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A cure for loneliness? networks, trust, and shared services in Bangalore

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Introduction

‘A small firm in an industrial district does not stand alone; a condition of its success is the success of the whole network of firms of which it is a part... The main problem for small firms is not being small but being lonely.’
(Sengenberger & Pyke 1992: 4, 11)

Small firms are fashionable, in developed and developing countries alike. If large firms cannot provide enough jobs, or if they are too inflexible to seek and supply new markets, then small and medium enterprises (SMEs) can fill the gap. At least that is the argument for encouraging smaller firms, ranging from the amorphous ‘informal sector’ to high-technology and sometimes capital-intensive firms supplying world markets.

India, in particular, has long had a policy of encouraging ‘small-scale industries’ and discriminating against large firms. The intentions were good; the results were sometimes good but often disappointing, and the opportunity cost was high. Many small firms are inefficient, exploitative and a drain on the public purse. The idea, and ideal, of ‘small-scale industry’ is a distraction from the tasks of achieving high-quality marketable production, employment, and good work for workers of both sexes. Policies designed to help small firms have sometimes – not always – amounted to little more than government aid for the educated unemployed, who can cause more trouble than the uneducated unemployed. Such policies have also given small firms an incentive not to grow beyond a certain level of investment (below which they have certain privileges) or employment (since firms with more than ten workers are subject to social security and other costs). Yet some small firms are innovative and market-led, make quality products, and teach useful skills.

Which industrial policies, in India or elsewhere, are most likely to achieve quickly the objectives most of us probably agree on: *economic growth* (in the short run, this has nothing to do with employment or equity; in the long run, it could raise living standards for everyone); more *employment*; *good wages* and *security* for those who have jobs; and *better work* (interesting autonomous work, with chances to learn new skills and to build a career)?

There may be trade-offs: economic growth without new jobs, or more jobs but worse ones, or good work for a privileged élite only. On the other hand the good things may go together: for example, if workers who feel secure and find their work interesting make better products, leading to faster growth and more jobs.

There is no virtue in smallness, no point in propping up firms simply because they are small. Large firms usually pay better and give more secure employment and better conditions. If larger firms could provide good work for all who need it, that would be fine; but they cannot. Smaller firms may have reserves of innovative talent; may create employment where large firms cannot or do not; and have the great merit that they exist, in large numbers.

Can the disadvantages of smallness be overcome, and its advantages exploited, through 'flexible specialization', as in north-central Italy (Sabel 1984, Goodman & Bamford 1989)? Flexible specialization happens when clusters or networks of smaller firms, usually but not necessarily in an industrial district, complement each other to achieve economies of scale ('collective efficiency') and co-operate on marketing, improving quality, developing new products, and stages of production for which some firms have specialized machinery or workers. They are interdependent, and independent of large firms when it is to their advantage. This allows them to do things they could not do if they were isolated in a jungle of competing firms. It works only if there is some degree of trust between entrepreneurs, and between them and their workers; and/or collective provision of 'real services' like training, consultancy and design, which single firms cannot afford to provide for themselves.

Hubert Schmitz (1992: 67) distinguishes between '(a) hierarchical clusters, for example where a large enterprise farms out parts of the production to small enterprises and thus orchestrates the division of labour, and (b) non-hierarchical clusters, in which equals compete or cooperate.' There is nothing wrong with hierarchy – or with large firms – if they can deliver what we want (employment etc.). But where hierarchy stifles innovation, or fails to draw out the smaller firms' potential to create jobs, we should explore ways in which smaller firms can achieve economies of scale ('collective efficiency') without losing independence and flexibility, in the special conditions of India's industrial economy as it is suddenly exposed to fiercer competition with foreign and Indian rivals.

This chapter is based on fieldwork in Bangalore, a city of nearly five million people, containing some of India's most advanced engineering and electronic industries. I know the city well, having done social anthropological fieldwork there over many years (Holmström 1969, 1971, 1972, 1976, 1984, 1998). I have also drawn on my experience of industrial districts in Emilia Romagna, the Italian region which is the best known example of flexible specialization (Sabel 1984, Brusco 1992, Dei Ottati 1991, Trigilia 1989, Bagnasco 1977, Goodman & Bamford 1989), where I made a study of the flourishing workers' co-operative movement (Holmström 1985, 1989). I am now completing a study of industrial districts in the Valencia region of Spain, where the regional government's agency for small and medium enterprises (Impiva) has tried to follow the Italian example.

Bangalore has a dense network of large and small firms using advanced technologies, and abundant skilled labour. The many small engineering and electronic firms depend mainly on large public and private sector factories for orders, but some of them market their own products. Increasingly, these small firms are using CNCs

(computer numerically controlled machine tools) and CAD (computer-aided design). If they lack some of the necessary machines and skills, they put the work out to other small firms and consultancies. They use 'real services' – testing, calibration, advice – provided by public sector bodies. I have written elsewhere (Holmström 1998) about the ways in which market-led innovation takes place in some of these firms, in spite of all obstacles: how information is transmitted from the market, digested and acted on, to improve the product or to fill a niche in the market. If flexible specialization can succeed anywhere in India, we should expect it do so in the network of large and small firms which make up Bangalore's engineering and electronic industries.

What are the prospects for non-hierarchical clusters, in which equals compete or co-operate? Or clusters where they compete *and* co-operate, as in the 'Third Italy' around Emilia Romagna, where these apparent opposites are combined in 'an industrial community that restricts the forms of competition to those favouring innovation' (Piore & Sabel 1984: 17)? Are places like Bangalore moving towards a less hierarchical model, where smaller firms are no longer ancillaries making components and doing job work to the large firm's designs, but interdependent firms supplying markets the large firms do not reach? Can smaller firms work together to develop their own products, and compete successfully with large firms on national and foreign markets, creating faster economic growth and more employment than big firms alone could provide?

In principle, everyone can see the benefits in pooling some resources, especially information, if only it were possible to define the limits of competition in the common interest. In practice this is hard to achieve in a situation where entrepreneurs and workers are afraid – with good reason – of cheats and free riders, those who take but give nothing in return. Competition in India is fierce and getting fiercer, with the liberalization of the economy and the ever more desperate scramble for jobs and higher living standards (Holmström 1999a, 1999b, 2000).

What are the extent and limits of co-operation and trust between small or medium-sized firms, and the prospects for less hierarchical management within firms and networking between them, for mutual aid and consortia? How can smaller firms make the most of their independence and flexibility, while overcoming the disadvantages of loneliness? And can public provision of 'real services' make up for lack of trust, or *build* trust? This case study of Bangalore is part of a collaborative programme of studies of the prospects for flexible specialization in other Indian cities and industries, and is relevant to other industrializing countries with large labour surpluses.

Formal associations and informal networks: the limits to trust

In Bangalore, small or medium firms compete to get job work from larger ones; but they also put out work to each other: manufacture of components, different stages in production, work which requires special equipment like a CNC machine tool, or capacity subcontracting to meet a deadline. They do this whether they mainly do job work or market their own products.

This division of labour between firms cannot depend entirely on short-term considerations of profit in a competitive market. It requires a degree of trust, just as running a successful flexible enterprise depends on some minimum level of trust between employers and workers: not unlimited trust in either case, but some shared understanding about the situations in which conflict or competition are appropriate.

In Bangalore this trust exists but within close limits. As the secretary to an association of small firms said, industrialists are far too suspicious of each other, especially where markets are concerned; unlike farmers, who share information because they cannot hide success from their neighbours, and do not compete to sell their produce. Yet it is obvious to all of them that the small or medium firms cannot possibly compete with large ones unless they can rely on other firms for help at short notice. Successful flexible specialization depends on this trust and mutual aid, as in the 'Third Italy' where:

Each firm is jealous of its autonomy, overly proud of its capacities, but fully conscious that its success and very survival are linked to the collective efforts of the community to which it belongs and whose prosperity it must defend.

One kind of dependence on related firms is implicit in the firm's innovative activity – the capacity to tailor a particular part or component to special conditions... The moment the firm begins to expand and move beyond its original specialty it finds itself dependent on the help of neighbors with complementary kinds of specialities; and because the neighbors can never exactly anticipate when they too will need assistance, the help is forthcoming... Mistrust freezes the technological progress of a whole sector; trust fosters it... Where invention creates demand and invention is collective, this is a natural result.' (Sabel 1984: 225-6)

This shared understanding about the limits to competition must be backed by public opinion within a group. In the last resort, there must be economic sanctions: if you cheat, you lose your reputation and no one will do business with you. The moral community – the group within which trust and reputations are built up and tested – is usually local: for example, the group of small and medium-scale businessmen in an industrial district. In some situations a more effective moral community could be a professional body, or a network of companies in different cities which do business with each other, or a community of birth like a caste or religion.

This last point could be crucially relevant to countries like India, where the solidarity of small firms, or of craftsmen, is often based on kinship and ethnic ties which exclude outsiders and limit the scope for growth, especially in employment.

Trust,... as a foundation of economic relations, is a 'double-edged sword': it can retard economic development where it is a strictly private form of transactional coordination, as in the case of mafias or aristocracies, for these, by definition, restrict the entry of new producers; where trust is highly generalized and public, on the other hand, it serves to sustain transactions and

reduce the costs for established producers, while at the same time allowing new entrants into the community. (Storper 1991: 112)

In the past, many Indian entrepreneurs, especially those with a financial rather than a technical background, have been notoriously suspicious of anyone outside – and sometimes inside – their own family, caste or religious community, and unwilling to share information. In an industrial district like Bangalore, are relations of trust still confined to closed communities? Or are there ways for new people, from different social origins, to join the networks of mutual aid, and to build up a reputation for competence and honest dealing?

My evidence of the ways in which trust is built up and maintained is anecdotal and one-sided. An entrepreneur (who trusts me) may tell me about particular people he or she relies on or distrusts and why, and may tell me more about general tendencies – what kinds of information entrepreneurs will share, how they make friends; but there were few occasions when I was able to get the story from both sides (and if I have it, I may be unable to publish it for fear of identifying the actors). In contrast, accounts of how market-led innovation takes place are more specific and easier to check. One can meet customers, service engineers and designers, all on separate occasions; see the old and new designs; watch and talk to workers making the new design in the factory.

Projects for mutual aid among entrepreneurs have foundered on a pervasive suspicion of each other's motives. Some entrepreneurs are more relaxed, willing to share information and technology with business contacts: as one of them said, we have few secrets – we copy other people's designs ourselves. A State Government official said that small or medium firms often help each other to find workers, and pass on technological know-how, which is no secret anyway since much of it comes from public institutions like the Small Industries Service Institute or the Central Machine Tools Institute: they are only suspicious where *markets* are concerned, afraid that someone else will undercut their price and steal their market.

Where there is a greater degree of trust, it can spring from a purely business relationship between entrepreneurs, which matures into friendship. More often, these friendships go back a long way: colleagues who trained together at an engineering or management college or the Indian Institute of Science in Bangalore, or who worked in the same big factory or an institution like the Central Machine Tools Institute, before setting up their own business, have a solidarity cemented by fond memories, like French Polytechniciens.

Another kind of business friendship is more of a patron-client relation: small-scale entrepreneurs keep up profitable contacts with the purchasing and other officers of the big firms they once worked for. Some small employers train engineers or skilled workers and then help them to start their own businesses, doing job work for their ex-employer, developing products, and helping in other ways.

An even stronger basis for trust exists in what Pierre Lachaier (1992) calls the 'Industrial Lineage Firm', where a company is divided and subdivided among the founder's kin; though in India there are notorious cases of bitter feuds between brothers or between branches of a family, which can break up business empires and close factories. Assuming that relatives remain on speaking terms, this network of kin is usually – not always – confined to a community of birth, in a society where most people marry within their own caste or religion. However it does not seem that membership of the same caste or religion or language group is automatically a foundation for trust, or that entrepreneurs will subcontract work to or share information with someone for this reason alone.

There are exceptions – some tightly-knit castes with merchant traditions – but business friendships, unless they began with purely economic relationships, are much more likely to develop in clubs and professional associations, or from chance encounters with neighbours living in the same suburb. Rotary and Lions Clubs, in particular, have local branches with an enthusiastic membership, engaged in charitable work and convivial gatherings. Engineers have their professional associations. A Kaizen ('continuous improvement') Study Circle of managers meets monthly. All these clubs and associations invite speakers (like me) and take refreshments. There are seminars and conferences in hotels, with parties and a bar. Entrepreneurs and managers belong, or aspire to belong, to a culture which is consciously modern, meritocratic, cosmopolitan, used to foreign travel, entertaining each other in the fine restaurants for which Bangalore is justly famous. These are the settings in which ideas are exchanged, and business contacts and personal friendships are formed.

Marketing and the small firm

To grow through market-led innovation and continuous improvement, each firm must have access to markets, and a quick feedback of information from those markets about market trends and customers' needs and complaints. Usually it gets both these things through the same channel (the firm's own sales staff, or agencies) but are other ways of getting the information: through trade associations, government bodies, the trade press (Indian and foreign) and informal contacts with customers, suppliers and business friends.

Another option for the smaller firm is to go it alone. The owner does all the marketing, and collects the necessary information. A more established firm will employ a specialized marketing manager, and sometimes its own service engineers.

An engineer employs 40 workers. His steady income comes from job work on his four CNCs, for large and small firms, and 'reverse engineering' for other firms. Engineers constantly discuss problems of production and quality informally with workers on shop floor, where I spent some days.

His enthusiasm is for the products he designs himself, especially an accessory for CNCs, developed from a standard pattern but with modifications and improvements to meet customers' stated requirements or to fill gaps in the

market. He will make, and if necessary design, a single piece, when a large firm would not be interested. Thus one customer asked for a model which tilts; another, for a model which will work when immersed in liquid. He designed these, and advertised them as additions to his standard range.'

His products are exhibited at trade fairs all over India, and his marketing manager travels around, asking customers and potential customers what they would like. One manufacturer of CNCs already includes his accessory with its standard products; if others follow, this will build up his reputation. He hopes to start exporting soon. It is hard for him to match the marketing network or design capability of a large firm, though he can use his access to friends in big firm where he once worked.

Going it alone is costly for a small firm. Thus several entrepreneurs making machine tools or components say the best opportunity to meet customers and pick up ideas is the Hanover trade fair, yet they find it prohibitively expensive to fly to Germany and stay there, knowing they may come back empty-handed. They can market their products through large manufacturing companies which have extensive sales networks throughout India and abroad, but which cannot give priority to the needs of smaller clients. Or they can use agents specializing in a range of products, often a different agent in each major Indian city. An agent may provide useful information about market opportunities, or may simply sell the product.

There appear to be few *local* marketing agents of the kind found in Italian industrial districts, with extensive contacts throughout the country and abroad, each handling the similar or complementary products of a few local firms and providing details and up-to-date information about new demands and trends. However there are hopeful examples.

An engineer has long expertise in designing a range of specialized machinery needed for certain industrial processes. His own factory is small (20 workers). Most of his effort goes into solving clients' design problems, turnkey systems, consultancy and training. He is starting an agency to market a range of products from high-tech small Bangalore firms, in India and abroad.

Another obvious – and Italian – solution is to form a marketing consortium.

A large factory used to make a machine, used by farmers and others, in its own factory. It does not require high precision work. A group of ancillaries on an industrial estate suggested that, instead of making parts, they could form a consortium to make and assemble the whole machine much more cheaply. It is now made in small, poorly equipped workshops. Instead of doing most of the production with cheap labour, as they used to, they now do all of it. Few of the workers are skilled and many are boys and girls, some apparently ten or twelve years old. The parent factory still markets the machine under its own brand name.

Such consortia do collectively what many small firms do separately: job work for a large firm, to designs and standards set by that firm. There is no innovation at all. Consortia exist, or are being set up, on the national level:

Indian automobile component manufacturers have come together to set up Inapex Auto Products Export Ltd, with government support. 'While India enjoys significant comparative advantages in the manufacture of these products, there are too many producers making small numbers of disparate items', so that India holds a mere 0.25 per cent of the world market. The chairman pointed out that 'the large global companies are no longer prepared to buy individual components from different vendors. They want matched packages of kits of several components from each source, which Indian suppliers are not currently equipped to supply.' The consortium will place orders with a large number of companies, exercise quality control, and market a common Indian brand. 'If this venture succeeds ... it will provide an example for similar export consortia in other industries, including food processing and electronics.' (*Times of India*, 30 July 1993)

No doubt orders from the new consortium will filter down to the smaller firms; but local consortia, built from the ground up, would be useful to smaller firms, which need both to sell their products and, crucially, to get market information they can use to make profitable innovations. After careful enquiry I found only two such consortia in Bangalore, one of them embryonic:

Five medium or small machine tool manufacturers – three in Bangalore, two in other cities – have set up a sales and service consortium. The founders of these companies know and trust each other, since they all worked together for the Central Machine Tools Institute in Bangalore.

The consortium has six offices throughout India, and 70 staff. They provide a comprehensive marketing and after-sales service for the five member companies and for a few other firms in Bangalore. The clients are not in competition with each other, since each makes different types of machine tools, for which the consortium has sole domestic selling rights. It does not operate abroad: each firm must make its own export arrangements.

The consortium's sales representatives meet from time to time, to assess market trends; and they regularly pass on information about customers' complaints to member companies, which send their own engineers to solve any problems. Thus the managing partner of one member firm said that if anything goes wrong with one of his machine tools – even because of a mistake by the operator – his customers know the firm's engineer will make as many flights as are necessary and will send a replacement urgently, without question: so he builds up a better reputation than larger firms.

Eight small firms set up a consortium a year ago, to export electronic components; the consortium also acts as agent for ten other local companies,

which are not members. They thought it best to begin in neighbouring countries, which have cultural and other links with India (and are cheaper to visit): two journeys to Sri Lanka brought a number of orders and a good chance of others. Then they will try other Asian countries. A partly-retired entrepreneur does most of the work: he has a small office and high hopes.

One success story, another moderately successful so far. Against this, there have been several failed attempts to form marketing consortia.

In the late 1980s a number of small consultancies sprang up, offering CAD to electronic manufacturers. Since there was cut-throat competition between them, an engineer with his own consultancy suggested that eight small firms should form a consortium, sharing out the available work according to their capacities: then they could employ specialized sales staff, and have an impact on the market. But (he says) every small entrepreneur wants to go his own way, and suspects even his partners and employees of plotting to go independent and take away his market. So nothing happened: most of these firms are out of business, and few CAD consultancies survive in Bangalore.

Two young engineers do job work, using two CNC wire-cutters. They cannot think of developing their own product, because of the difficulty of marketing it and knowing what is in demand: for example, they could not afford to visit the Hanover trade fair. I asked one of them: why does not a group get together and send one person to Hanover? That would never work – no one would trust the others, and each would want to go to Hanover for himself. There are business friendships, he says, especially between people who trained in the same institution, but few entrepreneurs trust each other enough to share information or to form consortia.

If few marketing consortia have succeeded in establishing themselves, there may be a better chance for consortia to purchase components or services. Thus firms in other parts of Karnataka set up formal or informal consortia to calibrate instruments (in Bangalore the government's Central Machine Tools Institute does it for them). Machine tool manufacturers are setting up a consortium to purchase components:

For some time the Indian Machine Tool Manufacturers Association has lobbied the government to reduce duties on imported components in line with the reduction of duty on complete machine tools, in order to make Indian products competitive in India and abroad. While the manufacturers waited for the government to take a decision, they asked a medium-sized Bangalore firm to do the groundwork in setting up an informal consortium of Indian manufacturers, who normally compete with each other, for the joint purchase of foreign or Indian components at the best prices. On behalf of the group, this company has begun to negotiate with Japanese and Indian suppliers of selected components.

One problem is standardization: each manufacturer may have bought components from a different source. If they agree on a single model, this will involve some firms but not others in costly design changes. If the consortium orders a variety of components, it will be difficult to get suppliers to agree on terms for supplying each member with different quantities and specifications; and the smaller the quantities, the harder it will be for the consortium to guarantee orders even for the following year.

Networking for innovation and design

A flexibly-managed large firm is decentralized internally in many ways, but it has powerful central departments for marketing and for design and development of new products. Smaller firms, which cannot do these things by themselves, must look outside, to other firms, public institutions, or consortia. Just as some smaller firms can handle their own marketing, while others use selling agents or (rarely) consortia, some are relatively self-sufficient in design, while others need outside help.

Many of Bangalore's smaller engineering and electronic firms are founded, managed and usually owned by engineers with design experience in large factories or in public institutions, especially the Central Machine Tools Institute. Often their motive for leaving secure employment was not simply economic: it was a passion to develop their ideas creatively. They are prepared to delegate much of the responsibility for marketing, production or labour, in order to spend as much time as possible on design and development.

These designers and designer-entrepreneurs may or may not use CAD, depending on the nature of the job and their own temperament. Thus a partner in a small firm making machine tools said most design work consists of thinking, not drawing, so CAD saves very little time: when he needs CAD, he has it done by the Central Machine Tools Institute. Another designer found CAD a distraction. But for some complex shapes CAD is essential or very useful, the expense is not prohibitive, and skilled assistants are available or can be trained up; depending of course on the complexity of the design.

As with CNCs, manufacturing firms with CAD do a certain amount of work for those without it. Thus a small electronic manufacturer does relatively simple 2-D (two-dimensional) CAD for some of the many firms making printed circuit boards (PCBs), and sends them the programmes on a disc.

Even firms with their own CAD facilities cannot handle design problems requiring specialized, and sometimes expensive, programmes run on high-powered computers. One solution is to take their design problems to one of the public institutions with which Bangalore is exceptionally well endowed, especially the Central Machine Tools Institute (CMTI). It is generally agreed that the CMTI does a good job but is slow and bureaucratic. Others include the National Aeronautical Laboratory and the Indian Institute of Science. The big public sector factories are

sometimes willing to help, particularly since many of the smaller entrepreneurs once worked there and have personal contacts.

The alternative is to use a specialized firm of designers, but these are few. It seems there were more of them about five years ago, but not enough demand for their services. What survive are a number of 'drafting pools' doing simple design work, or digitizing engineering drawings to be retrieved and modified when needed; and firms specializing in simple CAD for makers of printed circuit boards.

For the kind of design which requires original thought and imagination, there are a very few consultancies, which serve both small and large firms, in Bangalore and further afield.

One such consultant, with eight employees, said that until recently Indian markets were vast and closed. Few firms, large or small, saw any need for design. They just bought foreign designs if they could afford them and copied if they could not, though 'reverse engineering' never produces as good a result as the original. Now there is more competition and more push to innovate. Yet small entrepreneurs are still reluctant to pay for design, and wonder why they should spend good money when all they get for it is a drawing.

His complaint was echoed by another consultant: big firms now do their own designing; small ones do not pay in time, or in full. Many of them think they can manage without CAD: they would rather make a piece in metal and see if it works, which is very wasteful.

In fact many smaller firms are innovative and see the need for better design, often involving CAD. These are run by engineers with design experience, who are capable of doing much of the work themselves or with a few employees, or they are catered for by public institutions like the Central Machine Tools Institute. Other small firms do no original design, only job work to other firms' designs. This leaves a number of small firms which try to develop their own products, but which have not yet got the message that good design is worth paying for, at a time when old markets are fast disappearing or fragmenting.

Pooling resources: consortia to develop new products

The creation of an innovative climate in the industrial sector could be achieved through the further encouragement of research and development in enterprises and the formation of research consortia among companies. (Unido 1990: xxi)

One way to overcome the loneliness of the smaller firm is by networking, interdependence between small firms, between small and large firms, or between small firms and public institutions set up to help them. Going one stage further, they can achieve economies of scale by forming consortia for marketing or purchasing.

The most obvious need is a marketing consortium for firms whose products complement each other but are not in direct competition, or where the market is big

enough for a group of local suppliers to compete with producers elsewhere. Another obvious need is for purchasing consortia, even for firms which compete directly. In practice there are few such consortia in Bangalore, though there are informal arrangements serving the same purposes.

Taking a step further, smaller firms can combine their strength and achieve 'collective efficiency' by setting up formal consortia to develop and market new products. As with marketing consortia, there is some talk of this possible solution, but in Bangalore there is now only one successful consortium in which innovative small firms pool their resources to *design and develop* their own high-quality products.

When the public sector Indian Telephone Industries told its ancillaries it was modernizing its products (not before time) and would no longer require their services, they formed a consortium Anco, designed their own telephone, and persuaded ITI to market it. Meanwhile they are developing new products, like small telephone exchanges for particular markets, which the consortium may later market independently.

Some forty firms, employing over 2000 workers, have shares in Anco, which divides the work among member firms and employs 150 people directly, in administration and assembly. These firms' labour is cheaper than in their former parent factory, which not only pays higher wages to a large staff but subsidizes a large township and a fleet of buses. But low pay is not Anco's only advantage, since it has experienced engineers and the capacity to develop existing designs imaginatively.

Another success story comes from Coimbatore in the neighbouring state of Tamil Nadu:

Coimbatore has many small or medium firms making domestic pumps. Since each firm had its own design, customers found servicing slow and difficult, and spare parts hard to find. At the suggestion of the State Bank of India, the manufacturers agreed to set up a consortium to standardize products and parts. Each firm still makes and markets its own pumps, but there is a useful division of labour between firms making different parts, and more co-operation and exchange of information between competing firms to maintain and update the system of standardization.

Consortia for research and development, and perhaps production, seem such an obviously good idea that Anco is much talked about, and held up as an example; yet it is the only one of its kind in Bangalore. There have been abortive attempts, before and after Anco, to do something on similar lines.

In the mid-1980s an engineer, with experience in design and marketing, persuaded six other engineer-entrepreneurs to develop a machine tool part, similar but not identical to one made by the large factory where most of

them had once worked. Their main saving would be on wages. The consortium raised a bank loan, developed the new machines, sold two of them and paid off the loan. But after two years, when the founder wanted to build up their market, he says he encountered petty jealousy from some of the others, about matters like paying his air fare to Bombay. He sees now that he should have been more diplomatic: like him, his colleagues had left the big firm because they wanted independence, and people who strike out on their own are not suited to working in a team.

Another scheme was more ambitious and innovative:

Inspired by the example of the Coimbatore pump manufacturers' consortium, and – like that consortium – with State Bank of India support, a number of large and small companies, making computers or computer parts, set up a steering committee to develop an innovative computer which would be competitive on world markets. Financial institutions were sceptical about India's chances of developing a world-class product and unwilling to put up the capital. Each member company was asked to provide part of the capital, but some larger companies were unwilling to make the higher contribution demanded from them; one company wanted the sole right to manufacture the computer; and the project broke down, leaving at least one small firm to develop a new product, benefiting from the work already done.

The success stories, though rare, suggest consortia may have a future, as a way for smaller firms to overcome the weaknesses which are obvious to all of them, and will rapidly become more obvious as the economy becomes more competitive and open to world markets. The most pressing needs are for a marketing network comparable to those of the big firms, providing an efficient feedback of information to innovators and designers, and for well organized and funded research and development.

Too many hopeful projects have foundered on the rocks of an individualistic and competitive culture. Each entrepreneur treasures independence, which was often the chief motive for leaving employment with a big firm. There are special strains on a consortium which brings together firms of very different sizes, since the small ones fear domination by the large.

Trade associations

Joining a consortium means entering into financial and legal commitments which these individualistic entrepreneurs are reluctant to undertake, unless they see concrete benefits for themselves. Yet they are great joiners of clubs and associations, where the commitment is more limited and the expense modest.

There are trade associations, like Kassia (Karnataka Small Scale Industries Association), which provides excellent practical advice and other services to small-scale entrepreneurs, so its resources have to be thinly spread. Groups like Klik (Consortium of Electronic Industries of Karnataka: not really a consortium) publish

directories, and in other ways encourage mutual aid among entrepreneurs in one branch of industry. Others are locally based, like the Peenya Industries Association in Bangalore, bringing together smaller firms in the Peenya Industrial Area (claimed to be ‘the biggest industrial estate in Asia’).

In the past, the trade associations’ main task was to represent members’ interests to national and State governments, in relation to taxes, permits, quotas of raw materials, laws and regulations. Since many of these controls have been swept away in the recent liberalization, this aspect of the associations’ work is becoming less important. Now they concentrate on advising new or established entrepreneurs, putting members in touch with markets and suppliers, publishing newsletters and trade directories, while still lobbying the government where they believe this is necessary. Thus some associations are trying to get a relaxation of labour legislation affecting smaller firms, and to stop inspection of their premises; or to end the daily power cuts which force factories to depend on generators. Some trade associations have more ambitious plans to set up their own technical, quality control or marketing services. They organize meetings for discussion or to hear outside speakers, and social gatherings where business friendships are formed or kept up; though for this purpose they seem less important than social or charitable clubs like Rotary and the Lions Club. Trade associations are much looser than consortia, yet they are a soil in which consortia might grow. In some cases their office-bearers have actively encouraged members to form consortia: in at least one case, with success.

If consortia or similar forms of networking are to succeed, they need the kind of initial push which the State Bank of India gave to the Coimbatore pump makers’ successful consortium or the abortive computer consortium. Public policies to encourage consortia are probably worthwhile. But consortia for marketing, purchasing, or for the development and manufacture of new products, are unlikely for some time to become as important as they are in Italian industrial districts.

‘real services’: public institutions to help small firms

So much for self-help. Are there other ways in which public policy and institutions can help smaller firms to achieve market-led innovation, commercial success, and good jobs? One lesson from the literature on flexible specialization and industrial districts is that successful networks of innovative smaller firms are most likely to emerge where the state, local authority, or public institutions intervene to provide the services which smaller firms cannot provide for themselves, separately or by forming consortia, and cannot easily buy on the market: what Sebastiano Brusco (1992: 187) calls ‘public provision because of market failure.’ Following Italian usage, these are known as ‘real services’. They include training workers and entrepreneurs, accountancy, design, management consultancy, advice on marketing and technical standards in export markets, and testing of materials. In the ‘Third Italy’ these services are often provided by local governments, working closely with associations of local entrepreneurs and with trade unions.

From the 1940s onwards, the big public sector factories not only produced a supply of skilled experienced labour, but continued to provide consultancy and technical services to smaller firms: sometimes officially for a modest fee, often informally through personal friendships.

Bangalore has also been well supplied with training and research institutions, starting with the Polytechnic and the Tata Institute of Science (now the Indian Institute of Science). Such institutions have operated in Bangalore for many years, long before the rapid growth of electronics in the 1980s; like the Small Industries Service Institute (SISI), of a type found in all major industrial cities in India. SISIs provide a range of services under one roof: technical and market advice, training courses for workers, and machining which the small firms lack the equipment or skilled labour to do for themselves. Bangalore's SISI played an important part in building up the dense network of small engineering workshops in industrial estates and back streets, mostly doing job work for larger firms. Like other SISIs its resources are spread too thin, because it has to help all 'small-scale industries' indiscriminately and cannot target its efforts narrowly enough on firms and industries with real prospects for growth.

The Industrial Training Institute, also on a pattern found throughout India, provides subsidized Diploma courses for young men and a few women, mostly school-leavers. Their diploma-holders try to find work in the bigger firms, where wages are higher and jobs more secure. Here they face stiff competition from young men trained in other public or private institutes equipped with newer machinery; so they enter smaller firms while waiting and hoping for a job in a large firm.

Other public institutions, funded by the central and/or state governments sometimes with foreign financial and technical aid, offer specialized services: among others, the Foreman Training Institute; the Electronics Test and Development Centre; and the Government Toolroom and Training Institute, which makes, sells or leases tools, runs an 'Earn while you learn' training scheme, and offers consultancy. The Bureau of Indian Standards tests samples, inspects factories and awards ISO certificates, which are required for products exported to the European Community and an advantage in other markets.

Tecsok (the Technical Consultancy Services Organization of Karnataka) is a recent initiative of the state government. A small group of engineers advise 'tiny', small and medium entrepreneurs about new technologies. Its fees are subsidized, yet few small firms are willing to pay for detailed feasibility and market studies.

Other government or privately-funded research institutes in Bangalore provide consultancy services which are used mainly by larger firms and a few of the smaller high-tech companies. The National Aeronautical Laboratory also serves electronic and engineering industries not connected with aircraft production. The prestigious Indian Institute of Science, especially its Centre for Electronic Development and Technology (CEDT), advises companies and trains their engineers.

Two institutions have been of strategic importance in stimulating high-quality innovative production. The Central Machine Tool Institute (CMTI), recently renamed the Central Manufacturing Technology Institute, funded by the national government, was established in Bangalore because India's leading machine tool manufacturers were concentrated around the public sector giant Hindustan Machine Tools. The CMTI pioneered research and development of CNC machine tools in India. It is now moving towards an emphasis on whole systems (Computer Integrated Manufacturing) rather than machine tools alone. It trains engineers, designs and now manufactures machine tools, and provides consultancy, machining and design services.

The CMTI exists to serve industry throughout India, but its presence has been of crucial importance for engineering in Bangalore, especially for smaller firms. The CMTI provides technical services, especially calibration and testing. It designs or modifies special-purpose machine tools on request (though many smaller firms are unwilling to pay for new designs, or they design their own tools). The consensus among the CMTI's customers is that its services are of high quality, but delivery is slow, hampered by bureaucratic delays and form-filling: a criticism the Institute is trying to meet. And some of Bangalore's most innovative and successful engineering firms were founded by CMTI designers, who know and trust each other, and exchange ideas and services.

The other institution which provides valuable 'real services' to innovative firms is the Nettur Technical Training Foundation (NTTF), a voluntary institution with seven training centres, all in South India. It began as a joint initiative of the Swiss churches, the Swiss Government and the Church of South India. No longer linked to the churches, it now supports itself by running its own factories, and to a lesser extent from consultancy and services to firms.

The NTTF has two training centres in Bangalore. The older centre provides a rigorously planned four-year diploma course in tool and die making to 120 young men – half of them from village schools – who receive free tuition and subsidized or free hostel accommodation. Tuition is in English, with special help for those whose English is poor. About 30 per cent of those who complete the course find work abroad; the others find work in Indian firms, or become small-scale entrepreneurs. The Foundation also offers a postgraduate course in tool engineering, besides special programmes and short courses. The new Electronics Centre offers similar programmes for women as well as men, notably in CNC programming and CAD.

The NTTF provides a small but valuable supply of highly skilled and employable young workers; short courses to many more who are already employed, mostly in larger firms; and high-quality consultancy and design services to firms willing to pay for them. Its engineers are involved in other initiatives to raise standards of quality and innovation in Bangalore's engineering industries, like the Kaizen Study Circle, or workers' conferences organized jointly with trade unions.

Although Bangalore's engineering and electronic industries have access to an unusually wide range of public institutions providing 'real services', none of these institutions is the result of *local* initiative, either by entrepreneurs or local government, even if they are responsive to local needs. Some are administered by the state government, which has its capital in Bangalore but serves a population of over 40 million. Others come under the national government, like the Central Machine Tools Institute, the only one of its kind in India which Bangalore is lucky to have. The Nettur Technical Training Foundation is a voluntary organization, not dependent on state aid. Some institutions were founded with financial and technical aid from foreign governments (Czechoslovak, German, Danish, Swiss), though most no longer receive financial aid.

These institutions are important to local industry not only because of the services they provide directly, but because of close personal friendships between their staff and the entrepreneurs running innovative smaller firms in the city, many of whom began their careers in institutions like the CMTI or the big public sector factories. These people, whether they work in public institutions or in large or small factories, share a professional culture and a network of contacts, which do not guarantee trust but are sometimes a foundation for it.

The social anthropology of exchange and trust

Men are able to trust one another, knowing the exact degree of dishonesty they are entitled to expect. (Stephen Leacock)

Marshall Sahlins (1972), building on social anthropological theories of exchange which go back to Marcel Mauss' *The Gift* (1954, originally 1925), places what we regard as 'economic' relations at various points on a 'spectrum of reciprocities', including social and moral relations not usually regarded as 'economic' at all, and which may or may not involve transfer of material things. This spectrum ranges from 'generalized reciprocity, the solidary extreme' (Malinowski's 'pure gift'), through 'balanced reciprocity, the midpoint', to 'negative reciprocity ... the attempt to get something for nothing with impunity' (Mauss 1954: 193-5). An example of negative reciprocity is the 'amoral familism' which, according to Edward Banfield, allows one to predict behaviour in a south Italian hill town:

The Montegratesi act as if they were following this rule: Maximize the material, short-run advantage of the nuclear family; assume that all others will do likewise... In a society of amoral familists, no one will further the interest of the group or community except as it is to his private advantage to do so. (Banfield 1958: 83-4)

Another example may be contemporary Russia (where 'If you catch someone with his hand in your pocket, he says "You don't understand market forces"').

Sahlins attempts to classify the spheres of social relations where different rules of reciprocity apply, enforced by economic or legal sanctions, public opinion, or conscience. His examples are from 'primitive' societies, but the idea is also useful in

understanding industrial societies. ‘Balanced reciprocity’ refers to direct exchange. In precise balance, the reciprocation is the customary equivalent of the thing received and is without delay’ (Sahlins 1972: 194). In industrial society, this could be a product, a cheque, or a contract (but for ‘customary equivalent’ read ‘market price’). Our idea of a typical ‘economic’ relation is one of balanced reciprocity, sometimes tending towards the negative. In the words of the economist Robert Kuttner, ‘every business relationship is a one-night stand’.

In an ideal-type free market economy, individuals or firms act legally but otherwise in their own self-interest, so contributing to the common good. Such an economy does not exist: self-interest is always tempered by conventions, trust, moral pressure and mixed motives. Real successful markets lie somewhere between balanced and generalized reciprocity.

Flexible specialization moves the pointer further towards generalized reciprocity: Emilia Romagna is a long way from Banfield’s (one-sided?) picture of southern Italy in the 1950s. An industrial district is a moral community where the limits to trust and self-interest are understood and backed by public opinion, as they apply to different kinds of relationship: contracts, informal co-operation, competition. Here I compete with you vigorously; here I trust you and you can trust me. Or I work for you and want more pay; I may even strike; at all other times I work hard, loyally and imaginatively to make our business a success.

Self-interest, narrowly defined, only explains so much. To explain or change behaviour in real – not abstract – markets, we need a more complex understanding of motives in a culture: economic self-interest, the social and family reasons why people want money, the respect of others in a moral community, pride in one’s work, creativity and independence. Trust and self-interest can go together, provided the boundaries are clearly drawn.

What can be done to build trust?

I have described the extent and limits of co-operative networking between smaller firms in Bangalore, the ‘real services’ which exist and the use which small firms make of them (for more details, see Holmström 1998). If networking and ‘real services’ can sometimes cure the loneliness of the small firm (as they have done with spectacular success in the ‘Third Italy’), what lessons are there, for Bangalore, for India, and for other industrializing countries? Are there critical factors which allow or encourage trust? What is likely to work and what is not? What is there to build on? Is public provision of real services an *alternative* to trust, *built* on it, or a way to build it and to define its limits?

Experience from Italy and elsewhere suggests that the provision of ‘real services’ is only likely to be effective when there is strong specific local demand for a particular service: otherwise well-meaning attempts to guess the demand, and to provide a broad spectrum of possibly useful services, are probably a waste of effort and public money (Nadvi 1994: 222, 237). But once ‘real services’ exist and are used,

they can be the basis for building up and encouraging trust. They are object lessons in the possibility of common action, and an incentive to organize more of it. This applies even where the state apparatus is sometimes ineffective and sometimes corrupt, provided there are enough people in it who are moved by professional pride and an ethic of public service. Fortunately this is still the case in India. Nor is the national or local state the only supplier of 'real services': if consortia or associations of small firms do not take the initiative, voluntary organizations like the Nettur Technical Training Foundation can do so.

Bangalore's successes and failures suggest practical steps which those in a position to decide – governments, entrepreneurs, trade or voluntary associations, unions – might take to build successful industrial districts, in India and other developing countries, and to show entrepreneurs and their workers how to break out of dependence on large firms for markets and designs etc., or how to turn that dependence to their advantage. In particular:

- Improve and invest in 'real services'.
- Target public spending and incentives more effectively.
- Foster cooperation between entrepreneurs.

First, *improve and invest in 'real services'* (training, advice, technical services, consultancy, help with marketing etc.) provided by public institutions. But which public institutions can give the best value for money?

While state intervention does not actually create industrial districts, such assistance, particularly in the form of 'real services', can be critical in ensuring the overall success of small-firm clusters which lack the capacity to generate internally support infrastructure... Such programmes are likely to be more effective if formulated by levels of government which are politically rooted within the community, in much the same way that the industrial cluster is socially embedded; moreover, they must actively involve the participation of those to whom they are directed through representative sectoral associations. (Nadvi 1994: 237)

A fine principle, but hard to act on where local government is weak. In places like Emilia Romagna, local government has provided many of these services, and helped consortia and trade associations to provide others. However local government in Emilia Romagna is notably efficient and free from corruption. This is not always the case in India, or in other regions of Italy.

In Bangalore, most 'real services' are provided by agencies of the national or state governments. Some agencies, like the Small Industries Service Institute, follow an all-India pattern; others, like the Central Machine Tools Institute, are unique: Bangalore is lucky to have them. There are also specialized research institutes, entirely or partly supported by public funds. The initiative is not local, but the impact is.

One institution could serve as a model for the provision of training and consultancy. The Nettur Technical Training Foundation (NTTF) is a voluntary association, supporting itself from its own factories and receiving no state funds, with two of its seven training centres in Bangalore. Several state governments have approached the Foundation for advice on the possibility of establishing centres on the NTTF model: a training, design and consultancy service, supported by production in its own factories and from fees. It is not clear whether anything will come of these initiatives. But if this were done, is it desirable – or possible – to combine accountability with the independence from state interference, which the NTTF regards as a key element in its success?

Secondly, *target public spending and incentives more effectively*. Develop more practical, corruption-proof and influence-proof machinery for intervention by national, State or local governments. Past policies designed to promote ‘small-scale industries’ have sometimes been indiscriminate, helping the efficient, the inefficient and the fraudulent equally. This is now generally recognized in India. There is, however, the problem of making incentives more selective while avoiding party or communal pressures, and corruption.

Thirdly, *foster co-operation between entrepreneurs*, especially in marketing and product development: easier said than done, when they are often so suspicious of each other. Indian entrepreneurs can see the advantage of consortia for marketing, sometimes for common services like testing, and for research and development of new products. Yet consortia are difficult to get off the ground, because of suspicion and the personal tensions which arise when fiercely independent entrepreneurs make a sincere effort to work together.

Support consortia and other joint efforts, building on the success of a few (Anco in Bangalore, pump manufacturers in Coimbatore) and holding them up as examples of what can be done. Encourage informal networking and a mutually beneficial division of labour between firms, even those which sometimes compete among themselves. Trade associations, based on particular industries or localities, are sometimes one way to build confidence and trust, a moral community with sanctions against cheats and free riders.

What are the bases for trust? Kinship and birth community (caste or religion) are often effective, but exclusive. Other bases to build on are links between business associates; between colleagues who worked together in big firms, or in public agencies, before starting their own business; or members of social-and-philanthropic clubs like Lions. These people are open to new ideas and anxious to hear about new methods (like Japanese management). They see themselves as innovators. And this is a propitious moment in India, because of liberalization, an awareness of new problems and opportunities, that there can be no going back to the old days of permits, quotas, and bureaucratic string-pulling. Public agencies could make a concerted effort to spread the message: not just a vague message that trust is a good thing, but a constantly updated appraisal of successes and failures of collective action.

Emphasize the importance of defining the *limits* of trust in different types of relationship, the spheres in which different rules legitimately apply: formal contracts, informal co-operation, competition (in Sahlins' terms, the borders between balanced reciprocity and something more like generalized reciprocity).

This emphasis on trust – rather than power within a hierarchy – applies not only to relations between entrepreneurs, but between employers or managers and their workers. Distinguish participative management, with the potential to draw on workers' talents and imagination, from the paternalism which some Indian employers still hanker for: the myth that there are no conflicts of interest, that the firm is an organic unit like an ideal family. As with relations between firms, useful trust needs to be based on clear definition of where interests coincide and where conflict is recognised, with ground rules for managing conflict. This may mean coming to terms with unions rather than trying to keep them out: collective bargaining can define the limits and rules of conflict (even including strikes).

These are not just abstract reflections on what would be desirable, but proposals for what can be done, and who should do it: the various public agencies charged with stimulating industrial growth in general, and small and medium enterprises in particular; research and consultancy institutions, public or private; business associations, local and/or sectoral (sectoral ones are best); social clubs; and trade unions. Smaller firms have no great virtue in themselves, but a cure for their loneliness can take us some way towards curing the real diseases of poverty, unemployment and tedious work.

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