syndicale*, explains the reasons for restructuring to the union members.³³ The FTMH also sets down a certain procedure for dismissals.³⁴ The union maintains close links with the employers. Its president was a member of the Board of Directors of the ASUAG, for which he was reproached. There are constant contacts between employers' associations and unions and the people in charge try to find solutions which can be presented both to their members and to the political authorities.³⁵

The disruption lies perhaps less in the number of jobs in the watchmaking industry than in the change of structure: the crisis of the 1970s marks the complete stop of working at home. To that is added the closure of factories. The towns become empty, the customs and traditions associated with the watchmaking industry disappear, whether outings for the factory workers or work-tables put at the place in the house with the most light. Moreover, the watchmaking industry was concentrated in a particular region, so the shock was felt much harder, regions with more diversified activities do not experience these problems . . .

When the first quartz watch arrives, nobody can say if the worse enemy is American or Japanese. Later, attention is turned towards other Far East countries. The Swiss differentiate between competitors who are watchmakers and those who are not, the latter often regarded as being impossible to beat. Japan is considered as a rival against whom can be fought fairly, whereas the American electronics manufacturers, and later the Far East manufacturers, are regarded as ruthless enemies who spare no-one and who respect none of the silent rules of the market.³⁶

With the quartz crisis, Swiss watchmaking companies realise that they are not alone in the world. They fear for their survival, as a computer graphics published in 1982 shows.



* Soviet Union 39 Mio (11%) ; China 21 Mio (6%) ; Europa without Switzerland 20 Mio (5%) ; USA 9 Mio (2%)

Figure 4: Swiss production compared with the rest of the world.⁴⁸

It is interesting to see that we are under the impression that the share of Swiss watches on the world market can only decrease, perhaps up to the point of disappearing. Indeed the clock shows 6.20. Unless time is stopped, it will soon be 6.30 and the Swiss share could be reduced to nothing . . .

Switzerland was supplanted by Hong-Kong in terms of number of pieces in 1978.³⁷ Let us not forget, however, that Switzerland

was Hong Kong's leading watch part supplier at the beginning of the 1970s and therefore contributed to its development.

At the end of the 1970s, when business is extremely bad, the Swiss watchmaking industry brilliantly shows that it masters the technology of quartz by bringing out the thinnest quartz watch in the world in 1979. It is the Delirium, whose machine-made gold watch-case measures less than two millimetres thick and has been designed to integrate all the parts of the quartz movement. The same technology is then used for the Swatch®. These pieces, produced using completely automated methods, do not permit the replacement of the jobs lost. However, they allowed the image of the watchmaking industry to be regilded, particularly that of the people in charge, and confidence in the future to be restored.

The Swiss watch production presently consists of only 12% mechanical watches, and therefore 80% electronic watches. However, these mechanical watches represent 60% of the value of watch exports.³⁸ Mechanical watches have therefore resolutely moved up to the high-class range. The Roskopf watch is far away ... However, during certain visits at the Musée international d'horlogerie de La Chaux-de-Fonds (Switzerland), there are occasionally remarks made by certain retailers³⁹ who regret that there are not more cheap, Swiss, mechanical watches, for which there would certainly be a market, as batteries always present supply and stockage problems ... It will be interesting to follow the development of this potential market and the reactions of the different watch manufacturers.

CONCLUSION

It has often been said that the watchmakers, the management as well as the technicians, "missed the boat" and did not react fast enough. Yet, the need to change structures and develop new products goes back to the 1960s and certain changes and research are carried out. There is a real unanimity concerning the necessity for structural changes and the very particular relations between union and employers make the transformations easier.

However, the technological change intervenes in an unruly context, to say the very least: the monetary question is often mentioned in the press, quite rightly. For years, the Swiss exporters benefited of a Swiss Franc which was known to be actually under-valued. When the currencies started to float, the

shock is terrible, even more so as the Swiss currency, which becomes a value of refuge, is over-valued this time, which penalises the exporters even more.

The product changes, as well as the structure of the capital and the production,⁴⁰ and also the management. The image of the industry and its managers also evolves: for a long time the managers of the watchmaking industry were thought to be lacking in foresight ; at a later date, their ability to rebound is acknowledged. From an industrial failure, the watchmaking industry goes on to become an example of successful revaluation. On the other hand, the regions affected by the crisis are marked on a long-term basis and acquire the label of disaster-stricken areas. The crisis, therefore, acts as a revealer of regional imbalances, transforms rich regions into poor, outlying regions and shifts the centres of management. The Management of Ebauches SA was in Neuchâtel. All the decisions are now made in Bienne, otherwise in the Swiss-German part, at the headquarters of the large banks, who intervened to help out the watchmaking industry. In this way, the antagonism between the Suisse-French and the Swiss-German parts makes a distinct appearance. It is interesting to see to what extent the Swiss watchmakers, who were used to travelling all over the world, balk at having to go to Bienne, Zurich or Basle, conscious that their independence is lost. This transfer of decision-taking centres to the Swiss-German part sometimes seems to have made more of an impression than the relocations to Asia and the increase of new competitors.

Another aspect should be mentioned here: whereas the Federal State no longer wishes to get involved in the watchmaking industry, to which it gave back its liberty with the end of the Watchmaking Statute in 1971, the banks invest to a great extent. Huge amounts, for that period, are involved. However, the banks commit themselves substantially, considering that the loss of the two leading companies would be more costly in terms of loss of skills, jobs and also of image, than to put them on their feet again. We would be tempted to say that the banks were not globalised.⁴¹ Indeed, at the time they showed real concern for this industry, considered as a national industry. Such investments do not take place after this period and the case of the end of Swissair (former national Swiss airlines company), where the banks refused to invest, forcing the State to intervene, provides a striking contrast.⁴²

The watchmaking crisis thus reveals to what extent the watchmaking industry is part of the Swiss identity. Even if, as we have already stated, it is a crisis affecting a limited area, it concerns the whole country, as we can see from the huge number of press articles which we have met: the subject was not limited to the economy pages of the newspapers. Moreover, the awareness for change appears at a very early stage. In actual fact, as from the late 1970s, we can see "historical" articles, mentioning the past. In a period of crisis, it allows us to reassure ourselves, to keep hold of a solid foundation in a world of continuing evolution. At the same time, this past is quickly idealised, but Switzerland succeeds in keeping its image of homeland of watchmaking. This crisis remains a reference, because of its extent: during the grounding of Swissair, another Swiss gem, in October 2001, the financial loss and the loss of image immediately recall that of the watchmaking industry 20 years before. The recovery of the Swiss watchmaking industry is also quoted as an example and the directors of watch companies are considered as very good managers. They also suffered as it was their industry which was the first to be affected dramatically by what could be called the fourth industrial revolution, that of electronics. The watch is indeed the first common product to be replaced by an electronic product. The difficulties experienced later by other industrial sectors help to diminish the severity of judgement made against the Swiss watchmakers at the beginning of the crisis, which, let us recall, arose after a period of uninterrupted growth and which no one could even imagine it was going to finish in such an abrupt way.

30 years after the beginning of the crisis, what has become of the Swiss watchmaking industry? While still being a very lively field of activity, it looks after its patrimony, at different levels, not only within companies, but also at the level of public authorities.⁴³ This is however not new. As from the late 1970s, that is even before the end of the crisis, we start writing pages about the glorious past of the industry. Many watch companies have published books relating their history, employing historians for this, whose jobs often become permanent within the company. It still remains that the watchmaking patrimony suffers from many handicaps. The industry which forms it has not completely disappeared and is still not inclined to be considered as patrimony, while it is still active. Identical problems are encountered

in the framework of the scientific patrimony of research laboratories still in activity. By using the past as a selling-point, this obstacle can be partially bypassed, but at the risk of a history which is entirely orientated towards marketing and which no longer reproduces the reality such as it was experienced. Moreover, the watchmaking industry has a very long tradition of secrecy, so it is not used to exhibiting itself, so much so that the marks left by this industry in the countryside are not very visible. In visual terms, the site of La Chaux-de-Fonds/Le Locle (Switzerland), potential candidate for registration on the list of the Unesco World Patrimony, cannot be compared with the blasting furnaces of the Ruhr. Undeniably, we are talking about a technological countryside, but one which is not easily grasped. It is a challenge to develop a region which has experienced an industrial crisis and which can just as easily make a clean sweep of this past as leave few visible marks in the countryside. The concept of Watch Valley tries to develop this region⁴⁴ and questions how to convey a rich, industrial past, unrecognised, even within its own region.

NOTES

- 1 Cf. Jacques David, *Rapport à la société intercantonale des industries du Jura sur la fabrication de l'horlogerie aux Etats-Unis*, 1876, facsimile of the original manuscript, Longines, 1992. This report is decisive for the introduction of the mechanization in the swiss watch production, wich could not assume the competition with American watches, standardized and automatically produced, so cheaper as well as more accurate. André Beyner, technical manager of Ebauches SA in the 60-70s, told lately (delivery of the 11th Gaïa's Prize, 16th of September 2004, Prizewinner: André Beyner, International Museum of horology, La Chaux-de-Fonds, Switzerland), that to convince the board of directors of the need to invest in a new factory of electronical components, he used the same words than David a century ago.
- 2 See especially *Crise des métiers, Menace économique. La Suisse devant la pénurie de main-d'œuvre. Situation-Causes-Conséquences-Remèdes*, Rencontres suisses, Lausanne, 1972.
- 3 On the 15th of August 1971, President Nixon put an end to the gold convertibility of the dollar and increased taxes on goods entering the USA. It placed at high disadvantage the Swiss watchmakers. Swiss franc becomes a currency-safe investment and increases strongly compared to the dollar. It increases automatically the prize of Swiss products especially in the USA which is meanwhile the first buyer of Swiss watchmaking. The increase of taxes made also more difficult the Swiss watches' sales. The ascension of electronics producers will take place in an already difficult context for the Swiss.
- 4 Cécile Aguilhaume, "De la Bêta à la Swatch 1968-1983. La mutation horlogère suisse dans l'œil de la presse", MA thesis in history under the direction of Professor Laurent Tissot, Université de Neuchâtel (Suisse), Faculté des Lettres, 2003, 294 p.

- 5 Interview with René Retornaz, former director of the Federation of the Swiss watch industry, Mézières, 14th of august 2001. Facts and reference also mentioned by Sebastian VIVAS, "L'ancre et la plume. Le Journal suisse d'horlogerie, 1876–2001, acteur et miroir de la culture horlogère", MA thesis in history under the direction of Professor Laurent Tissot, Université de Neuchâtel (Suisse), Faculté des Lettres, 2001, 193 p.
- 6 Weekly of the main swiss watchmaking trade union, the FTMH (Fédération des travailleurs de la métallurgie et de l'horlogerie / Federation of the employees of the metallurgy and watchmaking industries).
- 7 Radical weekly from Zurich (right middle), representative of the business and industrial interests, read and considered abroad.
- 8 Phone interviews in 2001 and 2002. I'd explain this attitude by the bad image of the Swiss watchmaking industry due to this crisis. Whereas the overall economic climate was quite good in Switzerland, to be fired was seen as suspect, as a mark for bad competence. Those people were able to find quickly a new job but don't wish to be linked anymore with watchmaking, whose image was for a long time associated with crisis and failure. For the point of the image of watchmaking in the general public, see also Convention patronale de l'industrie horlogère suisse, François Matile (red.), *Le rouage dégrappé. Les crises horlogères, une fatalité en voie de disparition?*, 1995.
- 9 "Ende der rückläufige Uhrenkonjunktur?", *Basler Nachrichten*, 14th of February 1972.
- 10 See Gottraux Emmanuel, *L'industrie horlogère suisse*, brochure published by the Federation of the Swiss watch industry for the Swiss national Fair in Lausanne, 1964, reprint in 1968, La Chaux-de-Fonds, 1968.
- 11 Fédération horlogère suisse, *L'horlogerie demain, Etude prospective de l'industrie horlogère suisse*, Bienne, 1967.
- 12 See "Ein Gespräch mit Gérard Bauer. Uhrensymphonie: Mit Variationen", *Neue Bündner Zeitung*, 24th of March 1972.
 Im Grunde genommen hat Gérard Bauer in den letzten Jahrzehnten ständig gegen sich selber gearbeitet: indem er unentwegt dafür eintrat, die Uhrenindustrie aus den Fesseln des Staatskartells zu befreien, hat Bauer auch seine eigenen Verbandsmacht geschwächt. Was die F.H. früher kraft Gesetzes durchsetzen konnte, muss ihr Präsident mit viel Charme, List, Ausdauer und Ausstrahlung auf freiwilligem Wege erreden."
- 13 The title "Minister" given to Gérard Bauer designed at the time the function of ambassador in Switzerland.
- 14 For genesis and development of electronical watches in Switzerland two recent books were newly written by people involved at that time: Max Forrer, René Le Coultre, André Beyner, Henri Oguey, *L'aventure de la montre à quartz. Mutation technologique initiée par le Centre Electronique Horloger, Neuchâtel, Neuchâtel*, 2002 and Thomas Perret et al. *Microtechnique et mutations horlogères. Clairvoyance et ténacité dans l'Arc jurassien*, Neuchâtel, 2000.
- 15 Interview with André Beyner, La Chaux-de-Fonds, 18th of December 2001. The return's rate of the Bêta has been very low, which can be seen as a proof of its reliability.
- 16 A feature article published at the beginning of the 1980s presents the main issues. The author remembers that Switzerland had a monopole in watchmaking production since the Second World War and then notices the following facts:
 La Suisse était seule capable de répondre à une demande qui allait s'intensifier. Sa principale préoccupation était de produire, toujours plus. Il semble que de mauvaises habitudes aient été prises à cette époque, ayant entraîné des choix qui allaient se révéler désastreux. [...]

Ainsi, la montre à quartz, bien qu'inventée au Centre électronique horloger de Neuchâtel en 1967, n'a-t-elle guère intéressé les horlogers suisses. "L'industrialisation de la montre à quartz a été plus lente chez nous que chez nos concurrents ...", dit aujourd'hui M. Rubin, porte-parole de l'ASUAG, parce que, jusqu'en 1974, le problème de tous les fabricants suisses était de trouver assez d'argent et de moyens techniques pour satisfaire la demande en produits traditionnels. Et quand vous êtes pressé par des demandes que vous n'arrivez pas à satisfaire, votre principal souci n'est pas de vous lancer dans une autre fabrication, assez différente ..."

[There is no electronics industry at the time in Switzerland] Et, comble de malheur, les horlogers suisses ne pouvaient pas deviner que le président Nixon ralentirait l'effort de guerre américain au Vietnam et qu'il amputerait les crédits de la NASA. Aussi, privés de ces deux juteux débouchés, les électroniciens américains se sont retrouvés devant des montagnes de microcircuits, et devant les coûteuses machines qui les produisaient en grande série, sans savoir à qui les vendre. Ils ont donc inventé de nouveaux produits: les calculettes électroniques, les jeux vidéo ... et les montres numériques. Ces montres, qui n'avaient plus grand-chose à voir avec un produit horloger, ont obtenu un succès inattendu, notamment auprès des jeunes consommateurs."

- in *24 heures hebdo*, weekly pullout of *24 heures*, 31st of October-1st of November 1981, 3 pages by Francis Gradoux, under the title "A l'heure de la concurrence".
- 17 Interviews with René Besson, Neuchâtel the 18th of March 2002, the 8th of April 2002 and the 22nd of April 2002 and with André Beyner, the 18th of December 2001.
 - 18 Stephens Carlene and Dennis Maggie, "Engineering time: inventing the electronic wristwatch", in *BJHS*, 2000, 33, pp. 477-497.
 - 19 Pieter Doensen, *Watch, History of the Modern Wristwatch Design 1950-1983*, Electric 1950-1993, Utrecht, 1994.
 - 20 Speech by Gérard Bauer, quoted by JR, "Assemblée générale de la FH à Bienne. 1975: une année difficile pour l'horlogerie" in *Gazette de Lausanne*, 12th of December 1975.
 - 21 See especially: Rapport d'un groupe d'experts mandatés par la FH, "L'horlogerie suisse dans la vision des dix ans à venir", in *Bulletin FH*, n°13, 30 juin 1977 (labelled as confidential).
 - 22 See M. K. (correspondent in Geneva), "Mouvements électroniques: Ebauches S.A. fait le pont entre prototypes et series", *Gazette de Lausanne*, 12th of April 1972 and Gil Baillod, "'SWISSONIC LINE', un programme électronique global d'Ebauches SA", *L'Impartial*, 12th of April 1972.
 - 23 The Japanese competition was known and documented, even if the language made difficult a fully understanding of the facts in Japan. In August 1970, industrial espionage about machine tool made the watchmaker feel anxious but up to an extent proud. In articles about the facts published in *L'Impartial*, (Gil Baillod, "Espionnage industriel en Suisse: la course a commencé au Japon ..." 11th of August 1970; Editorial by Paul Bourquin, "L'actualité horlogère II", 12th of August 1970) we feel contempt and fear but also pride: Swiss machine tool are good enough to be copied by the main competitor on the world market.
 - 24 Hong Kong is used as a transit market for the Far East. Swiss are the first watchmaking parts' suppliers in the 1970's. See Jean-François BLANC, *Suisse Hong-Kong. Le défi horloger*, Lausanne, 1988.
 - 25 The Roskopf watch is a simplified mechanical watch invented par G.-F. Roskopf in 1867 in La Chaux-de-Fonds. Its nickname was "the Proletarian". Since there was no patent in Switzerland at the time, this conception has been used by many producers, especially in the area of Soleure. Very soon a "Roskopf watch" is a

- simplified cheap mechanical watch, produced in large amounts and fashionable. It is often referred as one of the forerunners of the Swatch®.
- 26 Interviews with, among others, Gil Baillod, La Chaux-de-Fonds, the 24th of October 2002; René Besson, Neuchâtel, the 18th of March 2002, the 8th of April 2002 and the 22nd of April 2002; André Beyner, La Chaux-de-Fonds, the 18th of December 2001 and René Retornaz, Mézières, the 14th of August 2001.
- 27 Interview with Gil Baillod, La Chaux-de-Fonds, the 24th of October 2002.
- 28 This quotation refers to the buying of Zenith watches, Le Locle by Zenith Radio Corporation, Chicago.
- 29 See "Den Teufel an den Wand gemalt", *Vaterland*, 26th of April 1972. It shows the point of view of the American businessman, of Tschudin and of the Swiss Chamber of the watchmaking industry. It recalls that Swiss firms are bought by American corporations, an idea which doesn't appear in "Des prévisions peu réalistes", editorial, *La Suisse horlogère*, 27th of April 1972. Paul Bourquin, "Réponse à un Américain trop pressé qui prédit le chômage aux horlogers suisses", *L'Impartial*, 29th of April 1972, pick up the text of *La Suisse horlogère*, in order to show that reorganization and technical changes don't bring unemployment. The news item of the Swiss Telegraphic Agency, "Le point de vue d'Ebauches SA", *L'Impartial*, 29 avril 1972, completes what we could read in the article of *Vaterland* (see reference above) about the posture of the biggest Swiss producer of work blanks.
- 30 ATS, "Quatrième société d'horlogerie suisse. Le groupe Movado-Zenith Mondial passe sous contrôle américain", *Feuille d'Avis de Lausanne*, 2 juin 1971; E.O., "Groupe Zenith: une solution suisse était-elle possible ?", *Feuille d'avis de Lausanne*, 3 juin 1971; ATS, "Le président de la FH et l'affaire Zenith. M. Bauer: 'nous devons nous garder de tout nationalisme ou protectionnisme'", *Gazette de Lausanne*, 4 juin 1971.

These reactions take into account all alternatives to the buy by the American corporation. Nonetheless they always mention union with other Swiss watches companies, never a possible financing by Swiss banks. We can see that the idea of watchmaking as a national industry branch to be sustained with Swiss capital is not at stake in the beginning of the 1970s. Deciders think then in terms of 'industry' (industries must be financed by others industries) not yet in term of 'national branch' (a Swiss industry should be sustained by Swiss assets).

- 31 See especially the account by Charles THOMANN, *Les dignitaires de l'horlogerie. La merveilleuse et tragique épopée des derniers régleurs de précision qui participaient aux concours de l'Observatoire chronométrique de Neuchâtel, 1923-1967*, Neuchâtel, 1981
- 32 FOG, "Quarante mille travailleurs" *L'Impartial*, 13 juin 2002
- 33 We can quote as a meaningful example this feature article published in *La lutte syndicale* of the 13th of March 1972 by G. Tschumi, chairman of the trade union, "Faillite de Tramelan SA: ce qu'il faut en penser". He remembers that the number of Swiss watchmaking firms has decreased from 2332 to 1618 between 1955 and 1970. He claims that it is normal and irreversible:

"Pour être concurrentiel, pour améliorer l'équipement technique, pour faire une publicité valable, il faut des moyens financiers, il faut une certaine envergure. En soi donc, la disparition des entreprises horlogères non viables n'est pas un mal. Cette disparition ne signifie pas forcément la disparition d'un atelier, ni même de postes de travail. C'est la disparition d'une raison sociale. Les concentrations, les absorptions ne conduisent pas forcément à des usines géantes, à des bâtiments gigantesques, mais à grouper sous une même direction des centres de production répandus dans toute la région horlogère. Cette évolution ne se fait pas sans heurts et sans quelques souffrances. Pour les limiter, pour garantir la sécurité de l'emploi, il faut que l'information se fasse rapidement pour que les travailleurs et leur syndicats aient leur mot à dire assez tôt et pour qu'ils puissent jouer leur rôle".

34 In the binder *Uhrenindustrie: Zirkulare an die Sektionen 1971–1979* cote: 04–0067, lieu: 54.1.5 we can read a circular of the 26th of February 1975 telling what to do during the recession. It is labelled as highly confidential (French text: "Etablies par la FTMH, ces directives n'ont pas encore été homologuées par les employeurs, qui les ont cependant accueillies avec bienveillance. Elles ne doivent donc en aucun cas être divulguées par voie de circulaire ou par la presse, mais sont destinées à vous faciliter les pourparlers avec les employeurs").

The circular says that:

- Every cut in working hours (short-time working), decision to fire employees etc. must before be discussed with the trade union secretary of the area
- Before every short-time working, it must be sure that no foreign worker, temporary worker etc. has been hired at lower wages than former employees.
- In order to maintain "the Labor Peace" (in French: la Paix du travail. Its refers to the agreements between trade unions and employers' convention in 1937 which prevented strikes since that time), it must be avoided to fire union workers.
- The first redundancies are for, in that order and unless these people are unionist:
 - workers having a pension and no dependants,
 - "frontaliers" (commuters from across the border) and foreigners with B permit [residence and work permit to be renewed every year] without dependants
 - Swiss women, married, without child
 - "frontaliers" and foreigners with B permit with dependants
 - wives of Swiss workers with dependants

35 There are very interesting pieces of archive in the FTMH about those controversial themes. I'll mention: *Uhrenindustrie: Congé de formation, Paix du travail, situation économique, salaires conventionnels, salaire 13e mois 1974–1979*, cote 04–0075, lieu 54.2.2; *Uhrenindustrie: Zirkulare an die Sektionen 1971–1979*, cote: 04–0067; lieu: 54.1.5; *Uhrenindustrie: Problèmes en cours, 1972–1979*, cote 04–0054, lieu 54.1.2; *Registratur André Ghelfi: Entlassungen und Betriebsschliessungen 1971–1984*, cote 01–0154, lieu 44.4.3

36 They won't use the usual selling channels, will sell at very low prices and above all sell watches by making the whole watchmaking industry looking cheaper. For them, the watch is a consumer good like any other, a point that Swiss watchmakers cannot accept, since they have a long-time history. Japanese watchmakers will agree up to a certain point.

37 Jean-François BLANC, *Suisse Hong-Kong. Le défi horloger*, Lausanne, 1988

38 Fédération de l'industrie horlogère suisse FH, *Horlogerie suisse et mondiale en 2004*, Bienne, 2005

39 Cf. some conversation of guides in the International museum of horology with visitors, among them retailers in the Caribbean area (Jamaica).

40 In 1983 only one firm is remaining, which will become the Swatch group.

41 It must be taken into account that in the beginning of the 1980s the state of the Swiss watchmaking is far clearer than in the 1970s. Only two firms remain and they are merged. It is a lot more easier for bankers to know where to invest. It could explain the lack of implication in the 1970s, when Zenith watches is bought by Zenith Radio Corporation for example.

42 Interview with Pierre Dubois, former State secretary of the economics department of the canton of Neuchâtel, Neuchâtel, the 9th of January 2002

43 The canton of Neuchâtel put in the finance of a one-year job of an historian to make an inventory of the watchmaking heritage of the canton of Neuchâtel. This research was launched because of a motion set and accepted by the parliament of Neuchâtel. See *Motion Giovanni Spoletoni et Viviane Houlmann, Mise en valeur du*

patrimoine horloger du Pays de Neuchâtel, set the 24th of June 2002 and accepted the 25th of March 2003. A political report should be presented in fall 2005.

44 See www.watchvalley.ch.

45 Diagram taken in the book by Georges Piotet, *Restructuration industrielle et corporatisme. Le cas de l'horlogerie en Suisse 1974-1987*, [Ph. D. Thesis] Thèse de doctorat présentée à la Faculté des Sciences Sociales et Politiques de l'Université de Lausanne, Lausanne, 1988.

46 Graph drawn thanks to data found in: Hansjörg Siegenthaler (dir.), *Statistique historique de la Suisse*, Zurich, 1996; *Annuaire statistique de la Suisse*, Bureau fédéral de statistique (from 1979: Office fédéral de la statistique), volumes 1969-1984, Bâle, 1970-1984 and Georges Piotet, *Restructuration industrielle et corporatisme. Le cas de l'horlogerie en Suisse 1974-1987*, [Ph. D. Thesis] Thèse de doctorat présentée à la Faculté des Sciences Sociales et Politiques de l'Université de Lausanne, Lausanne, 1988.

47 Graph drawn thanks to data found in: Hansjörg Siegenthaler (dir.), *Statistique historique de la Suisse*, Zurich, 1996; *Annuaire statistique de la Suisse*, Bureau fédéral de statistique (from 1979: Office fédéral de la statistique), volumes 1969-1984, Bâle, 1970-1984 and Georges Piotet, *Restructuration industrielle et corporatisme. Le cas de l'horlogerie en Suisse 1974-1987*, [Ph. D. Thesis] Thèse de doctorat présentée à la Faculté des Sciences Sociales et Politiques de l'Université de Lausanne, Lausanne, 1988.

48 Diagram drawn after the computer graphics of the article by John Wicks and Ralph Büchi, "SSIH und ASUAG. Trumpf im Sumpf", *Schweizerische Handels-Zeitung*, 18th of November 1982.