1.6 Education as Industry:
A Techno-social Perspective (2008)*

To treat education as industry may give cultural shock to many. In Indian traditional culture, knowledge is always treated as sacred treasure ('*pavitra dhana*') and the Guru, who educates or helps and shows the way for acquiring knowledge, is treated with great respect and reverence. Education and knowledge ware, therefore, not salable and tradable commodities.

The Indian cultural view has been changing over the last few centuries during industrialization and post-industrial or knowledge-based society development. It is becoming not only a marketable commodity but also a big global business worth 1500 billion dollars annually.

Technology has transformed education:

It is interesting to understand the path of development of education through the last few centuries coming down to 21st century. In agrarian society, when communities were localized, and transport and communications were limited access to knowledge was limited to select few. And they formed themselves to be the exclusive and powerful class controlling society through political, religions and knowledge power. The situation changed radically when printing technology emerged in 15th century. The books, the print, became the medium of knowledge; and marketing books or knowledge became publication industry.

First epoch making change emerged due to technology. The knowledge and education, limited to the select few, became accessible to many ultimately leading to mass education- all this due to industrial development.

The word 'industry' has acquired specific meaning during the last few centuries. According to Webster and Oxford dictionaries, it is a 'diligent or constant application of work,' or a 'production of goods from raw materials' or a' business or activity of manufacturing', or 'people & activities involved in producing a particular thing or a particular service'. These meanings of industry supports inclusion of agriculture in the fold of activities of Chamber of Commerce and Industry, and Maratha Chamber of Commerce, Industries and Agriculture (MCCIA) of Pune deserves compliments for its openness and vision in including agriculture in its name.

The whole humanity moved and transformed from 'agrarian' to 'industrial society'. The education, as it evolved, has also moved from *schools*, *pathshalas* and *madersas* conducted in churches, temples and mosques, the religious places of worship, to schools, colleges and universities organized and conducted in public places. The education has always, and will always remain to be a part of social form and structure of the time. It is, therefore, no wonder that it has also acquired industrial form.

* MCCIA Education as Industry

Lokmanya Tilak criticized the colleges as '*factories*' producing graduates. The process of admission, teaching, student progression, evaluation and batch production & certification resemble factory processes of inputs, conveyor belt sequence of activities,

testing, grading, certifying and marketing. Educationists do call it a *'factory model of education'*. When I established Yeshwantrao Chavan Maharashtra Open University at Nashik, I used a definition of *'distance education'* by Otto Peters, a German educationist, as an *'industrial form of education'*. All the structures and functions of the open university were designed on stages of planning, development (self-instructional materials), production (books, audio-visual materials), distribution (student support system), evaluation (testing, examination and certification) and feedback & reform. Education also uses the same language and concepts as in industry; when you meet a old college-day friend you naturally ask 'what *batch* did you belong to?'

Industry & Education have identical features:

Industries based on auto-machines have certain basic features. Each industry product must be similar and identical; consistency and uniformity is quality! There is a division of labour, worker must do the same thing over and over again; he is a 'cog' in the machine, a faceless worker. Workers are 'specialised 'in their skills and specific operations. They cannot be easily migrated (very costly & unproductive) over to other distinct functions. Service is limited to product use only, and not necessarily the total customer satisfaction. Feedback is obtained and put-in at various stages of industry functions to reform and perfect product. Mass-production is the approach, and capturing a large *'market share'* is the way to success. This approach offers products to large numbers and maximizes profits. With quality and cost-competitiveness industry gives customers choices and value for their money when there are competing providers.

The mass production by industries has two distinct impacts; first it involves many in production and delivery services thereby creating more employment and wealth. Industry has raised standard of living through amenities and facilities enabled by industrial products and services. Employment of large number of workers in economic and wealth generation is responsible for higher GNP and Per Capita Income-indicators of economic progress of a nation. Along with this good impact, there is an adverse impact too. People associated with 'industry', often lose their faces or identity; and customers get used to the industry products, which are created with *'one-fit-for all'* approach. In-fact customers are forced to *'fit'* themselves into the usage of product or its services; that is why all that ad-industry for promoting and converting people to use a particular industry product. Humans with diversity and creativity are not the industry strategy and goals.

Education has also moved along the same path. It offers *'one-fit for all'* type courses in the present-days of *mass education* with similar type of industrial processes. The goal is that graduates should find better *'fit'* or places in industrial world – local, national or international. Institutions, which make difference in education, have emphasized on personal contacts & interactivities, often outside the classrooms, cared for students' background, abilities and preparation and have helped students to develop. This happens only when student-teacher ratio is small and faculty is highly qualified and experienced – the parameters of quality in education. In these days of *Education for All*, solving the triangle of *quality-quantity-cost* equitable for all is practically not possible; if quality is raised cost goes up and quantity or numbers educated goes down. Solving this triangle is often described as *zero-*

sum-game. Offering quality education for all at affordable cost in the existing industrial form of education is impossibility.

Agriculture as industry is different.

A few words about agriculture as industry. First this industry is not so universal, in the sense that it depends on agro-climatic zones, local conditions of soil, people who cultivate and their socio-cultural contexts and preferences. What agriculture produces is consumed by the people for their living or by industry for food processing and by business for marketing. A farmer produces not often for marketing but for subsistence and supporting local community. He is also a customer of products that he is not producing. Indian farming is sustaining two-thirds of its population, and is giving livelihood to nearly 70 % people, mostly rural. Agriculture is also a culture, creative and enjoyable process for individuals, families and community. Since it gives food and life security and opportunity to carry out work in daily changing environment, it becomes a way of living and working as well as a way of joyful and happy life for many.

With chemicalization of agriculture, farmers started producing more. It gave them higher purchasing power. Along with mechanization, a process of agro-industrialization has started and is enriching rural India. Research and development of new technologies, new varieties of seeds and plants and genetically modified seeds are creating a new scenario that can feed large population of the world. Briefly, the agriculture is a bio-industry depending on locality and socio-cultural contexts of the people. It is a distributed local bio-industry offering opportunity to farmers to become '*prosumers'*- producers + consumers.

Industry is transforming into new paradigm:

Micro-electronic revolution and emergence of Information Communication Technologies (ICT) have changed scenario in all walks of life. They have created globalization, customization and convergence of technologies with fusion of computing, telecommunicating & broadcasting sciences. The scenario is so fast changing in technologies with increasing applications in all ways of living and working that it is difficult to predict scenario after ten years.

There are, however, many distinguishing features that can guide us to set our goals, directions of development as well as immediate paths. The ICT is networking the whole world – individuals, institutions and organizations; and enabling people to connect and interact any one from anywhere anytime. The centralized technologies such as servers, networks, satellites etc, and personalized technologies such as personal computers, personal digital assistants and with access technologies such as mobile Internet, broadband connectivity on-line and no-line (wireless) are creating new open world, new society. It is changing and transforming localities into global communities, and people into universal men and woman. As Thomas Friedman finds in his famous book *'The World is Flat'*, the ICT is changing the world and creating level playing fields for all.

Needed New Paradigms - Socialized Industry:

The industry is using new technologies for automation and customization; and aims at providing each customer (or their groups) the product that meets their choices, needs and requirements. The global competition requires not only quality and cost-competitiveness, but also total customer satisfaction; not only at the time of purchasing, but also while using the product, banning the warning seen in shops: *'once sold can not be returned'*. The industry is preparing to sell products and provide services that go with the customer till customer is satisfied, not only during the warranty period, but throughout the period of product usage; the approach called *'Back to Futures'*. In industry commerce and agriculture the direction of development for capturing markets and consumers is to offer customers the products and essential services during entire product utilization. Industry is socializing and shedding its mechanistic nature.

The socialized industry has quite different dimensions. It should be related to locality-the place and people. It should be friendly to social, cultural and environmental contexts of the community. It should match the developmental, rather sustainable developmental aspirations of the people and society. The globalization has therefore to merge with localization. Tomorrow's industry has to serve customers' specific requirements and local development. Instead of working in isolation and in competition with other providers, it has to work in partnership with customers and customer communities. In many industrial areas, a part of their production process could be shared with customers. This is clear from the examples of agriculture industry, wherein farmers/villagers could be customers as well as providers of inputs, the prosumers, by making the industry distribute. The situation would demand that industry should change its role from product sale to partnership with some customers, if not all, in manufacturing and delivery by forming producer-customer consortia or interest specific communities. In short the industry should work not for profits of providers alone, but for 'profits' and 'development' of customers also. Recent development of contract farming and agriculture market act is in a direction towards development of such communities or consortia. This creates a scenario in which intermediary class of businessmen vanishes gradually and joints either producers or customers. Developing a socialized industry directed towards development is a great challenge and involves inventing thousands of ways and means of socialization and models of development of society.

Education in ancient India has started with personalized teaching and learning at the feet of a Guru. Education has become a mass-production phenomenon in Industrial society; and will revert back to personalized education in information society. The modern ICT enables creating knowledge grid, network of resources- of content, experts and expertise-accessible to all anywhere anytime. Broadband and mobile Internet technology (EDUSAT-Educational Satellite of ISRO included) enables to create:

1. *Distributed classroom* for peer and expert interactions.
2. *Mass-personalization support* to fulfill needs and requirements of individuals, groups and institutions.
3. *Just-in-time communication* to help solve immediate problems at hand
4. *Distributed and blended system* of education using classroom (formal), distance education (non-formal) and informal education in an integrated way.
5. *Personalization technologies* that can support individual and institutions with performance and requirement assessment for reforming and developing

Part of these technologies are available today, though not in a complete form, and could be utilized for personal achievement rating, supporting learning and developing, so that the person becomes nationally and globally competent and capable. In fact the technology mediated open and distance education in a convergent educational mode can help us in solving the *quality-quantity-cost* triangle satisfactorily.

The concept of MCCIA's Finishing Institute is a first step in that new direction. It would use ICT, networking, distributed classroom and personalization technologies already available in Pune, and establish a consortium of industries and educational institutions in training and educating the graduates coming out of educational institutions. The program would be training in those employment skills, competencies and capabilities that are essential in industry and lacking in graduates. The goal is to help graduates to secure place in a particular industry; and industry to get well-trained and qualified graduates by saving training costs.

In order to prepare for ever-changing industrial situation, the graduates have to develop learning and self instructional skills, to follow life-long-learning path and to raise personal capacity and capabilities to match the situations he/she will be facing at the work place. In fact such type of training and learning is essential for workers in industry also so that they can contribute to the capacity and capability building of industry. The initiative of MCCIA in proposing Finishing Institution is to develop partnership approach through consortium that helps continuous developing at individual and industry / institution level. It is a small step on a long journey on capability building and maturation path for public and private institutions and organisations.

New Paradigm: Education as a Developmetal Industry:

The considerations given above would reveal that commerce, industry and agriculture have to undergo a great paradigm shift during the next 10-20 years. The direction of development is globalization, localization and customization. The knowledge based and development centric era of 21st century would require that new technologies such as IT (Information Technology), BT (Bio-technology), NT (nano-technology) and other technologies should be used to make processes, products and services knowledge intensive. India is having intellectual resource that helps develop new paradigms and take the country on the forefront of development.

The new paradigms are bringing produces and consumers directly in contact by eliminating many intermediates. Industry will become *global* + *local* = *glocal* and will have to create its own customer base. This stage would come only after enough mass production and fulfillment of basic and foundational needs, the stage of personalised and customized goods would start.

Education has a special space in all this progress. Actionable knowledge forms input resources for development, for every change and creativity, for applications and relevance and for sustainability. With omni presence of knowledge, expertise and experience available to anyone anywhere, the emphasis in education as well as in working, shifts to development.

As Amarty Sen in his inspiring book *Development as Freedom* defines development simply as the process of expanding the real freedoms that people enjoy; and the central

criterion for the assessment of developmental progress is whether the freedoms that people have are enhanced. He argues that development happens primarily through the free agency of people. It is therefore essential to link developmental activities with participation of the people who are involved or for whom the development is meant; and the development achievement is measured in terms of the freedom people enjoy in choosing, deciding and controlling their own future. The sustainable development is becoming a global agenda and global movement through programs of Millennium Development Goals and Decade of Education for Sustainable Development (2005-2014) proposed by UNESCO and approved by all countries in UNO. It is a movement to ensure freedoms of people in developing world and developing societies.

Development has many forms, facets and appearances as many as people and communities. The sustainability of development is a search of those practices and principals that ensures many dimensions of developments and related freedoms. Ultimately the problem of development is to identify unity in diversity; inculcate those values and commitments that ensure sustainability and freedoms. It becomes a search for unifying values and principles, those global values essential for universal man and woman, for global societies.

One of the strategies and ways for developing appropriate education for sustainable development or developmental education is to create consortia and alliances of *private-public-community partnership* on win-win basis. The partnership approach would be successful if working together becomes a culture. This in-turn requires observing *core values* such as openness, participatory democracy, transparency and accountability, besides faith in *founding values* of Indian Constitution, namely liberty, equality, fraternity and justice.

Education is therefore the core industry that imparts training and learning for development essential for all industries, all human endeavor; and would be coming to a center stage as society becomes knowledge based. Education is therefore transforming into a personalized industry, a developmental industry.

Incidentally this article also makes a case for inclusion of education in the name of MCCIA!

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