

# **Circulation of Competencies and Dynamics of Regional Production Systems\***

ALAIN BERSET<sup>1</sup> AND OLIVIER CREVOISIER<sup>2</sup>

<sup>1</sup>*Senator, Swiss Parliament*

<sup>2</sup>*Institute of Sociology, Research Group in Territorial Economy,  
University of Neuchâtel*

*As borders become more open, regional production systems (RPSs) are tending to become increasingly specialised. In any given sector, two or three cities or regions compete on a global scale while other systems disappear. The specialised RPSs concentrate the know-how, the knowledge, the major companies, and the most important research and training institutions relating to a given sector. As capital moves around freely between these various spaces, labour and competencies are increasingly described as the main anchoring factors of these activities. Many authors speak of the existence of specific know-how, or of a specialised labour market. Consequently, what role do migrations play? In the post-war "Fordist" period, migrations above all provided cheap labour for the industries of northern countries. Today, the profile of migrations has diversified considerably. They are located at the two extremes of the pyramid of competencies. Our hypothesis is that movements of highly qualified labour play a determining role in the renewal of those RPSs that are competitive on a global scale. This paper considers in parallel the historical evolution of three Swiss production systems representative of current transformations (watch industry, micro-technologies, advertising/marketing) and the evolution of migrants' competencies. Based on empirical surveys, the link between these evolutions is examined, in particular from the point of view of innovation and structural change. Our assumption is that migrations can be the driving force behind the dynamics of knowledge and competence. Consequently, the insertion of migrants and the various ways in which this integration takes place in the workplace becomes the central question. A typology of the relations between the insertion of migrants and regional industrial dynamics is built up, ranging from rigidified productive structures to the creation of new competencies and new economic activities.*

I ncreased competition on a global scale is deepening the spatial division of labour in two directions. On the one hand there is a more profound traditional, functional, “vertical” spatial division of labour (Massey 1995) between central regions or nations with high wage levels and peripheral regions or nations with low wage levels. On the other, there is also a more marked “horizontal”, competitive spatial division of labour, i.e. a progressive differentiation between regions in terms of evolving blocks of specific competencies (Perrat 2005; Storper 1992).

This paper focuses on the second phenomenon. In any given sector, the reorganisation of production systems reveals a tendency to adopt a form of global competition between two or three regions or cities. These regions or cities concentrate competencies, major companies and research institutions within a particular sector. As capital circulates more or less freely between these various poles as a result of the development of the financial industry, labour and competence increasingly appear as the most decisive anchoring elements for internationally competitive production systems. Various authors have advanced explanations for this: the existence of specific types of skills and resources at the regional scale (Colletis and Pecqueur 1995; Crevoisier et al. 1996; Le Boterf 1995), the existence of a market for specialised labour in industrial districts (Becattini 1992; Garofoli 1992) or in “global cities” (Sassen 1991), etc.

If labour and competencies are now decisive anchoring factors, what is the role of migrations? Within the “Fordist” system of the post-war years, migrations above all made it possible to provide a cheap labour force for rapidly developing countries in Northern Europe. Today, the profile of migrants has diversified considerably. These people are now situated at both extremes of the qualifications pyramid and it is necessary, for the most qualified, to shift from the paradigm of allocation to the paradigm of the circulation of competencies (Nedelcu 2004).

Our hypothesis is that migrations play an essential role in maintaining competitiveness among regional production systems (RPSs). This impact can be described along two axes. First, there is a diversification of the contemporary forms of anchoring migrants in the RPS, and second, the impact depends on the way in which competencies circulate.

The first part of the paper forms a conceptual framework revealing the circulation and anchoring of competencies. We show, in particular, that the traditional approaches oriented towards mobility of the factors only apply to special cases, and that these are not conducive to understanding today’s transformation within migratory flows. This typology, although presented at the beginning, in fact emerged during the research. It should therefore be considered as a result of the confrontation between empirical findings and conceptual work during all the research and not as an *a priori* intellectual construct.

In the second part, we draw parallels, using survey data from the historical evolution of three RPSs in Switzerland (watchmaking, micro-technology and

publicity/marketing) on the one hand, and from the evolution relating to ways in which competencies circulate and migrants become integrated, on the other. These three sectors are representative of current changes within production systems. In fact, watchmaking mobilises both traditional areas (marketing, design, etc.) and new ones, thus bringing it closer to the model of industrial districts; micro-technology is evolving rapidly thanks to developing technologies, and evolving in forms modelled on techno-poles; finally, publicity and marketing activities are characteristic of metropolitan systems.

In the third part, we synthesise the results obtained in order to reveal the relation between the circulation of competencies and the dynamics of RPSs in the form of a table. We notably discuss these results in relation to the local system of training and research.

Finally, in conclusion, we return to the necessity of moving from the paradigm of mobility and localisation to that of the circulation and anchoring of competencies, in order to develop new theories on migrations and on regional development.

## **1. Circulation of Competencies and Regional Anchoring**

### *1.1. Two approaches to regional development*

Today, we can pinpoint two major models of regional development that correspond to two approaches to migrations.

On the one hand, there is development based on the attractiveness of the region for companies, labour and capital. Attractiveness is characterised by localisation factors. This approach, based on the *mobility* and the *localisation* of production factors, has dominated economic study of migrations to date. In this perspective, development takes place because a source region presents characteristics that are inferior to those of a target region, whether in terms of salary or availability of employment. Migration thus appears as the *correction of an imbalance* that is essentially *quantitative*. In fact, moving to one area from another reduces the differences between factors that take the same form (salary level for example), but have different values depending on the area.

On the other hand, regional development can be seen as the *transformation* of an RPS thanks to *innovation*. Competitiveness on a global level is acquired by developing *regional production systems* specialising in a certain sector, technique or type of product or service. These RPSs do not maintain their advantage thanks to lower costs, but rather thanks to their capacity for making their specialised competencies evolve dynamically and autonomously (following their own logic) as a result of integrating new knowledge. In such a perspective, migrations are not seen as correcting an imbalance between a source and target region. Migration makes it possible to *maintain the competitiveness and coherence of an RPS*, while

allowing competencies to circulate, combine and develop because they confront one another. It is thus the *qualitative* articulation that becomes the decisive factor. To grasp this aspect, the notion of *competence*<sup>1</sup> becomes a central issue. In fact, in an environment that is becoming more and more uncertain, the technical division of labour that has characterised production within most industrial sectors for fifty years is showing a tendency to be replaced by a *cognitive* division of labour. Companies are favouring the constitution of coherent units that place the emphasis on competencies. “Through this modification to the nature of the company’s activities, it is the very principal on which the division of labour is based that is renewed. The principle of the division of labour thus appears to be in the process of sliding from a logic of technology and yield towards a logic of competencies and apprenticeship” (Moati and Mouhoud 1994: 52). Thus, the dynamics of companies generate new needs for competency or call for a recomposition of the available competencies (Flynn 1993). This transformation is even more evident within activities that are considerably exposed to technological changes. To date, very little research has been done in order to understand how RPSs identify and mobilise competencies that have been developed elsewhere. Most research emphasises the specific characteristics of local know-how (such as in the industrial district approach) or the coherence between the training/research system and the companies (on the model of “techno-poles”).

### *1.2. Typology linking the circulation of competencies and regional development*

In this section, these two approaches to regional development and migrations (quantitative in terms of costs and qualitative in terms of anchoring competencies) are combined in order to construct a typology of forms of anchoring and mobility.

It is worth noting here that this typology was drawn up during the research, in parallel with fieldwork. It is not the result of abstract theoretical thinking. Short examples are provided for each of the cases. Nevertheless, as it hinges largely on knowledge of the case studies, the typology can only be fully understood when referring to the empirical research, of which various examples are provided.

Tarius (1996; 2001) developed the notion of circulatory territories in order to show the diversity of forms of mobility and of migrants’ relations with the different places through which they circulate. Starting from that notion, we describe the complex contribution of migrants to regional and local development with two narrowly linked processes. *Circulation*, on the one hand, characterises the movement of people and of their competencies from a source region towards a target region. *Anchoring*, on the other, is the way in which these people will become inserted within the firms that hire them. To give an example, certain

---

<sup>1</sup> Competence is a pertinent combination of formalised knowledge, techniques, know-how, attitudes (for example the knowledge of practices within a specific professional milieu), intuition, reflexes and habits. Competencies can exist only in an active way, as they are linked to activities, and “in situ”, i.e. within a specific local working context.

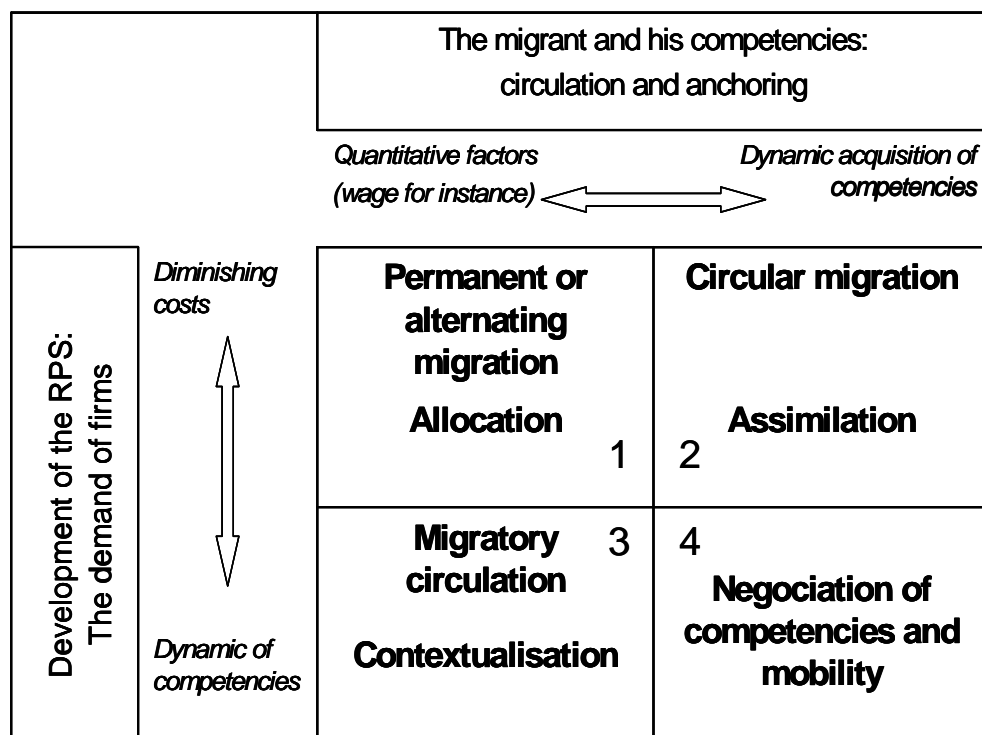
migration movements can be explained essentially in terms of wage differentials. Circulation and anchoring here will be very different from those movements caused mainly by the perspective of improving the competencies of individuals or of the job providers. In the first case, variations in wages may provoke the reverse movement. Anchoring will be weak. In the second case, anchoring will depend on learning processes. Understanding migrations also implies an understanding of the different modalities of circulation and of the anchoring of competencies (Figure 1) that characterise the relation between one migrant and the RPS that receives him or her. In a schematic way, we oppose *quantitative motives* (mainly wages and costs) to *qualitative motives* (learning and development of competencies) for circulation and anchoring.

Migration moreover consists of an encounter between an *individual* and a position offered by a *firm*.

From the viewpoint of the individual who changes location, is migration linked to the acquisition of new professional competencies, or is it mainly motivated by wage considerations? The *horizontal axis* makes this distinction. In general terms, two distinct consequences can be expected within an individual professional migration. Either it allows an individual to obtain a salary that is more interesting than that of the source region (because the employment possibilities or the salary rates are better in the target region), or the migration is considered to be “professionally beneficial”, i.e. it offers the migrant new areas of competency. The quantitative aspect of the question, consisting of asking what is the salary differential induced by mobility, offers only a limited explanation and represents one of the extremities of the individual axis.

From the point of view of firms, and more generally of the target RPS, is the aim to associate specific competencies in order to adapt to technological and market developments, or rather to reduce costs thanks to an immigrant labour force cheaper than that obtained locally? The *vertical axis* takes this question into account. On the one hand, the company strategy mainly consists of cutting its costs in order to remain competitive. Schematically, such strategies may be thought to rely on the production of stable goods and techniques, few organisational changes, few innovations and little learning. Hiring immigrant workers, which is less expensive than hiring locals, makes it possible to achieve this. On the other hand, the strategy of a firm can be oriented towards differentiation and learning in order to stay competitive. In such a case, innovation is crucial and it is necessary to integrate new competencies in technologies and products. Hiring migrants who will bring new and/or specific competencies may help in this respect. It is then possible to distinguish four cases.

**Figure 1:** Typology of Modalities of Circulation and Anchoring of Competencies within an RPS



Source: Authors' elaboration.

### 1.3. Allocation of competencies by cost: permanent or alternating migration (Case 1)

The first case presents instantaneous adaptation. The immigrant is first of all defined as having to adapt to an existing position, a little like a piece in a jigsaw puzzle. If such jobs are more often than not intended for unqualified workers, an identical form of anchoring can also exist for those who are more highly qualified. The transfer of competencies that are recognised or implemented within the source context into a post-migratory context depends on the technical and cultural proximity of the pre- and post-migratory contexts. Following this logic, the company does not seek to acquire competencies, but merely to make efficient use of the competencies available from the labour force working there. In such cases, where the anchoring factor is the cost, we speak of *allocating* competencies.

From the viewpoint of geographical and professional mobility, this allocation corresponds to permanent migration, or at least alternating migration (i.e. more or less regularly repeated migrations from the same source region towards the same target region). Seasonal workers are included in this category, because most immigrants who arrived in the Swiss labour market between 1950 and 1970 are

seasonal workers who later settled in the country. This type of geographical mobility, i.e. a “one-way ticket”, corresponds to the great majority of those who came to work in Switzerland, and has been the case for approximately thirty years.<sup>2</sup> It is a form of migration largely determined by the levels or conditions of work between the source and target regions.

The profile of those who migrate is thus typical of what is usually termed “immigrants” within European countries.

#### *1.4. Acquisition of competencies: circular migration (Case 2)*

In the second case, awareness of immigrant status may lead individuals to bring about a repositioning in companies of the target region. Immigrants, if they are capable, may use a strategy of *acquiring local competencies* at the workplace or within training institutions. In the same way, if they are capable of distancing themselves from their immigrant status, they can play on their “difference” to set in motion, or create, competencies that would not have been recognised as such in the pre-migratory context (unremarkable in the source context and rare in the target context, such as linguistic competencies). In this second case, linguistic or other home-grown competencies can be mobilised by immigrants to participate directly in defining “competency”. For them, this case corresponds to a form of professional *assimilation*, a process at the end of which the competencies of the migrant totally fit within the local mix, even if some components of those competencies issue from the context of origin.

From the immigrants’ point of view, this case represents a geographical and professional mobility oriented towards qualification: the objective is to acquire new competencies (usually readily available in the labour market of the target region) in order to return and capitalise on these in the source region (where these competencies are supposedly considerably less easy to find and thus constitute an advantage to those who master them). This kind of mobility includes a circuit followed by migrants in order to develop their competencies and eventually return to their region of origin. In opposition to a simplistic treatment of permanent migrations, which was often considered from an economic point of view as a total break with the country of origin, such migratory movements are increasingly known as *circular migration* (Dupont and Dureau 1994), or *brain circulation* (Gaillard and Gaillard 1997; 1998).

#### *1.5. Contextualisation of competencies: migratory circulation (Case 3)*

The third case – that of *contextualisation* of the competencies of migrants within the target firm - is different to the first two in that it is the company that evolves and seeks out *specific competencies* among migrants. The company, under pressure

---

<sup>2</sup> Even if alternating migration has been long maintained by migratory policy in order to restrict direct immigration (seasonal worker status, type A work permit), the automatic conversion of seasonal A permits into annual B permits constituted the basis of permanent migrations.

from the environment, becomes specialised and evolves according to blocks of knowledge centred around competencies. To do so, it seeks out competencies that are rare or non-existent locally at certain times. Migrants bring such competencies with them, and these competencies are implemented, and contextualised, within the company. The anchoring factor of the migrant is thus the diffusion of individual competencies in the target context. However, although these competencies may correspond to what the employer is seeking at a given moment, nothing makes it possible to affirm that this situation is stable. In such a case, an employer may recruit someone with the competencies of interest, and may break the relationship rapidly if markets and technologies change.

*Migratory circulation* characterises the migrant with rare professional competencies, and who moves from one company to another depending on the needs of employers. This case corresponds to “transient” migrations (Findlay 1993) or migrations with a dynamic migratory space (De Tapia 1996; Dorai et al. 1998) or also what Gaillard and Gaillard (1997) termed “brain circulation”. These are generally highly qualified migrants who move about within an international network of competencies, depending on the needs of the companies within this same network. They are usually *specialists* who possess rare competencies, or management-level employees within large concerns who are moved to affiliates abroad.

#### *1.6. Negotiation of competencies and mobility (Case 4)*

The fourth case deals with the principle of *negotiating competency and mobility*. In a changing environment made up of blocks of specialised knowledge, immigrants must constantly adapt their competencies. Here, notions of distancing and instrumentalisation take on their full dimension from both the immigrants’ point of view and that of the company. Note that this rarely takes place on recruitment, but is more often the result of an evolution within working relations.

*Negotiated mobility* describes cases in which both immigrants and the professional context in which they exist draw benefit from mobility. Cases linked to internal migrations within a company may enter into this category (see, for example, Pierre 2003). Within large companies whose labour force is present in several countries or even on several continents, international migration may form part of a career plan negotiated between employee and employer. Mobility is negotiated and controlled by the company. It allows individuals to improve their competencies by gradually gaining access to various positions within the group employing them. Such career paths may also take place among different companies, where the person concerned follows a strategy for acquiring competencies within an international network of companies active in similar sectors. Note that in this type of case, migration is rarely permanent: it is part of what we shall call an “individual training circuit”, a little like circuit training within sport. The objective is to test the individual’s competencies by favouring the acquisition of new competencies. This method used

by companies is fruitful for individuals: and by confronting those in new situations, it contributes towards developing their professional experience.

To summarise, this typology takes into consideration new forms of anchoring and of the circulation of competencies, while integrating the traditional forms of migration. In fact, in Case 1, the approach to the phenomenon is based on a characterisation of the allocation of competencies, and is restricted to noting whether there is a correlation between supply and demand for competencies at a precise point in time. The three other cases bring new dimensions to the subject. First, they bear in mind the *dynamic* process of anchoring individuals by the company, or of the individual's acquisition of competencies. This dynamic aspect also takes into consideration the various temporal aspects of circulating competencies, ranging from brief stays to permanent migration. Second, this typology stresses the difference between quantitative anchoring (as a result of costs or salary) and qualitative anchoring (innovation and the acquisition of competencies). *We can thus understand not only how migrations can correct certain imbalances in the labour market, but also the way in which the circulation of competencies allows regional production systems to acquire the competencies that are crucial for their adaptation to changes within technologies and in the markets.*

## **2. Changes within Three Regional Production Systems**

This section applies the typology developed above to three RPSs in western Switzerland: watchmaking, micro-technology and communication. These three sectors have the advantage of covering a large extent of the current economic changes taking place. In fact, watchmaking mobilises both traditional areas of competency (micro-mechanics) and newer ones (marketing, design, etc.), thus bringing it closer to the model of industrial districts. However, after a period of major innovative activity, this system has been progressively integrated within international groups. Micro-technology is a relatively new industry that is evolving rapidly along with changes in technology. These activities are mainly developing from training and research centres, on the techno-pole model. Finally, and under the heading "communication", we group together publicity, marketing and design activities. These services are relevant to numerous sectors of activity, and are characteristic of metropolitan systems.

The empirical part of the study is based on several research projects carried out by the same research group at different periods. The first was a survey on the integration of migrants in small and medium firms and their impact on innovation (Berset et al. 2000). It concerned the watch industry, the micro-technologies industry and communication services, and consisted of interviewing migrants about how their lives and jobs developed over time, how their competencies evolved and how they became integrated within their present position. Complementary interviews were systematically carried out with managers of the same firm in order to understand the links between, on the one hand, migrants and their competencies

and, on the other, innovation and changes in the firm. Moreover, demands were made about the perception and eventually company policy towards these competencies. In total, seventy-four interviews were held. Other older surveys about the transformation of the same RPSs in Switzerland, carried out by the same authors, are also used. The most important one was dedicated to the dynamics of competencies in industry (Crevoisier et al. 1996). Approximately one-quarter of the interviews made within this survey nearly ten years previously had immigrants as their subjects. Other research works were devoted to gaining a more general understanding of the evolution of production systems (Corroleur et al. 2000; Crevoisier 1993b), thanks to which it became possible to establish links between micro-observations made within firms and regional dynamics.

### *2.1. Watchmaking between 1950 and 1970: the “immigrants” lead to more rigid production structures*

#### 2.1.1. Structural evolution

Between 1950 and 1970, the general context was one of stability in products and technology, of ongoing growth in demand, and of a labour force shortage. New arrivals in companies started at the bottom rung of the ladder, carrying out simple tasks for which a maximum of a few weeks’ training was necessary. Their competencies were those inherent to the position they held, internal to the company and handed down in a hierarchic way by the workshop foreman.

#### 2.1.2. Forms of insertion for migrants: the “immigrants”

The “immigrants” were set to work in standardised jobs, and the competencies they required were handed down by their hierarchic superiors within the company. The possibility of taking on foreign workers, basically from Italy and Spain, allowed the companies and their production levels to grow. This led to a marked drop in average qualifications, and to the organisation of work becoming more rigid.

The work was mainly unskilled and required few qualifications. The individuals within this category thus conformed to productive structures marked by great stability. Their insertion mainly concerned linguistic and cultural adaptation within a working team where the objective was the homogeneity of its components and attitudes. What counted even more was adapting to “in-house” production methods that could only be acquired within a given company.

#### 2.1.3. Forms of mobility: permanent migration

In the case of Switzerland, the vast majority of those sharing this type of professional insertion are nationals from Latin countries (i.e. Italy, Spain and Portugal) who, after migrating, took the decision to settle in the target region for a long period, at least until their retirement. Given this past or present project to become permanently settled, the migrants’ desire to become integrated was strong

in both social and professional spheres. Adaptation responded to a professional obligation, while also taking on a strategic dimension, i.e. that of the learning of a language and behavioural norms: assimilating them was considered to be a socio-professional investment.

Most such immigrants were unskilled workers. At the outset, it was mainly men who immigrated, but over time, a certain stabilisation of this population took place. Reuniting families in Switzerland also allowed the mobilisation of a female labour force. This migration – initially seen as temporary – thus became permanent.

Immigrants active in watchmaking are relatively numerous (approximately 40 per cent of the labour force). Most of them arrived in Switzerland without any training in the watchmaking sector, but found work there and received their training “on the job”. Geographical migration, and the constraints linked to an unfavourable economic environment in the source region, preceded professional mobility.

#### 2.1.4. Impact of migration: more rigid structures develop

During the 1960s, the watchmaking RPSs became increasingly organised and rigid. This led to rapid standardisation, an increase in the division of labour and, above all, a marked decline in workers’ qualifications. Until 1970, recruiting foreign workers made it possible for companies to grow. However, this growth led to the *productive structures becoming more rigid*: the low cost of foreign labour favoured postponing the time during which new investments should have been made. In fact, it was less costly in the short term to handle an increase in growth by hiring workers than it was to invest in more efficient equipment. In the long term, however, this facility became a trap and led to the industry falling behind the times on a technological level.

## 2.2. *Watchmaking between 1982 and 1990: the “specialists” create new markets*

### 2.2.1. Structural evolution

During the 1980s, watchmaking first underwent a major crisis and then a repositioning in the market, thanks to the development of products linked to fashion and luxury. From a product that told the time, a watch became a status symbol. This change, which made it possible to save the industry and then to make Swiss watchmaking successful, took place via the integration of competencies in the areas of marketing, design and communication: aspects that had hitherto been absent within the region and the sector. From this point on, it was the market and customer relations that dictated the products, technologies and working methods, including production workshops. The change in perspective was considerable.

### 2.2.2. Forms of insertion of migrants: the “specialists”

The absence, or in any case the insufficient amount of competencies in design, communication and marketing in the watchmaking RPS was to heighten the need for foreign specialists, who would bring with them not only technical competencies but also an awareness of consumer requirements in the major export markets. In addition, the innumerable different styles, technologies and materials used – that characterised the sector – called for foreign technical specialists at various points in time.

### 2.2.3. Forms of mobility: “migratory circulation”

Watchmaking companies called upon numerous specialised competencies in the areas that they did not master and that were lacking or rare within the region. At the outset, anyway, this was a case of migratory circulation in the sense that calling upon these specialists only took place at certain times: for example when setting up a publicity campaign, designing a new collection, or introducing techniques for working a particular material. With time a certain number of these competencies, although not needed regularly, nevertheless became central to the development of the RPS. This was particularly true for design and for publicity and marketing. The development led to a certain number of foreign specialists settling in the region, meaning that the migration of such experts became permanent.

### 2.2.4. Impact of migrations: creation of new markets

The contribution of new competencies and the linking of these to existing know-know took place partly as a result of immigrating specialists in these sectors. The possibility of attracting these competencies, plus the interest shown by these specialists in the watchmaking sector as it deployed its activities, meant that this RPS could be reorganised to a considerable extent. The change in the sector’s activities required linking up with international networks in the sectors of design, publicity and marketing, with which the region had had no connections in the past. On the production side, the circulation of competencies led to rapid access to very diverse technologies that could create the product in various forms, thus allowing the product to evolve with fashion (as for example the use of different materials).

## 2.3. *Watchmaking since 1990: “trans-nationals” provoke loss of autonomy*

### 2.3.1. Structural evolution

The renewal of the watchmaking industry and the impressive growth in its profits aroused the interest of both national and international investors. If we take the development of the Swatch Group – which bought up numerous watchmaking companies – as an exception, virtually all other companies in the watchmaking industry have been bought by international industrial conglomerates and financiers.

In parallel, the luxury, mechanical segment within watchmaking has developed on the basis of local competencies.

### 2.3.2. Forms of insertion of migrants

In this context, the profile of the immigrants has once again changed considerably: it is now a question of managers delegated by a concern's headquarters to manage local companies. We could call them "transnationals", i.e. those at director level, heads of departments, etc. with a high level of professional competency in terms of diplomas and experience. The management competencies they bring with them are simply put to work in a local context. They usually have the language of the company headquarters as their working language (French, Italian or English).

In the mechanical, luxury segment, immigrants for whom watchmaking is a passion and who wish to acquire these competencies have come to Switzerland. Their anchoring process took place via a post-migratory training period within the region. Several institutions offer such courses.

### 2.3.3. Forms of mobility

Managers employed by multinational firms often come from abroad and tend to move on to other regions and countries after a certain number of years. In fact, a period spent in a different country is part of the career path for employees of such concerns. This is migratory circulation in the sense that for those who occupy these positions, the time spent in such an RPS is a phase to be completed before returning to occupy a more senior position at headquarters or in more central regions.

Concerning the immigrants who are attracted by the mechanical, luxury sector of watchmaking, we can speak of circular migration as their primary objective is usually to obtain training in the host region in order to return to their source region. However, for several of those interviewed, this return led to professional failure so they returned and settled permanently in the region.

### 2.3.4. Impact of migrations: loss of autonomy of subsidiaries of large groups

The impact of the arrival of foreign managers and their competencies within the watchmaking RPS represents a decline in terms of all higher-level, specialised tertiary positions in the region. In fact, management competencies are no longer worked out and dealt with "on the spot", as was the case previously, but are now imported and re-exported without this having any considerable impact on the region. Managers attribute services with high added value (design, marketing, legal advice, etc.) to centralised services or headquarters. This increased spatial division of labour questions the local capacity to develop such new products and technologies. The evolution suggests an increasing and exclusive concentration on manufacturing functions.

Within the luxury, mechanical sector, the fact that the immigrants follow local training has made it possible to reproduce local know-how, for which the demand is extremely high.

## 2.4. *Micro-technology*

### 2.4.1. Structural evolution

Micro-technology can be characterised by the combination of several types of technology, and mainly micro-mechanics, micro-electronics, optics and materials sciences (Maillat et al. 1995). Cameras, sensors of all types, measuring apparatus for numerous types of medical equipment such as endoscopes, etc. are typical micro-technology products. Centred on an evolution of technology rather than a stable ensemble of products, this RPS maintains its competitiveness by combining new technologies resulting from several areas of research (optics, micro-electronics, micro-mechanics, information technology, etc.). Those at the centre of companies within this RPS are above all multi-disciplinary engineers who have followed specially adapted training for this sector, which has evolved rapidly since the beginning of the 1980s because micro-electronics and computer science considerably challenge the traditional RPS of the region centred on micro-mechanics. So-called “micro-technology engineers”, able to combine these technologies in order to produce miniaturised and mobile devices, have been trained.

### 2.4.2. Forms of insertion of migrants: the specialists

However, specialists in areas that are combined – such as advanced micro-electronics – are often recruited abroad. In fact, they cannot be trained “on the spot” because of the small size of the RPS and of the very diversity of these specialities. Their anchoring in the companies and in the region’s research centres thus corresponds – at least at the outset – to the integration of new competencies that make it possible for the products and technologies to evolve.

### 2.4.3. Forms of mobility: migratory, possibly permanent circulation

The recruitment of these specialists is directly carried out abroad, by means of advertisements in specialised publications or via a network of relationships. Individuals thus migrate because of their competencies. They are hired by local companies that at first have relatively precise expectations. However, these expectations evolve considerably if the specialists concerned “make themselves a place” in the company or region. If they do not, they can leave again to offer their competencies elsewhere.

*Permanent migration:* in micro-technology companies, mobility within both the foreign labour force and that of Switzerland is relatively low. Foreigners hired for competencies that exist locally are generally those with unrestricted work permits,

meaning that geographical migration is, in professional terms, permanent in most cases.

#### 2.4.4. Impact of migrations: development of a combined-type technology industry

The impact of these migrations is considerable in the micro-technology RPS. In fact, this system could not be maintained without the regular renewal of advanced competencies that are combined within the RPS. They therefore have a significant impact on the technologies and products of the company, and thus to some extent they play a contributory role towards the development of such an industry.

### 2.5. *Communication*

#### 2.5.1. Structural evolution

Services for publicity, marketing and communication entail numerous competencies that are halfway between the commercial, artistic and information technology professions. Like other services to companies, publicity and marketing underwent appreciable development as of the mid-1980s. It is a sector typical of metropolitan centres. Its competitiveness basically depends on two elements. First, it depends on the attention paid to variations of attitudes among consumers and the capacity to anticipate tastes and fashion. Second, information and communication technology plays an essential role, and this sector is currently undergoing rapid change. Generally speaking, the competencies of individuals play a greater role in structuring this activity than do material investments. The articulation of competencies around coherent companies and production systems is thus meaningful.

#### 2.5.2. Forms of insertion of migrants: acquisition and contextualisation

Keeping an ear to the ground regarding markets often means translating tendencies developing elsewhere into a national context. This *contextualisation* often takes place via the circulation of those active in the major national and international centres for publicity and marketing. This geographical circulation allows them to acquire an awareness of social, cultural and linguistic variations in the market. Regarding the evolution of technology, this sector is a primary user of new information and communications technologies. It is particularly important to be at the “cutting edge” from this point of view. Here, too, circulation makes the rapid *acquisition* of new competencies possible.

#### 2.5.3. Forms of mobility: circular migration

The distinction between permanent migration and circular migration questions many existing notions of migratory and professional projects. These projects are, however, those that generate uncertainty for the researcher, either because a project can be frequently subject to modifications or, at times, because no such project

exists. Migratory circulation, which generates a circulation of competencies, corresponds – for the individual – to a permanent migratory status. This situation remains exceptional within watchmaking and micro-technology, but corresponds fairly well to a certain idea of the mobility of competencies in the communication sector.

*Migratory circulation:* Mobility is very highly regarded within companies in the communication sector. The creative aspects of professional activity within the sector – even if they are not the most important elements for all types of activity linked to communication – mean that here, mobility is recognised as a strategic competency. In communications, we are dealing with a branch in which competition and competitiveness come into play among all companies in the market, independently of their size. The “quality of the individual” therefore takes on considerable meaning here. Companies therefore attempt to exchange employees, thus allowing a certain circulation of competencies yet without running the risk of losing these individuals.

#### 2.5.4. Impact of migrations

The communication sector cannot function without a significant and international circulation of competencies. At a period when the same products are sold in numerous countries, communication makes it possible to adapt them to the characteristics of local consumers. In this context, migration cannot be dissociated from the sector’s evolution. It is by migration that innovation takes place. Innovation consists of translating competencies developed elsewhere into a local context.

### 3. Circulation of Competencies and Regional Dynamics

The changing RPS and the forms of circulation and anchoring described in the previous section can now be synthesised. This study shows that it is possible to establish a relationship between these two variables (Table 1). A connection thus exists between the evolution of the RPS and the forms of circulation of competencies encountered therein. We do not know whether or not these forms of mobility have reinforced the competitiveness of these systems. In fact, an RPS calling upon a migrant labour force can be considered either as a mark of dynamism or as a means of avoiding more difficult problems such as investing in the workforce. Two examples illustrate these points: one can be seen in the way that an RPS is influenced by migrations; the other is the impact of migrations on the local training system.

**Table 1:** Forms of Circulation of Competencies and Structural Changes within Three Swiss RPSs

RPS and period	Type of migrant	Circulation and anchoring of competencies		Structural change
		Type of mobility	Type of anchoring	
<b>Watchmaking 1950–1970</b>	Immigrants without qualifications	Alternating, then permanent migration	From the lowest positions; no competence required at the entrance; learning on the job	Drop in average qualifications. Structures became more rigid; lack of incentives for training
<b>Watchmaking 1980–1990</b>	Specialists in design/marketing	Migratory circulation	Integration and diffusion of new competencies	Reorganisation of the RPS around these new competencies. Repositioning of products with higher added value
<b>Watchmaking 1990–2000</b>	Transnationals, managers hired by foreign large companies	Migratory circulation; steps in careers oriented towards headquarters located in more central regions	From the top, No diffusion of competencies towards the rest of the RPS	Integration within international companies; loss of higher tertiary functions in favour to central regions
	Immigrants looking for watchmaking competencies	Circular, then permanent migration	Entrance via the lowest positions in the local labour market, then assimilation via training in an institution	Reproduction of local competencies thanks to local training system
<b>Micro-technology 1990–2000</b>	Specialists with technological competencies not available in Switzerland	Migratory circulation that may become permanent	Allocation or contextualisation	Maintaining local competitiveness thanks to the rapid combination of diversified competencies. The local research system allows new combinations
	Immigrants without qualifications, unskilled wives of migrants	Permanent migration and regrouping of families	Allocation	Lower costs within unskilled assembling operations
<b>Communication 1999–2000</b>	Specialists, creative experts	Migratory circulation	Acquisition and contextualisation Major, rapid diffusions	Continuous movement of the RPS around these new competencies. Repositioning of services within high value added sector

Source: Authors' elaboration.

### *3.1. Effects of migrations on RPS structures*

Current economic evolution consists of establishing a new international division of labour. The opening of national economies is bringing with it an increase in the international division of labour and a recentring of the production from each country towards a limited number of traded goods and services. For countries with high incomes, this recentring is taking place more often via innovation than via cost competitiveness. When we place this economic change in parallel with migratory flows, we are tempted to establish a succession. In fact, during the 1960s, the call for foreign labour was aimed at expanding the industrial sectors within a context of shortage of labour, technological stability and mass production. The characteristics of the immigrant labour force that interested receiving countries at the time were availability and the capacity to carry out predetermined tasks. In such a system, immigrant labour was not a driving force behind economic evolution, but simply constituted the extra fuel necessary to make the machine run faster. However, and with time, this system became dependent on the extra fuel, and the fact of deferring investments led to structures becoming more rigid (Stalder et al. 1994).

Today, competencies have become a much more central issue. As innovation becomes more crucial, access to a very broad and diversified international labour market appears as an important trump card. The “quality” of the individuals is becoming decisive, as is the capacity of companies to capture, mobilise and orient these competencies. In such a context, the circulation of competencies via migration plays a much more central role than it did in the past. Switzerland by no means possesses all the competencies necessary for adapting its activities or for the advent of new sectors. A country that offers comparatively high wages offers not only the possibility of finding the competencies its firms are looking for, but also incites them to imagine what they could produce thanks to those capabilities that they can mobilise. It opens up new development avenues.

This study has led to a better understanding of the role of migration in three sectors representative of the current changes in activity. In watchmaking, a traditional sector but one with a high innovative capacity, based to a large extent on micro-mechanical know-how, immigrants bring with them new, strategic competencies in the areas of design or marketing. These are competencies that were crucial to the evolution of the sector during the years 1985–95. As the sector identified the opportunity to develop in that direction, immigrants, especially from France and Italy, were attracted to it, thus making it possible to articulate these competencies – new for the region at that time – with the traditional local know-how (Crevoisier 1993a). In the area of manufacturing, on the other hand, immigrants still occupy unskilled positions. Often, moreover, they complete additional training in Switzerland and hold positions similar to those occupied by locals. In micro-technology, an area that is evolving rapidly and where training and research is carried out in several countries, the circulation of competencies plays a much more central role. The capacity to acquire specialised labour with capacities complementary to those found in Switzerland is a driving competitive force within

the sector. Finally, in design, publicity and communication, the circulation and integration of competencies is often the key to accessing markets, which are becoming more and more international.

While traditional immigration during the years 1950–70, which inspired the theory of production structures becoming more rigid, was based on the substitution capacity between new investments (source of uncertainty) and foreign labour (less costly and more flexible), a contrary situation exists today. The emphasis is now on complementary aspects between existing and developing activities and the necessary competencies to make production structures evolve. Immigration at the end of the 1990s became more a factor for the evolution and modernisation of productive structures, thanks to innovation. However, we must avoid a simplistic dichotomy here. The immigration of workers with few or no skills continues today, and services numerous sectors of the economy (hotels, restaurants, health sector, etc.). Generally speaking, however, the current role of immigration in economic activities is today much more of a driving force than in the past, and thus clearly goes beyond the traditional patterns.

### *3.2. Effects of migrations on local training systems*

Work on the national or regional innovation systems highlights the complementary aspects between economic activities and training and research systems. Nevertheless, these approaches mainly consider functional correspondences between training and research activities and firms. The issue of the labour market and labour mobility is generally not addressed. How does the circulation of competencies revolve around these questions? It seems clear that it is not possible, today, to train individuals in all the competencies needed by a competitive RPS. In fact, the area of training implies high fixed costs. Moreover, certain competencies may be essential for an RPS, without the number of employees being high. Even within the framework of a national economy, it is difficult to meet every need. In Switzerland, therefore, linguistic divisions within the country constitute a serious obstacle to sufficient specialisation of training sources at national level. The French-speaking area of Switzerland, where our study was carried out, has a population of only 1.2 million! Calling upon specialists trained abroad thus appears to be essential.

To what extent does a trade-off exist between setting up a regional or national source of training and attracting foreign specialists? In fact, companies are to an increasing extent seeking rare competencies that they can mobilise rapidly. They regularly exert pressure to obtain the necessary work permits. What should be the attitude of the state? Should it allow immigration or finance new types of training for nationals? Different elements must be taken into account: the types of competency required, the durability of the demand, the capacity of the companies to pay salaries for qualified nationals, etc. Moreover, there is an emerging need for increasingly specialised higher education, which in turn requires more and more

specialised curricula at both national and international levels. The circulation of students should also be taken into consideration.

This phenomenon of attracting qualified migrants is reinforced in Switzerland by the high general level of salaries, which makes it possible to bring in almost anyone. In less wealthy regions, we can see the opposite phenomenon developing: here, it is only possible to set up sources of training for specialists, as it is impossible to attract them from elsewhere ... and those who are trained in this way are then tempted to emigrate towards countries where they receive better remuneration for their competencies!

#### 4. Conclusion

Today, the change in the nature of borders and the falling costs for transporting goods, capital and personnel have considerably affected the changes within the RPS. In a context "... marked by the intensification of exchanges in general and of spatial mobility, groups of professional immigrants appear as a privileged group within current, new social and spatial dynamics" (Marotel 1993: 2). But how can we define the impact of these migrations on spatial economic dynamics?

The neoclassical approach to regional growth is based on the attractiveness of the wages of the region. Migrations correct imbalances in the labour market. This means seeing the issue from the viewpoint of individuals, independently of their environment, who are consequently able to choose the region where they wish to settle of their own accord. Basically, however, this approach can be equated to thinking that economic agents have their "heads in the clouds". From those "clouds" they observe various regions, each possessing a certain number of factors that distinguish them from the others in the eyes of these agents. This is the constitution of a "market" where the regions to choose between are on display and where moreover the choices can be regularly reviewed. The interest of such an approach is one of micro-economics: admittedly, it attracts our attention to the decision-making process regarding possible alternative choices about the localisation. Its main limitation, however, is that it implies considering attractiveness as a short-term aspect based mainly on individual decisions and not as a historical and spatial construct.

For this reason, in order to enrich migration studies, it is necessary to move beyond the paradigm of *attractiveness and mobility* of individuals to that of *anchoring and circulation of (more collective) competencies*, the latter being broader than the former. The RPSs are the result of the interaction of individuals, companies and the areas in which they are located, over time. The question is no longer "what region offers the best factors for localisation?" but "how are these RPSs constituted and how do they evolve?" The RPSs have a history and are characterised by relations that have been built up or broken down over time (Crevoisier et al. 1996). The individuals and the companies within an RPS are engaged in the production of the resources and needs of the local society. Thus, *understanding migrations also*

*implies revealing the needs generated by the dynamics of the RPS, and the possibilities that can be opened up by the mobilisation and anchoring of competencies generated elsewhere.*

Such a perspective makes it possible to formulate new research questions. First, is there now a relation between the dynamics of the RPS and the circulation of competencies via migration? This paper offers various elements that indicate that this is indeed the case. Flynn's study (1993) also follows this approach, and shows how interregional migrations allowed the region of Lowell (United States) to move from a traditional industrial structure towards the development of new activities. In fact, the technical change was possible thanks to the immigration of various categories of workers (highly qualified or unskilled) that were progressively grafted on to the labour force already in place. Restructuring this region (changing technologies, new products, creation of new companies, etc.) was therefore possible thanks to highlighting and making use of competencies from elsewhere.

This leads to the second question that can be raised: do the dynamics of an RPS create a call, a demand for competencies generated elsewhere, or is it the possibility of attracting competencies that incites local companies to change? This second question is essential in order to understand the impact of measures such as the free circulation of persons within the framework of the European Union: does this liberalisation facilitate changes within an RPS, or is it the driving force behind them?

## Note

\*The authors wish to express their sincere thanks to an anonymous reviewer for valuable and constructive comments on the draft of this paper.

## References

- BECATTINI, G. 1992. "Le district marshallien: une notion socio-économique". In: G. Benko and A. Lipietz, eds., *Les régions qui gagnent*, 35–55. Paris: Presses Universitaires de France.
- BERSET, A., WEYGOLD, S.-A., CREVOISIER, O., and HAINARD, F. 1999. "Les phénomènes de qualification-déqualification professionnelle des immigrants". *Revue européenne des migrations internationales* 3: 87–100.
- . 2000. *Main d'œuvre étrangère et diversité des compétences: quelle valorisation dans les entreprises?* Paris: L'Harmattan.
- COLLETIS, G. and PECQUEUR, B. 1995. "Les facteurs de la concurrence spatiale." *Dynamiques industrielles et dynamiques territoriales*. Toulouse: Du Colloque.
- CORROLEUR, F., BOULIANNE, L., DECOUTERE, S. and CREVOISIER, O. 2000. "Ville et innovation: le cas de trois villes de Suisse occidentale". In: O. Crevoisier, and R. Camagni, eds., *Les milieux urbains: innovation, systèmes de production et ancrage*, 69–99. Neuchâtel, Switzerland: Édition de la Division Économique et

- Sociale (EDES)/Groupe de Recherche Européen sur les Milieux Innovateurs (GREMI).
- CREVOISIER, O. 1993a. *Industrie et régions: les milieux innovateurs de l'Arc jurassien*. Neuchâtel, Switzerland: Édition de la Division Économique et Sociale (EDES).
- . 1993b. "Spatial shifts and the emergence of innovative milieux." *Environment and Planning C: Government and Policy*: 419–30.
- CREVOISIER, O., FRAGOMICHELAKIS, M., HAINARD, F. and MAILLAT, D. 1996. *La dynamique des savoir-faire industriels*, Zurich, Switzerland: Seismo.
- DE TAPIA, S. 1996. "Echanges, transports et communications: circulation et champs migratoires turcs". *Revue européenne des migrations internationales* 12 (2): 45–71.
- DORAI, K., HILY, M.-A. and MA MUNG, E. 1998. "La circulation migratoire: bilan des travaux". *Migrations études* 84.
- DUPONT, V. and DUREAU, F. 1994. "Rôle des mobilités circulaires dans les dynamiques urbaines. Illustrations à partir de l'Equateur et de l'Inde". *Revue tiers monde* 35 (140): 801–29.
- FINDLAY, A. 1993. "Les nouvelles technologies, les mouvements de main-d'œuvre très qualifiée et la notion de fuite des cerveaux". *Migrations internationales: le tournant*, 165–78. Paris: Organisation for Economic Co-operation and Development.
- FLYNN, P. M. 1993. *Technology Life Cycles and Human Resources*. London: University Press of America.
- GAILLARD, J. and GAILLARD, G. A. 1997. "The international mobility of brain: exodus or circulation". *Science, Technology and Society* 2: 2.
- . 1998. "The international circulation of scientists and technologists: a win-lose or win-win situation?" *Science Communication* 20: 106–15.
- GAROFOLI, G. 1992. "Les systèmes industriels de petites entreprises: un cas paradigmatique de développement endogène". In: G. Benko and A. Lipietz, eds., *Les régions qui gagnent – districts et réseaux: les nouveaux paradigmes de la géographie économique*. Paris: Presses Universitaires de France.
- LE BOTERF, G. 1995. *De la compétence: essai sur un attracteur étrange*. Paris: Éditions d'Organisation.
- MAILLAT, D., LECOQ, B., NEMETI, F. and PFISTER, M. 1995. "Technology district and innovation: the case of the Swiss Jura Arc". *Regional Studies* 29 (3): 251–63.
- MAROTEL, G. 1993. "Les marbriers de Carrare: Culture migratoire et expansion économique". *Revue européenne des migrations internationales* 9 (1): 95–110.
- MASSEY, D. 1995. *Spatial Divisions of Labour: Social Structures and the Geography of Production*, 2nd edn. Basingstoke/London: Macmillan Press.
- MOATI, P. AND MOUHOUD, E. M. 1994. "Information et organisation de la production: vers une division cognitive du travail". *Economie appliquée* XLVI (1): 47–73.
- NEDELUCU, M. 2004. "Introduction. Le saut paradigmatique: de la fuite à la circulation". In: M. Nedelcu, ed., *La mobilité internationale des compétences*, 9–18. Paris: L'Harmattan.
- PIERRE, P. 2003. *Mobilité internationale et identités des cadres: des usages de l'ethnicité dans l'entreprise mondialisée*. Fontenay sous Bois, France: SIDES.
- PERRAT, J. 2005. "Territorialised industrial policies and new spatial division of labour: Which stakes for socio-economic actors?" *Villes et territoires face aux défis de la mondialisation*. Dijon.
- SASSEN, S. 1991. *The Global City*. Princeton, N.J.: Princeton University Press.
- STALDER, P., FRICK, A. and SALZGEBER, R. 1994. "Die Auswirkungen der Ausländerpolitik auf dem Strukturwandel der Schweiz". Bern, Switzerland: Schweizerischer Nationalfonds. (Nationales Forschungsprogramm 27.)
- STORPER, M. 1992. "The limits to globalization: technology districts and international trade". *Economic Geography* 68: 60–92.

- TARRIUS, A. 1996. "Territoires circulatoires des migrants et espaces européens". In: J.-M. Berthelot and M. Hirschorn, eds., *Mobilités et ancrages*. Paris, L'Harmattan.
- . 2001. "Nouvelles formes migratoires, nouveaux cosmopolitismes". In: M. Bassand, V. Kaufmann and D. Joye, eds., *Enjeux de la sociologie urbaine*, 103–34. Lausanne, Switzerland: PPUR.

### **About the Authors**

Alain Berset, who completed his Ph.D. in economics at the University of Neuchâtel, Switzerland, is a senator in the Swiss Parliament. He was elected in 2003 as Social Democratic candidate for the Canton of Fribourg and in 2006 was nominated vice-president of the Council of States. E-mail: [alain.berset@parl.ch](mailto:alain.berset@parl.ch)

Olivier Crevoisier is director of research of the Research Group in Territorial Economy (RGTE) at the Institute of Sociology, University of Neuchâtel. He has worked and published intensively on regional development, participating in the research of the European Research Group on Innovative Milieus (GREMI) and focusing on the impact of the financial industry on real activities. He has also published several books on labour markets in the perspective of the institutional and territorial economy. Currently taking part in the EURODITE European research project on learning regions, he has been visiting professor or lecturer at the universities of Toulouse, Varese, Fribourg and the Swiss Technology Institute of Lausanne. E-mail: [Olivier.Crevoisier@unine.ch](mailto:Olivier.Crevoisier@unine.ch)