Lehner, Franz *Anthropocentric production systems - the European response to advanced manufacturing and globalization*, Commission of the European Communities, Luxembourg, 1992

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Franz Lehner's has produced a report that synthesises the major results and conclusions of the FAST (Forecasting and Assessment in Science and Technology) research programme on the prospects and conditions of anthropocentric production systems (APS) in Europe by the 21st Century. APS is defined "as advanced manufacturing systems based on optimal utilisation of skilled human resources, collaborative industrial organisation and adapted technologies."

In the book the case for APS starts with an outline of the challenges to European industry and the features of a production system that will meet these. This is then followed by the definition of the characteristics of APS, the developments and prospects for APS in Europe, and the European response to advanced manufacturing.

Rapid change, from both inside and outside Europe, has hit European industry: "Its capacities to adapt to change and to innovate products, processes and structures are at stake" (p. 5). Challenges from newly industrialised countries, Lehner contends, are not deindustrialising the advanced countries. He uses broad indicators taken from other reports, to show that "the development of the advanced industrial societies is more complex than the assumption of a change from an industrial to a service society suggests" (p. 8). While Europe is not becoming deindustrialised, the performance of manufacturing industry in Europe has fallen below other advanced countries.
The pre-eminence of Japanese manufacturing industry in innovation, productivity and quality is used as an exemplar. The author claims that the basis of its success is more to do with organisation and labour than technology and automation. Power and responsibility are delegated, work is organised around groups and teams, and strong efforts are made to develop employees' skills. Much of what he presents is well known and has become part of conventional wisdom.

Having drawn desirable characteristics from the comparative studies, Lehner then puts his case for the industrial revival of Europe. Manufacturing should embrace "Quality Production," which has the following features:

- High quality goods produced in response to a commensurate change of demand;
- Low degree of standardisation and a high degree of customisation of products;
- Fast adjustment to products to take advantage of the highest state of science and technology that is economically available at the time;
- High services component.

Anthropocentric production systems are advanced for achieving this Quality Production. They fulfil both the economic aim and the social aim (to create and secure human working conditions) underpinning Quality Production. Lehner presents the following components as essential in these systems:

- Flexible automation supporting human work and decision-making;
- A decentralised organisation of work with flat hierarchies and a strong delegation of power and responsibilities, especially to the shop-floor level;
- A minimised division of labour based on some form of integrated work system design;
- A continuous, product-oriented, up-skilling of workers at work;
• A product-oriented integration of the broader production process: that is, the chain of research and development, work, marketing and services.

Technologies within the CIM genre are considered unsuitable. CIM concepts, being based on full automation, are part of the world of mass production and therefore fail to take cognisance of the shifts towards quality production and lean production. Changes to fully-automated systems require considerable costs in time and effort. They require a complete programming of the production process, incorporating all eventualities, variance and deviations. In a condition of rapid innovation, however, leading-edge technology is not completely known and tested.

The arguments, Lehner presents, for decentralising organisations so work groups are empowered at the shop floor level are not new. Though, the responsibilities of work groups, which he lists, provide a focus for deciding the requirements of computer-based support to human decision-making. Lehner places particular emphasis on correspondence between the scope of tasks, powers and responsibilities of work groups and skills and learning capacities of workers. Workers must be capable of performing most of their tasks and operations applying skills they already possess. Up-skilling should, for the most part, operate as a gradual and continuous learning process through work, i.e. learning by doing.

Lehner produces a list of features needed for flexibility. He then proposes Intelligent Manufacturing Systems as the operational instrument for combining the intelligence embedded in automation technology with the human intelligence of skilled workers.
While anthropocentric production systems offer the future way, Lehner lists significant obstacles to their application:

- Tayloristic management strategies and Taylorism underpinning the design of computer-integrated production;
- Standardised mass production;
- Rigid organisations, status systems and wage structures;
- Shortages in skilled labour due to weak vocational training; and
- ‘Low-trust’ industrial relations.

These obstacles plus the wide range of actions in the recommendations presented as necessary for anthropocentric production systems to reach significant numbers may leave the reader despondent. Moreover, it is a pity that the reader is distracted by numerous misspellings, poor grammar and repetition.