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The Italian "Industrial Districts" and the role of Information Technology

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Italian Industrial Districts (here ID) represent one of the most original forms of production in industrialized countries: a group of small family enterprises within a densely populated rural landscape produce textile, panty-hoses, furniture or mechanical goods. Their production is increasing at an Asiatic rate : 7, 8 even 10 % a year. Bagnasco, in a famous book (Bagnasco, 1977), identified three Italies : the north-western regions with big industrial companies (Piedmont, Lombardy), the Mezzo-Giorno with wide latifundias, low income, rural exodus and the power of the Mafias, and finally the "third Italy", the regions of the Districts mainly in the north-east (Veneto, Frioul), but also in the center (Emilia-Romagna, Toscana, Umbria), developing faster than most other regions in Europe.

The main originality of the ID is their organisation around local networks of personal communication systems which ensure their flexibility and their efficiency. The Districts have been able, up to now, to accommodate simultaneously individual initiatives and global organisation, solving in their peculiar way the main problem of modern economy. Production is distributed among small economic units, often within families. Cohesion is assured by personal ties, friendship and a common system of values. Information flows through heated discussions around a bottle of *grappa*, the local brandy.

For all its virtues, the system, however, is fragile. Increased competition through European unification and globalisation, as well as the development of information technology within enterprises (data base management, Intranet...) or between them (Internet) increase the need for modernisation and seem to create a "New Economy" while undermining local personal networks. Industrial districts cannot ignore the very rapid progress of Information Technology ; on the other hand, they might be destroyed by such developments. This paper tries and evaluates their present situation and the prospects they may face in a near future¹.

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1)- Districts' organization and the role of Information Technology

Bellandi identifies Industrial Districts through five characteristics (Bellandi *in* IRIS, 1996) :

- 1- a small region offering daily experiences of work in common, living together and/or meeting regularly;
- 2 – an economy depending on a main industrial sector;
- 3 – this principal industry is rooted in the region, i.e an important portion of the added value is created within the region;
- 4 – the main industry is based on a large number of complementary production units on the technical and commercial levels;
- 5 – local economy is based on many small or middle-size enterprises, quite independent of any large one.

We would like to add a sixth condition, probably necessary : demographic density in the District region is quite high .

1.1 – IDs' conditions of existence :

Such conditions are not met frequently : they are partly contradictory. A District requires a rural region with high densities but also modern local industries; a qualified manpower, with the participation of whole families in the work force; activities opened to world competition but preserving also local traditions and customs; small units much more independent than subcontractors usually are but able, at the same time, to adjust efficiently their production process; a mesh of closely related enterprises without too strong a leader.

Bellandi humorously indicates that IDs follow the "hornet model" : according to any physical law, it should not be able to fly, but it does fly. Districts succeed because of a flexible mixture of competition, collaboration and tacit conventions between actors. Families living at short distances know each other, exchange regularly goods, services and information on an informal basis, without written contract. They adhere to the same quality standards in production, to the same rules to decide in which order they will satisfy customers' orders, to the same social values.

Meldolesi (Meldolesi *in* IRIS, 1996) underlines the role of farmer's family structure still surviving in the ID and based on Mediterranean customs : a refuge into family values. An ID enterprise is actually a group of friends or parents related to an entrepreneur by a long practice. Such group is always available, living with and for the enterprise, with an impressive flexibility and a strong attachment to quality of work. Freedom of action is increased by a definite disdain of social laws. In a certain way, families succeed in IDs because they behave outside and sometimes against the legal national framework.

As a result, IDs offer very advantageous aspects : important cost reductions in transactions as well as in training and maintaining manpower, strong innovation capabilities due to neighborhood effects, population density leading to economies of scale. The strong redundancy of production units facilitates a Districts' adaptation to market fluctuations : marginal enterprises may stop producing when demand is low and turn to family activities or, on the contrary, work over-time if necessary. Of course, such abilities imply a mediocre productivity and a standard of living probably lower than what organized workers could hope for in an integrated enterprise : if the system ensures to the farmers a much better income than agriculture, there is

probably here a social deficit which has not been really evaluated. All in all, the Districts, however, have brought a surprising prosperity to rural regions.

For Silvio Conti (Conti *in* IRIS, 1996) quoting Storper & Walker (1989), a District's main characteristic is a triple flexibility : in the social division of work, **vertical disintegration** produces an agglomeration developing communications, personal contacts and a decrease of some costs (e.g. : transportation costs) ; **flexibility** generates a common labor market and creates a new organisation of production particularly profitable to enterprises which may hire or lay off workers according to the needs of the production cycle ; **flexibility in the District delimitation** contributes to technological innovation.

Organizing and managing these different forms of flexibility represent some of the most important tasks in *Information Technology*. A flexible division of work implies a complex management of responsibilities and tasks not only at a time, but also in a dynamic way, during the whole production and marketing processes. If this can be done in an informal way through personal contacts as long as work organization is not too complicated, it is doubtful that increases in production and in exports and new efforts for developing productivity in front of foreign competition could be realized with such primitive management tools. This is one of the main dangers the IDs will have to face and a domain where computers could offer a big help.

For Conti, an Industrial District integrates two different networks, each one corresponding to a type of knowledge : a hierarchical network where territorial links play practically no role, and a cooperative one built on local informal relationships based on personal contacts. Combination of these two networks of different kinds ensures the robustness of the system when exposed to competition. The first kind of network involves scientific knowledge codified in a formal way and transmitted through teaching. The second one, however, implies non-codified know-how acquired through everyday experience within a small group of workers in close contacts (Storper *in* IRIS, 1996).

The originality of the ID is due mainly to the second type of knowledge transmitted within groups of friends or families, children working as apprentice. Such transmission modes, however, are today in question. On one hand, the fantastic development of transportation means and, more important still, of electronic communications distends personal networks, swells the limits of the Districts and generates new forms of competition : relationships are not contained within each District any more. On the other hand, transmitting knowledge from a generation to the next one is not an easy and harmonious process : rural workers who created the Districts in the 1960/70s sent their children to university ; these come back with diplomas, formal knowledge and quite different ideas. Meanwhile, farmers who became successful managers keep their patriarchal mentality : they remain "padre/padrone" and want to manage their firm until their death. In this way, revolution in information technology is compounded by generation conflicts.

The future success of IDs seems to depend on their capacity to answer two questions :

1)- How can a production system profit from the enormous flexibility assured by a strong desegregation of production units and, at the same time, insure a sufficient coordination between these units ?

Information Technology whose main role is to insure fluid circulation of information, should play here a crucial role. And since IDs' success is largely based on innovation, the use of the computer should be a key factor in their development.

2)- Very disaggregated production structures are certainly an asset for the ID ; but then, how to avoid their turning into liabilities (very elastic working hours, patriarchal structures, unequal distribution of added value, inefficiency of a disorganized system..) ? In other words, how to foster a regular and important increase in productivity without worsening working conditions ? Since new electronic technologies seem able to-day to guarantee such regular increase, they should be at the heart of future IDs developments.

The computer is not, like a new soldering machine, a technology *per se*, but rather a basis for new technologies. As such, it may lead to standardization like in taylorism, or on the contrary, to preserving and developing local methods. To use only Information Technology as an office tool, as it was the case in Italian IDs, is to deprive oneself of its main benefits and to stiffen production methods, which it could contribute, on the contrary, to make more elastic and adaptable to market needs.

In this way, theoretical developments generated by studies of the Italian IDs have led to models of organization completely different from traditional models of great enterprises. Geographical proximity becomes a fundamental parameter. Since modern technological means of communication tend to reduce drastically, even to obliterate the effect of distance, one may wonder if the main advantage of the IDs production system is not going to disappear.

1.2 – Are IDs robust ?

Districts are more complex than people usually believe. If 77% are typically located in one place (Cf Aster's survey), they depend strongly on foreign exchange : 83% of surveyed enterprises export their main product. Structural relationships between enterprises are quite strong : 51% are part of bigger groups, Italian mostly; but 11% are controlled by foreign groups. Between one third and one half, depending on sectors, are independent.

After enjoying a long period of prosperity between the 1960s and the early 1990s, Italian IDs feel now the crunch of international competition. The creation of an integrated economic zone within the European Union seems to produce more tensions at the regional level and even at the local level, where IDs are located, than at the national one. Electronic communication means will certainly have a big impact. Until now, most studies have focussed on telework, a capital objective for the European Commission, which has earmarked important credit for such studies. Unfortunately, more than twenty years of experience show that telework is developing very slowly, and only in certain narrow niches. On the other hand, new working relationships based on e-mail, tele-conferencing, intranet and consultation of databases on line begin to show their impacts; they should become very impressive in a near future.

In a shrinking market, organizing enterprises reduce their orders, affecting negatively all smaller constituents of an ID. Some producers turn to outside suppliers and customers, deteriorating the coherence of the ID. Other smaller firms find it harder to adapt to changes. For instance, in Prato, close to Firenze, one of the most famous Italian districts dedicated mainly to textile production, the main enterprises, in face of declining sales, have looked outside the ID and found more innovating firms in remote areas, thanks to electronic communications; such a diversification strategy may be very efficient but tend to destroy the coherence and even the existence of the ID.

When enterprises have built a close network since a long time, resistance to crisis is much stronger : examples show the leading enterprise, in case of decreasing sales, diffusing rapidly the information in their network. All members try then and find solutions, using innovation

capacities, which remained dormant. Loyalty within a network plays a double role : it reduces the trend to panic, to look outside and to tear apart the very cloth of the district ; it helps also to diffuse rapidly best practices among all participants. But loyalty cannot be improvised. Dei Ottati shows it must be established slowly through stable collaboration over time, and building a safe communication system able to reassure participants in time of needs. The leading enterprise (*committente*) must ensure to participants order preference, price stability, respect of deadlines, financial help. On the other hand, sub-contractors must observe deadlines, quality standards and accept quite elastic working hours. Such relationships must be deeply personal, but the use of computer networks, if not indispensable, is obviously most useful. It is important to recall the peculiar organization of IDs : a firm, even if narrowly engaged in a production system, keeps strong relationships with other producers and buyers. It is immersed in a complex, embedded local market : another argument for using powerful communication systems. In Prato, for instance, leading enterprises have felt the need to inform regularly sub-contractors even when they are not part of their network. They have used seasonal congresses and turn increasingly towards electronic communications.

2 – Producing with the help of the computer :

Fortunately, we have been able to use three different surveys made in 1999 and 2000 in different groups of Italian IDs : Stefano Micelli has surveyed twelve IDs in north-east Italy (Piedmont and Lombardy) producing mainly finished products for the market (58%) and semi-finished for other firms (21%). Producers work in very closed systems : 61% of strategic suppliers are located in the same ID, 11% outside the ID but in the same region; only 8% abroad.

SITECH has made survey in Umbria, around Perugia. The sample is not representative of Umbrian enterprises : it centers on the most dynamic and innovative firms ; 35 are small (less than 50 employees) and 5 are big enterprises (more than 100 employees). Various sectors are represented : 1/3 in mechanic, 12% in building industry, 12% make furnitures, etc..

The ASTER survey was made, with the help of the CNR, in Emilia-Romagna, one of the most innovative regions in Italy.

2.1 – Office and industrial software :

The use of the computer with standard software for typing letters, manipulating small data bases or using spreadsheet is, like in the rest of the industrial world, very diffused. Office software, however, is not very interesting : it grows in size every year, offering less and less useful functions, requires always more hardware resources and seems often a strategy to force small firms to buy regularly bigger machines and bigger software. The example of Microsoft "Office suite" is obvious. Using such applications requires no particular skill and does not change hierarchy in the work place or traditional procedures. That is probably why they are so easily accepted.

IDs enterprises seem to be well equipped in computers. In the north-east, for instance, all employees have one or several PC at their disposal in 42% of the firms surveyed ; more than half of the employees use one PC in 41% of the others. Only in 18% of the enterprises (mainly in the mechanical sector), more than half of the employees have no PC at hand. But such wide equipment seems used quite poorly for simple office work. Only 26% of firms in Emilia-Romagna have completely or partly automatized production control, in spite of its importance ; 85% do it still mainly by hand. Manufacturing Resource Planning (MRP) is used in 56% of firms, CAO/DAO in 34%.

Using the computer does not mean a deep change in practice : tasks remain traditional. Most firms recognize that elaborating projects on the computer is a capital task, but they do not use it, mainly by lack of knowledge :

77 %	des Entreprises ignore	Product Data Management
69 %		Design-to-Cost
72 %		Co-Design

There is a lack of interfacing software relating project elaboration with production organisation : only 18% of enterprises use CAD/CAM softwares, which are often quite inefficient. Most enterprise managers ignore these products.

2.2 – Data management :

Big enterprises use classical software like Oracle. Most of them (91%, ASTER survey) have developed a Management Data Center (Employees files, billing, production control,..). MPR (Material Planning Requirement) is used in most big enterprises (51%), much less in small ones (20%). Manual systems are still very popular, for instance in Printing (85%) and Ceramic (77%) industries. Most industries surveyed in Umbria (true, the most modern ones) have a Data Center. It is however surprising to observe that one big enterprise out of 15 does not have any : in 2000, they seem still to work with pen and paper.

Softwares are a problem : small and middle-sized companies use widely EXCEL. Apart of the very bad quality and known erratic behavior of Microsoft products, Excel is a software of quite limited capabilities. To use it to build an elaborated system of combined spreadsheets is courting disaster : to find a bug becomes practically impossible, and there are always bugs in important applications. The fact that functions are embedded in cells and point to other elements, which may reside on other spreadsheets recall the sad period when BASIC, with its GOTO statements, produced unrecoverable errors in chain.

More surprising still, EXCEL seems to be often used not as a spreadsheet, its original use, but as a data management tool, to sort and retrieve qualitative information. Clearly a base built on such a software must be very small or become unmanageable. Maintenance is out of question. Of course, data base management software exists even at a small price, like ACCESS or as free open software, like MySQL. The limit here is not the cost but the training necessary to put the base in its normal form, breaking down a mass of data into independent tables and transforming it in a truly relational base, the only one which can be easily maintained over time. Using some methods based on the entity-relation paradigm, like MERISE, is a must but remains widely unknown.

If anybody can fill up an EXCEL table, to use an approach like the entity-relationship method requires a training which is absent from most small and middle-sized enterprises. Such ignorance seems to be one of the main problems posed by the use of the computer.

2.3 - Project elaboration, CAO, Simulation, R&D

Computers are often used very efficiently in the production process itself : in the Castelfreddo district, close to Mantua, for instance, firms producing panty hoses use very modern methods with computer-controlled machines, because they work in close relationship with the Brescia District which makes the textiles machines and test them in Castelfreddo. The use of the computer is obvious here and need no further development.

On the other hand, computers are very rarely used in Research and Development or in conceiving the products and preparing the production process. CAO/DAO softwares are quite elementary (AUTOCAD,..); powerful software like CATIA is nowhere in use; simulation on screen, pattern recognition, or Neuronal Networks are practically unknown.

In Castelgoffredo district, computer is used only for office works. Marketing and statistical analyses are limited to the few important firms. In Umbria (Perugia), small computer firms try and sale DAO software. Tecno Net, e.g., caters to the needs of small and middle firms (up to 500 employees) and distributes a double application : ARCIMBOLDO helps in designing the product, for instance, installing a kitchen in an apartment. The user, answering questions and drawing maps, enters the necessary parameters. The computer tests the feasibility of the arrangement, projects on the screen a 3-D image which the customer may rotate in order to view his future kitchen, lists the chosen components, the necessary connections and prints the bill. The software may also be used for designing new furniture's, creating bedrooms or living rooms, etc..

The application is made of two modules : one allows the customer to enter the data, the second one, more complex, checks the spatial lay-outs and makes choices and computations. The application runs under Windows and is not used on Internet, because it takes too much time to finish its work (more than two hours). There is here an obvious limit to the B2C (*Business to Consumer relationship*).

Another application (SESTANTE) is a Decision Support System, helping in decision-making . The user may consider simultaneously a wide range of variables (e.g : different suppliers, products and prices), check the orders already made and cross the information in multi-dimensional tables (Decision Cubes) which will help him in his choice. Such applications are classical to-day and use different forms of SQL. Tecno Net has built SESTANTE with a browser, using Code-Fusion (a language from the US company Allaire) and a Microsoft database, OLAP. This little firm proposes also other Allaire products like WebGateway and WebForum to build an Internet site.

Interestingly enough, Tecno Net, although a small firm, makes more than half its sales outside Umbria and, much to its regrets, finds the province too small a market with its 850 000 inhabitants. We observe here the first crises of the ID model : its concentration on a small territory, its traditional strength and asset, begins, with modern computer tools, to become a liability. The efforts of small computer companies to widen their market may well be, in the future, an important cause of the breakdown or at least of deep changes in the structure of the Industrial Districts.

2.4 – Investing in information technology :

2.5

Investment in Information Technology does not depend on enterprise size but rather on the aggressiveness and curiosity of the managers. Surveys show clearly that cost is almost never an obstacle : most firms dedicate less than 2% of their turnover to information technology. The main factor is training. Unfortunately, when they evaluate the cost of a computer systems, enterprises tend to take only in account the price of hardware and of software, neglecting the costs of training the staff, changing procedures, gathering data, maintaining the data base, all costs much higher than the sheer price of a system.

MICELLI indicates what were the following causes for investment in 1999 :

- fighting the Y2K bug 44%
- to replace locally developed solutions with integrated software 41%
- to replace commercial solutions with integrated software 33%
- to better integrate the firm computer system with the main customer system 4%

Once again, fashion wins the day and the famous and largely illusory Y2K bug preoccupied almost half the firms. On the other hand, to integrate better the firm system with the computer system of its main customer is a capital task, but interests too few enterprises.

Why so few investments in networks ? Firms do not cite cost (between 2 and 5%), but seem to think such investments are "useless" : video-conference (85%) as well as groupwares (76%) or e-mail (53%). On the other hand, 40% are developing e-mail, which seems quite contradictory.

3) – Communicating through the computer :

Contradiction is still worst for more powerful tools (Micelli) :

	<u>"Useless"</u>	<u>"In development"</u>
Internet site	60 %	28 %
E-commerce	75 %	8 %
Corporate banking	60 %	20 %

At spring 1999, 55% thought e-mail was useless, but a third planned to adopt it. Such contradictions are typical of transition periods and show only how fast change is coming. Most firms do not really know these methods and express rather prejudices than judgements :

	<u>"Have a good knowledge"</u>	<u>"Don't know"</u>
E-Mail	48 %	15 %
Video-conference	33 %	20 %
Groupwares	12 %	40 %
Internet	43 %	12 %
E-Commerce	38 %	15 %
Corporate banking	28 %	20 %

Either electronic communication tools are useless (but then, how to explain so many firms are planning to adopt them ?), or firms believe they know them without having an accurate knowledge of their nature and their efficiency. The wide publicity given to electronic communication means in the media may give the false impression they are known when such knowledge is superficial and erroneous.

3.1 – Internal and external communication :

Communication networks are still very simple : 42% use face-to-face contacts, 58% use telephone or fax. Most other tools are still not known among firms surveyed by Micelli : 92% do not exchange CAD data, and usually do not use CAO. File transfer is "used often" only by 5%, the biggest enterprises.

Widely known services are used :

- E-Mail : 83% of enterprises
- Corporate Banking : 78 %
- creation of an Internet site : 66 %

On the other hand, more powerful methods are ignored :

- groupwares : 14 % of enterprises (the biggest ones)
- EDI (Electronic Data Interchange) : 13 %
- video-conference : 11 %
- electronic commerce : 0.3 %

Even these results should be taken cautiously :

- e-mail is used much less than it seems :
 - 36 % of enterprises have only one e-mail address
 - in 39% of them, only a few offices have access to e-mail,
 - only in 25% have all offices an electronic address.

- video-conferencing is "rarely" used in more than half of the enterprises and "often" in 9% only;

Communications means with sub-contractors are very traditional :

- telephone (70% of cases)
- Fax (55%)
- face-to-face meeting (40%)

Electronic mail is used only in 8% of cases. More modern and more powerful modes of communication are practically ignored : 95% use no management-integrated software, 98% do not use video-conference.

In Umbria as well as in the North-East, electronic communication is used only in its more elementary forms. Here data indicating equipment in enterprises according to their size (Small Enterprises; Medium E; Big E):

	<u>Presence</u>	<u>Absence</u>	<u>SE</u>	<u>ME</u>	<u>BE</u>
LAN	78%	22%	71%	90%	100%
ISDN Line	70%	30%	63%	90%	80%
Internet Connexion	84%	16%	83%	80%	100%
E-Mail	78%	12%	70%	100%	100%

On the other hand, many enterprises declare they are investing in better communication systems, particularly in the traditional production chain :

- with customers 40%
- with suppliers 20%

but they neglect more original networks :

- with their employees
 - outside the enterprise (telework) 8%
- video-conferencing 8%
- with their business network 4%

To-day, a large part of the production process still relies on face-to-face, personal contacts : partly because IDs are not widely extended, also for the capital role of personal confidence between actors. For instance, in Castelgoffredo District near Mantova, small businesses relied on fax and began only to use e-mail at the end of the century. Some small enterprises and several middle ones have built Web sites, but none deals in e-business. Curiously, bigger enterprises are behind : probably for the somewhat old-fashioned mentality among industrial workers; also, because, interestingly enough, many managers seem to fear the effect of Internet on their position.

We could make, however, an interesting remark : researchers from the "Centro di Servizi" of Mantova, who observe regularly the IDs and contribute to their modernization, declared that e-mail is still practically ignored in Castelgoffredo. We visited, however, two small computer companies working to equip the District : they declared that almost one-third of enterprises had an e-mail address and used it. Such small anecdote shows how fast IDs are changing, and how difficult it is to keep abreast of their evolution.

3.2)- Marketing :

Most relationships take place within the production system :

- 56 % with shopkeepers
- 41 % with other producers
- 3 % only with consumers, which is very little.

Few enterprises have built their own marketing system : in the MICELLI survey, 71 enterprises have no marketing, only 6 have built one in Italy, 8 abroad and 14 within and outside Italy. Furthermore, 16 firms have no commercial traveller, 48 of them share travellers with other enterprises ; only 18 have their own traveller network. Actually, Districts firms are dedicated mainly to production, leaving marketing and sales to a few leading enterprises. Surprisingly enough, they seem satisfied and do not try to increase their share in added value. One may wonder if such restrained attitude will survive the increase in competition due to globalisation.

Surprised by the absence of electronic business, Micelli tried to find an explanation :

- half of the enterprises declare that e-business does not fit their production mode and their products. In Castelgoffredo, for instance, panty hose producers are not interested in offering their products on the net because their customers want a physical contact with the stuff, they want to touch it, which is quite understandable. As far as furniture or mechanical parts are concerned, however, one may doubt of such explanation.

- other causes are more convincing :
 - lack of resources : 8% of the enterprises
 - fear of conflict with the marketing network : 7%
 - lack of security in Internet transactions : 4.5%
 - costs : 2%

Avoiding conflicts with the marketing system is a good reason to shun e-business, but it shows also the danger, for a District, to live on itself with limited networks and to rely on a few local leaders.

Actually, the main reason is other : Districts firms avoid e-business because they are afraid to have to adapt products and marketing to a new information technology. To adjust to very different procedures is always felt in organisations as a painful task ; to decide if the peculiar organisation in the Italian Districts is flexible enough is still an open question. Most prefer to avoid deep changes and this has proved the main obstacle in developing the use of the computer. The question depends much more on organisation sociology than on computer or even software technology. It can only get worse with time and offers certainly to day the biggest challenge to the ID.

Telework is not very developed in Europe : between 3 to 5 millions persons use it, among them some 250 000 Italians². The European Union has tried very hard to develop such approach, partly to help solving difficulties in transportation. Barbieri did forecast a strong development with the increase of information technology, but here again, " the main obstacle lies in the strength of traditional organisations : enterprises tend to accept new technologies without changing traditional procedures.."

3.3 – Networking and Internet :

The CARLA-SITECH survey shows that only a few leading enterprises invest heavily in communication systems. Some of the smaller ones may imitate them. Planners wanting to develop such technologies should carefully identify the leaders and focus their action on them in order to induce a regional progress. :

- Leaders : 10% of firms
- Followers : 70%, imitating slowly and cautiously,
- Not interested : 20%

While big enterprises invest in quite complex communication systems, smaller ones are turning rather towards Internet. This may be a trap : to create a server is quite easy and cheap, but to develop B2B (*business to business*), and more dangerous, some B2C activities, is complex and difficult.

Have a Web site :

	<u>In use</u>	<u>in project</u>	<u>none</u>
Mechanical industries	33%	11%	28%
Building industry	49%	17%	17%
Furniture	66%	17%	17%
Electronics	80%	20%	0%
Textile	20%	20%	40%

In Emilia-Romagna, the ASTER survey exhibits better developments :

Internet :

- 60% of enterprises have a link
- 64% have their own site
- 79% use a site for publicity, with images
- 59% use it for training and helping customers

² Barbieri G-P "Aboliamo il telelavoro ?", in Casvecchia (2000), *E-work...*, CARLA-SITECH.

E-Mail :

- 44% use e-mail
- 43% propose a catalogue on-line

This high percentages may be misleading ; few enterprises include really communication into their activities :

- 14% only use Sale on-line, which requires a strong logistic,
- 35% communicate electronically product specifications to purveyors
- 27% use EDI (Electronic Data Interchange) with customers and purveyors.

Such results are quite disappointing : obviously, most enterprises have chosen technologies which are easier to adapt and require less or no changes to customs.

In Umbria, the CARLA-SITECH survey offers approximately the same results :

	<u>Yes</u>	<u>No</u>	<u>Prepare one</u>
-Use their own Web site :	44%	22%	18%
- To which purpose ?			
- Relationships with salesmen		6%	
- to specify products to purveyors		3%	
- Publicity, with images		41%	
- Catalogue on-line		16%	
- Hot line for customers		19%	

Like in other regions, electronic communication is used mainly to build a window on the world, but much less to increase the efficiency of internal relationships and modify firms organization.

4)- Information technology and the future of the Italian IDs :

The widening of the European Union and globalisation will certainly concern Italian firms and particularly the IDs, with their reliance on local ties, close production systems and idiosyncratic organization.

4.1)- Fighting increased competition :

In Umbria (ASTER), 15% of firms had participations in foreign enterprises, mainly to market their products. Small enterprises with horizontal structure were much more sensitive to competition ; leaders, with vertical, hierarchical structure, were more concerned with cost advantages and less by competition. Diagnostic is made more difficult by the variety of IDs ; in Castelfreddo, manpower represents only 15% of the global cost : competition by cheap foreign manpower is not very dangerous, but some other IDs making textiles or furniture are much more imperilled. The classical solution is to specialize in better quality products, to control strictly production costs and to automate tasks.

IDs produce mainly semi-finite products and are less open to competition on the consumer market, but relationships with suppliers are crucial. They are usually quite stable, but

the development of new methods like *just-in-time* may change their policies and give more importance to logistics : the computer here again is the basic tool.

4.2)- Coming changes in the Italian commercial system :

In Italy, small shops are still the rule, big hypermarket so frequent in France or in Germany are still very rare. A traditional and very elaborate system of travelling markets accounts for more than a third of the consumer supply. A deep modernization of such a costly system is likely, particularly under the influence of European integration. Another factor is the increase in Italian exports on European markets, much more concentrated than the Italian ones : export value has increased by 22 % in the first quarter 2000, but only by 1.7 % on the national market, a rate inferior to inflation.

Concentration is likely to alter the IDs' very decentralized structure : leading enterprises down the production process are the most likely to constitute the nodes around which small firms will cluster. Such danger is compounded by the growing use of Information Technology because dominant companies will try to impose their software and, more important still, the format they use for managing their data. The format question is crucial : it has been the main reason for Microsoft's success. On one hand, imposing a proprietary format evicts competition and tends to create a monopoly. On the other hand, software companies need large markets and will cater not to one District but to several ones, reducing strongly their autonomy. Both effects are going in opposite directions, but both tend to tear apart the very fabric of the Districts.

4.3)- The role of information technology start-ups

Small computer companies will play an increasing role in selling, installing and maintaining computer systems and software, or as Web agencies. Bigger companies attack also the new developing market : FINSIEL, a subsidiary company from Telecom Italia, is a software company with 8 000 employees. It will obviously cater to the need of very different IDs, which might then lose a large part of their close structure. Software companies will necessarily contradict the strict attachment of firms to a narrow production District.

Computer development is likely to shorten production chains through firms concentration. It might also weaken and even destroy the compactness of an ID, its main characteristic and principal asset. "Introducing the computer is not only a quantitative change, but rather a qualitative one : to spread widely information through the production system will put in full light the less efficient parts of the chain, producers or distributors who deduct a part of the added value which does not correspond to their efficiency."³

4.4)- The role of Research and Development :

Emilia-Romagna is particularly proud of its innovation policies, with the help of public funding. According to the SITTECH survey, 50 % of enterprises define themselves as "innovators", 35% declare they introduced "radical " innovations in their products. 42% of all enterprises, the big ones, mainly, have registered patents, particularly abroad. The surveyor, however, indicates that, unfortunately, the actual R&D effort is not as important it seems : between 1995 and 2000, 10 % of enterprises have not marketed any new product; 45 % have deposited no patent, 21% have not declared any R&D activity. Actually, innovation is practiced by the biggest and leading enterprises, increasing thus the probability of concentration.

³ Bernard Maître, PDG Galileo Partners, *Informatiques*, Numéro spécial, 3 mars 2000, p 10.

4.5)- The change in generations:

For a manager, transferring his firm to his son is always a tricky business, but in the case of the IDs, it is often complicated by a rural and patriarchal way of thinking and by the wide gap in education between the self-made men who created the small firms and their sons, coming back from university with a diploma. Introducing the computer in the firm can only accelerate and worsen generational conflicts.

Conclusion :

Most firms in Italian IDs use the computer in three different ways : for simple office works, for Computer Aided Design and in a third practice, more complicated and much more useful : Data Base Management under different forms ; only important firms seem to use it. One domain seems conspicuously missing : security, protection against viruses, mistakes or malign attacks are not quoted by any body. Most computer audits in the world show that security is always a forgotten topic. This does not make the lack of interest encountered in the Districts less dangerous. Another forgotten topic : maintenance ; few people have been interested in evaluating the cost of changing software or up-dating bases. It is well known, however, that such recurrent costs become quickly higher than the cost of buying and installing a system. Such disregards are typical of the first steps in developing Information Technology. It is important to correct them as soon as possible.

Using the computer is certainly going to change deeply the structure of the IDs. A computer is not like a Xerox machine left in a corridor, which anybody can use. In order to use completely its fantastic abilities, it is necessary to change methods drastically in administration, production procedures, marketing or management. Such deep changes are necessarily painful, destroying hierarchies, changing customs, redistributing power and requiring different and better training. This is the reason why so many computers are very poorly used : managers prefer to lose a large part of their investments in order to avoid too painful changes.

Italian Districts have a very peculiar structure, relying much more than in usual production processes, on personal ties and informal relationships. At first sight, they seem less able than other activity centers to modernize themselves and enter into the Information Technology era. On the other hand, the extreme elasticity of these systems, their extraordinary capacity to invent and to adapt themselves and to exhibit remarkable initiative abilities may allow them to adjust maybe differently but more rapidly than more traditional production systems. Italian researchers express remarkable confidence in the ability of Districts leaders. Recent data show, however, that most Districts, in the beginning of the 21st century, are in trouble.

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