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Information Technology and Citizen Participation:

Macro-Lessons from a Micro-Study

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Introduction

The study seeks to situate and highlight the relations between Information Technologies (IT) and imperatives of governance in the specific context of West Bengal (WB). However, the findings of the study have broader relevance in the context of India and other developing states/societies. Two basic assumptions guide the conceptual framework of the analysis here. The first relates to the 'great paradox' of technology: that technology can be a means of empowerment as it can be an instrument of marginalization and exclusion. A detailed theoretical discussion on the point is however beyond the purview of the study. The second assumption is that the differential access to technology is directly related to the specificities of power-relations that are embedded in the society in which the concerned technology is deployed. Let us briefly elaborate the points.

In an era in which the information revolution by its extraordinary power of connectivity promises greater access to its benefits by the poor and marginalized, IT need to have constant and intimate association with *everyday life* of the people in general and 'target groups' in particular. Because IT cannot remain a 'distant something' to people in acquiring a *people-centric* character they are to remove, or at least minimize, the differential access to technology. To do so they are to be integrated with the daily life and experience of the people whose quality of life they are supposed to enhance. However, the application of IT cannot be based on a 'single formula', by defying the social, economic, political and cultural *specificities* of the 'local' *space/site*. This is true both in the micro- and macro-contexts. In the micro-context, the social and cultural dynamics, composed of orientations, attitudes, behavioural patterns of people-cum-'target groups', have wide variations, be it a small village or a city neighbourhood. Such specificities are no less significant in the macro-context marked by severe *technology gap*, and *digital divide* between the developed and developing countries. [1](#) The scenario calls for scrutinizing and visualizing IT from a non-Western *Third World perspective*.

Such an *alternative* perspective has important bearing on IT-related policies both in terms of its theoretical and practical concerns. This constitutes our second assumption. IT policies

have differing forms and features but their major strand, in the present context, is exploration of pathways to improve the quality of life of the people. In being so, they are supposed to put *redistributive justice* at the core. The purpose of IT policies should be generation of *collective* awareness and empowerment with a view to facilitate the construction of a 'just and equitable society'— supposedly an order in which welfare and well-being are not the monopoly of few. Here too, the vantage point of the developing world is an important consideration. Even if the need for collective awareness and empowerment as part of construction of just society is, so to say, a 'universal need', it obviously has some idiosyncratic features as far as the developing countries are concerned.

In its focus on West Bengal [2](#) the paper primarily seeks to explore and evaluate the *human milieu* in which IT are being introduced and replicated, with simultaneous attention to the pros and cons. In order to avoid narrow technocratic interpretation detached from the socio-cultural context, it adopts a non-conventional route to explaining the issues at hand. The study, based mainly on the 'local' experience relating to the deployment of the Geographical Information System (GIS) — to be elaborated subsequently — would make some generalizations which could be instructive for policymakers in societies which are seeking to utilize IT for development.

West Bengal: The Site

The major reason for the focus on WB lies in its experimentation with e-governance which has IT as the 'nervous system'. However, the deployment of IT in West Bengal, insofar as the government is concerned, is strategically placed within the orbit of the GIS, described often as the 'backbone' of e-governance.

E-governance is a grand scheme (Heeks, 2002) which at one level promotes, through extensive and intensive use of new technology, 'transparent, efficient and accountable' administration based on cost-effectiveness, convenience, strategic networking, connectivity and quality public services. At another but related level it visualizes the coming of the *e-society* composed of empowered citizens-cum-stakeholders by transferring power, authority and resources from pre-existing centralized locations to decentralized locations. In administrative terms, the *mantra* of e-governance is (popular) participation; in more political terms, it is democratization. The significance of the GIS vis-à-vis the IT-enabled governance primarily lies in it being a kind of *pathway* or *support-system* [3](#) to broad-based access to digital, spatial information technology and data. It makes possible systemic, systematic, organized and coordinated utilization of IT – to be distinguished from scattered, uncoordinated way which in the context of the developing states could result from 'unbound enthusiasm' of policymakers exposed for the first time to IT.

Focal Domains for IT-enabled Governance

Source: Richard Heeks, *eGovernment for Development Information Exchange*, Manchester University, 2002. Suitably amended by the author.

To refer back to WB, it is being ruled by the Marxists since 1977 – which by itself is an unparalleled feat in the world history of the parliamentary Left. For a long time the Marxist rulers cited ideological reasons to oppose IT, on the ground that they are new and more convenient means of enforcement of dependency by the 'imperialist powers and their stooges'. The Left trade unions were also vehemently opposed to introduction of new technology on the ground that it would result in retrenchment of workers, thereby subverting the workers' movement in which WB has been at the forefront. But with the dawn of the neo-liberal era around the world since the eighties and the adoption of the Open Door policy by the central government of India in 1991, the ruling Left Front

government in WB has, partly under compulsion and partly being guided by “pragmatism”, eventually discarded its long-tradition of intense hostility to information revolution. The result was a radical shift, evident particularly since the mid nineties, to provide official recognition to e-governance. The Preamble to the *IT Policy West Bengal 2000*, the first comprehensive document to have officially indicated the shift, states:

The State Government will...promote the growth of IT industry in the State. This will offer benefits of (IT) applications for all types of industry, enterprises, private and public organizations and institutions. *Increasing information appliance access to the people...will be a major goal*. (Provision 1, “Preamble”, *ITPWB*, 2000:3, Italics mine)

The emphasized part of the excerpt is the entry point to IT in WB. In a direct reference to IT, the document notes that they will be identified and appropriately adopted in different functional units of the government. The document itself mentions that broad-based computer access along with web-enabled technologies and durable multimedia are the key to ‘providing better and efficient services to citizens’ (Provisions 1 & 2, *ITPWB*, 2000:1) and the chief means of transition of ‘IT-aware government to IT-enabled government’. West Bengal Electronics Industry Development Corporation Limited (Webel), the IT nodal agency owned by the WB government, has also been entrusted (Section 3.5, *ITPWB* , 2000:13-14) to work, in cooperation with private organizations such as Oracle India and WorldTel, towards exploring the requirement of information kiosks. The kiosks, it is being repeatedly pointed out at the governmental circle, are needed for ‘delivering a whole menu of services to the citizens’ and ‘facilitating ready use of the Internet by the common man’. In the section on ‘IT Education and Human Resource Development’ (Section 3.3, *ITPWB*, 2000:10-12) stress has also been laid on establishing a linkage between IT on the one hand, and research and development organizations and academia on the other hand. Designing and adaptation of specialized teaching methods have also been visualized. As part of building up the potential of e-commerce, priority has been accorded to the development and utilization of IT in industry (Section 3.4, *ITPWB*, 2000:12-13). Provision (Provision 3.4.1, *ITPWB*, 2000:12) has also been made for establishment of Industry Consortium based on ‘active collaboration’ of the WB government with leading industrial houses, software companies, venture companies and non-resident Indians. Yet another provision mentions (Provision 3.4.8, *ITPWB*, 2000:12) that software units and software technology parks would be given ‘fast track clearance’.

The New Policy on IT-Enabled Services (NPITES), which sets an even more aggressive ‘IT Vision’, refers (p.2) to the role of IT to provide public interface to government information, computerization of government departments and an aggressive IT Literacy Programme in educational institutions. In defending WB’s suitability in developing such ‘new’ atmosphere the policy document provides background material. It states: ‘WB has registered steady growth in the IT sector between 1996-2001.... The state recognizes that the potential is far higher, given its intrinsic capabilities’.

The policy of e-governance is also to be posited within the parameters of the politico-administrative goal of decentralized planning in the state. Headed by the State Planning Board it recognizes the government concerned as ‘enabler and facilitator’, rather than just a *doer*, and therefore calls for intensive and extensive citizens’ participation. The proverbial ‘big push’ to decentralized planning was made possible by the 73rd and 74th Amendments (1992) to the Constitution of India, which catapulted the *Panchayats* (the popularly elected three-tier institutions of rural local government at village, block and district levels) and municipalities from being mere subservient administrative organs of the state governments to becoming the third tier of rural/urban local government – alongside the central and the state governments. As one study (Datta, 2000) points out, the amendments not only made the election to the rural/urban local bodies mandatory, they also entrusted the popularly-

elected representatives with substantial powers to play a more meaningful role in grassroots-level *participatory* planning and seek development grants directly. By the same logic, it also entailed greater scope of efficiency and transparency in gender-sensitive governance with the ultimate purpose of greater accessibility and participation of ordinary people. In view of this, e-governance in WB cannot be implemented in a superficial manner as an infrastructure-cum-process that transmits data and information by electronic means for better service delivery. Its introduction and implementation need to take into account greater citizen participation. One effective way of doing it is to bring IT closer to the people as part of delivery of *development-oriented knowledge* (DoK).

Thus, in an ideal situation, the ordinary citizens in WB should be able to use the information/Internet kiosks or take help of the touch-screen display to get information on as diverse issues as tax status and arsenic level in drinking water. Such strategy assumes greater significance because not only are local capacities are often weak or unutilized, citizens are in most cases least informed about their own resources, skills, entitlements and obligations. Let us at this juncture deal directly with the idea and practice of the GIS.

GIS: The Backbone

Even if GIS has been introduced in North America way back in the sixties, in India and WB it is a new concept. GIS, as an information system, is supposed to be used for natural resource management, environmental monitoring and planning and researches relating to social, economic and demographic data with the purpose of creating updated database and ultimately, effective decision-making. The three types of data in GIS are: *Spatial Data* , *Attribute Data* and *Temporal Data* . In GIS, the database is normally conceptualized as a series of thematic topics or categories of information referred often as layers. The data is stored in three ways: *Vector Coding* , *Raster Coding* and *Network Coding* .

But for our purpose here, GIS is perceived not solely in terms of a 'technological marvel' in the service of the policymakers and administrators. In terms of social scientific perspective the main hypothesis of the study is the following: GIS is to be viewed, beyond its technical and technological parameters (described earlier) as a new and effective means of creating popular awareness about locality – its spatial and socio-economic characteristics – which can induce and facilitate people's participation in local civic affairs. Thus, GIS to us is a *political* (in the broad sense of mobilizing and organizing people) *construct* (Aitkin and Michael, 1995).

This hypothesis is directly related to the ambitious way in which the WB Government seeks to utilize it:

The objectives of...the GIS...in West Bengal are to provide an environment conducive to socio-economic growth and ensure delivery of services to all sections of the population to reduce inequalities in opportunity....E-governance is the use of information technology to deliver public services in a much more convenient, people-oriented, cost-effective, transparent and altogether different and better way. (*Status Note on Municipal GIS in West Bengal*).

In the *Status Note*, the government also highlights two major points which are to be referred and evaluated in the subsequent discussion. They are:

i) The transition from animosity and fears of computers and computerization to a realization among the municipal councilors and staff that technology can be used to improve the efficiency of the administration and quality of life of the general citizens, especially the poor.

ii) Change in people's perception of the local body in terms of better and quicker service, reduction in corruption, greater transparency in decision-making and allocation of resources and a more people-friendly government.

WB has readied itself to the adoption and application of GIS since the year 2000. Structurally, GIS involves an array of organizations – the governmental department of Municipal Affairs and Urban Development, Kolkata Metropolitan Development Authority 4 , WEBEL, State Urban Development Association (SUDA), with funding from such transnational organizations as the World Bank and the UNICEF. At the initial stage it also involved a private concern – Riddhi Management Services Private Limited – which along with Webel Informatics provided the technological support and initiated the process in Maheshtala municipality in the South 24 Parganas – a district closest to Calcutta. Maheshtala became India's first municipality to adopt full-scale computerized GIS, which was inaugurated on 30 October, 1998.

The urban municipalities, consisting of elected representatives of the people, are the locus of the linkage. The tailor-made GIS covers a number of areas pertaining to collection, storage and classification of data on geographical and socio-economic profiles. They include data on land and land use, water bodies, water table, physical infrastructure, health and family planning, tax collection, drinking water pipelines, drainage and sewerage system, garbage disposal, household, birth and death registration, mother and childcare, status of primary and technical education and various demographic characteristics. There are certain specific *local* issues as well. The mapping of landslide-prone spots in the hilly Darjeeling district is an instance in the point. We would mention it in greater detail in the section on "Overcoming Barriers". To refer back to the GIS, initially it was meant for fifty one municipalities of the state, had a north-south spread with northern areas like Jalpaiguri (WB's 'first e-governance-ready district'), Kalimpong, Kurseong and Darjeeling and southern areas like New Barrackpore, Budge Budge, Kalyani, Naihati, Bhadreswar, Barrackpore and Bidhannagar among others coming within its fold.

The GIS has two specific interrelated objectives – i) resource mapping and ii) target group intervention in urban areas. The objectives, as hinted earlier, are intimately connected to the administrative goal of efficient service delivery to the local people. However, if the GIS is narrowly conceived in terms of facilitating the collection and storage of information – through such familiar means as *enumeration, survey, data entry, map digitalization* and *data analysis* – for improved public service delivery only, it would, as mentioned earlier, at best remain a technological marvel. On the contrary, if it has to fulfill the broader goal of being an instrument of conscientization and participation of citizens to put them on the road to empowerment the GIS needs to be visualized and utilized as a *community-integrated, public participatory instrument* (Pickles, 1995) for creating *informed* citizens, with due weightage accorded to local resource, knowledge and skill.

The idea of Community-Integrated GIS seeks to expand the horizons of the GIS from being a cartographic tool to an 'inclusive' technology capable of promoting people's participation in local-level decision-making. Thus the Community-Integrated GIS is to combine valuable local knowledge and skill with 'new technology' to ensure democratization of development. Community-Integrated GIS recognizes GIS as an 'expert' system but tests the capacity of the technology in the context of people and communities normally peripheral to spatial decision-making processes and politics. In enabling the GIS to reach out to people and in broader terms in making e-governance a road to popular empowerment IT have a particularly crucial role. It is IT which can make GIS user-friendly interface for people's interaction. The role lies not only in transforming ill-informed, ignorant citizens into *informed* citizens but going beyond it to make the apathetic citizens *pro-active* citizens. Pro-

active citizens take interest and participate in local affairs and in the process ensure intensive interface between the administrators and citizens.

GIS has to rest on a 'back-up process' of *participatory communication* — grassroots-level, face-to-face, dialogical interaction between the administrators and the citizens, supported by *networking* with voluntary organizations, NGOs, community-based/neighbourhood organizations and various other forms of citizens' organizations. It also brings in the issue of relevance of traditional media technology, a point we shall consider in the later part of the discussion. The question that needs to be addressed here is in which way and to what extent the linkage in WB is conforming to our primary assumption of *fitting the IT to the people*, as opposed to fitting people to the IT? If one considers the idiosyncratic variables of WB it is evident that the question pertains to a *broad-based process of cultural re-orientation* with its quota of frictions and constraints.

Constraints

There is little doubt that the straightforward way to make the IT *interactive* is to increase the number of its direct users. But so far as the current scenario in WB is concerned GIS has not yet led to such a radical turn so as to enable ordinary citizens make direct and extensive use of it in their everyday life. Some major constraints can be identified.

Traditions, orientations, beliefs and habits – which constitute 'culture' of a given space – take fairly long time to change even in the face of technological push. Resistance occurs from among the people who being embedded in (*local*) politics, power relations and socially differentiated locations, are not exactly in the best position to be instantly receptive to it. More significantly, the resistance emerges from the political-bureaucratic establishment. In WB with the emergence of the 'newly-incarnated', technology-friendly 5 Left Front, after an overwhelming victory in the state-level assembly elections in 2001, and its "do it now" slogan, there are less overt protests by the orthodox elements of the political establishment and bureaucratic circles. However, resistance does remain, in many cases latently. Unbroken rule by the Front since 1977 has ensured relative political stability but alongside it has also given rise to infiltration of municipalities and *Panchayats* by various local self-seeking forces, including intermediaries, which/who resist any development meant to enhance citizen participation. A very complicated challenge stems from the 'hiccups' that are inevitable in the slow but steady shift from the long-cherished state-centric approach to the *entrepreneurial approach* to development. It is bound to lead to a very difficult situation with the ideological compromise of the Leftists with de-regulation and privatization. Apart from the ideological constraints there are practical constraints as well. Some major ones can be mentioned in brief:

- Being two and half year-old experiment the linkage is still to develop going through teething trouble which includes slack work culture and the suspicion that the introduction of the IT would lead to massive unemployment.
- Lack of localization of IT, in this instance – the lack of conversion of software in local language – is a deterring factor in the specific context of WB.
- Prohibitive costs of computers and accessories prevent much-needed expansion of public participatory character of the GIS.
- Some municipalities, such as that of Barrackpore, continue with the old accounting package mainly because they are not 'psychologically prepared' to adopt the new ones.
- The local surveyors often work out of compulsion, rather than on choice. A major complaint they make is that of irregular payment, a point that has also been acknowledged by the GIS Documentation team. This obviously hampers quality of the whole exercise.

- Lack of elastic tax-base and inefficient tax collection affect the introduction and implementation of the GIS. In many cases the poor economic condition of the local people works as a barrier to imposition of new tax. This also adversely affects the prospect of the GIS which is supposed to be a self-supporting exercise.
- Except in rare cases like Jalpaiguri when it comes to the district authorities there is comparatively less enthusiasm and commitment to the GIS in comparison to the municipalities.
- WB being mostly rural in spatial and demographic spread 6 , the linkage, unless expanded to the rural areas as well, would be limited in nature.
- Even if GIS is extended to the rural areas the constraints to popular awareness and popular participation would not go away because there is thin attendance in the meetings of Gram Sansad which could, as instrument for people-centric development activities, could play a leading role in legitimating GIS in rural areas.
- 69.2 per cent literacy rate in WB [which puts it in the twentieth position in India] 7 , and slow rate of rural electrification are severe obstacles to ensuring broader access to and utilization of the IT.
- One of the worst financial crises, faced by WB currently, has severely affected the development work in the state in recent times. Under these circumstances a great leap forward to expanding the 'net' of the direct users of the IT, especially in the context of deficiency in basic infrastructure in many areas, is not really a feasible proposition.
- The urban and rural local bodies are far off from being self-reliant, financially and otherwise, to embark on the introduction of GIS 'on their own'.
- WB lacks proper publicity of GIS and the consequent need for citizen participation. As a result, even the informed people are not aware of the work that has already been done. In this sense, the whole exercise has largely remained very 'introverted', which is not a very encouraging sign for those interested in developing its community character.

Going beyond the Constraints

While resistance does take place, so does transformation. In an anecdotal vein, one can refer to the instance of a former chairman of Maheshtala municipality, who being a dedicated activist of Left trade union movement, was 'habitually opposed to emerging technology'. But with a fair degree of exposure to the IT and its transformatory potential he became a self-confessed 'convert' and ultimately played a leading role in establishing GIS in his municipality. There are attempts by some municipalities, such as Bhadreswar municipality, to ensure greater use of the IT by the people. Thus, the municipality provides opportunity to the school children of the locality to make themselves acquainted with the IT and be aware of its developmental potential.

The instances given here need not be generalized. But they do indicate that a change in the mid-set is not impossible. Technologists in charge of implementation of the GIS scheme also favourably mention the name of the former district magistrate of Jalpaiguri, Subrata Gupta, who was enthusiastic in making the underdeveloped area the state's first "e-governance-ready district". Approximately 2131 of the total 2420 village maps of the district has been mapped, digitized and archived. Another positive dimension of the project is that remote villages in the Jalpaiguri district have been recorded and mapped for the first time using satellite-imaging techniques. The GIS backbone will enable authorities to view, access, retrieve and monitor detailed information and status of blocs, panchayats and villages – relating to electrification, water, land, food, roads, schools, health, animal husbandry – displayed on computer screens. All the 13 blocs in the Jalpaiguri district have a computerized center in the rural development centers. The Mendabari Panchayat in the district is claimed to be the first Panchayat in the state to have a full-fledged computer center with trained staff. It is also significant that the

electronic forms for Panchayat planning activities have been formatted in Bengali. Even if Gupta and his team of GIS experts also have their critics who point out that GIS implementation in the district has had too much of 'academic orientation' and too much stress on technical perfection of resource mapping, the instance itself reveals a positive synergy between bureaucracy and technocrats.

As hinted at the outset of the discussion, GIS scheme in Darjeeling district needs a special mention. The central focus of the scheme, administered wholly by the District Magistrate's office in Darjeeling town with a Deputy District Magistrate in charge, was initiated in April, 2001. Its central thrust is on 'community-based landslide preparedness'. In terms of its 'initial target' thirty Gram Panchayats (GPs) in eight hill blocks 8 , and another thirty VPs in the same blocks were earmarked for participatory landslide control in Phase I and Phase II. Landslides take a heavy toll in human and material resources in hilly Darjeeling and it come in the way of any sustained process of development in the area. Very significantly the thrust of the effort has been on the 'preparedness' to control such disaster, rather than on adopting *post facto* measures – which had been the traditional norm. Even more significantly, while the GIS being is technologically utilized for data collection (number of incidents, death, houses destroyed, trees lost, cattle lost, people under relief, areas lost in square kilometers and so forth), resource mapping and identifying disaster-prone areas, there has been no exclusive reliance on it. In the process of implementation there has been sufficient stress on the *human factors*.

Thus, the whole scheme has been linked to the building up of network of *self-help groups* to ensure alternative sustainable livelihoods for common people, especially women. The economic activities of the groups, having wide range and local character, relate to agriculture, diary, piggery, floriculture, carpentry, tailoring, knitting, carpet weaving, poultry rearing, bee keeping, noodles production, pickle making, bamboo work, composting organic resources, broomstick harvesting among others. The groups are supposed to be constituted by volunteers (number varies from four to ten) and the number of groups varies from four to thirteen in blocks. Fifty per cent of the members are women. The proposed network involves not only the government but also the voluntary agencies, non-governmental organizations, local clubs and religious organizations. The process also visualizes extensive communication network for awareness generation, which includes booklets, posters, handbills, slogans, one act plays, dance dramas, audio-visual documentaries -- all through extensive use of local language, that is, Nepali. The training programme for volunteers also includes multimedia presentation by using VIS cassettes and VCDs.

Like many efforts of similar kind the GIS implementation process in the district has limitations. Apart from the constraints mentioned earlier, most of which affect Darjeeling more adversely, there are certain area-specific constraints as well. Thus, we found that most blocks (including the worst performing Mirik) have failed to be pro-active. The better performing blocks have been Kalimpong I, and to some extent, Kalimpong II. Successive visits to the selected blocks reveal extreme lack of communication and coordination between the district administrative set-up and the local-level people's representatives and officials. There is a huge gap between the promise and performance in the non-performing blocks, creating disillusionment and frustration among local hill people. Ordinary people would narrate how they had warmly welcomed the government officials and representatives of the UNICEF with buckets of oranges with the hope that the proposed scheme would lead to the "end of underdevelopment" only to find out that no notable change had taken place. The failure of the top- and middle- level bureaucracy to carry out the scheme at the grassroots level needs to be underlined. The bureaucrats repeatedly point out that financial crunch has imposed a severe limitation on expansion of the scheme. But the fact remains that even within the available resources and with a good blueprint at hand better efforts could have been made to impart greater effectiveness and sustainability to the

implementation process. Two vital points mentioned by the people can be mentioned here. First, despite the purchase of computers and ancillary equipment under GIS almost none of them reached the block levels. Second, the promised visits by the officials associated with GIS seldom take place in rural areas. One could understand that the difficulty of the bureaucrats has there been the political interference in the process by the GNLFF (Gorkha National Liberation Front) which enjoys overwhelming political hegemony in the hills. But the district officials themselves mention that GIS remains a great exception in this regard because the GNLFF has "left it alone." ("It is too technically complex for them to make interference" is how an official puts it). But what is surprising is that even with this 'relief' from political intervention the officials have not been able to put in their best efforts to transform a very appropriately visualized strategic planning into practice.

At this point we would like to assert the importance of the localization process. The successive field-surveys, conducted during April, 2002 to March, 2003, shows that in a number of cases the initial suspicion and/or apathy of the people give(s) way to curiosity when they come to know that 'some sort' of technology is being introduced for better administration and management of their 'locality'. In a few cases, the eagerness to know what IT are all about has been directly related to vital concerns like healthcare and education, and more particularly to the idea that it would result in elimination of 'intermediaries' who make profit out of selling information — relating to municipal administration, marketing and so forth. The field-surveys also confirm the need for use of vernacular language (Bengali, followed by Nepali and Hindi) for greater and better message dissemination among common people. This is especially important as GIS is being described by experts (DasGupta and Basu, 2002) as a "unique example of modifying technology... (with) people's requirement as pivotal engine and local expertise as combustion fuel". This of course leads us to a vital question: to what extent the ordinary people enjoy the chance of becoming *direct users* of IT.

In view of this, the alternative and more practical way of negotiating with the reality is the 'piloting approach' (which we wish to distinguish from elitist and exclusionary strategy) with feasible, concrete objectives and scalable outcomes currently adopted in WB, which rests on initiating policymakers, bureaucrats, local councillors, and pro-active sections of local people (ranging from teachers, petty businessmen, traders, doctors, students and so forth) to IT. It is all the better if those belonging to these top layers display enthusiasm. During our survey we found a number of municipal ward councillors, cutting across political cleavages, who are eager to bring his/her ward under the purview of the linkage. This explains why the councillors, who are to play a vital role in the process by virtue of being the representatives of the local people, are being given preference in the publicity-campaign. The following excerpt (Brochure I), titled *Are you a Councillor? This Booklet is for You* (2001), distributed among the municipal councillors, gives some clue to how it is being done:

It goes without saying, if you need to make use of a technology to the fullest, you need to be familiar with it.... You might ask, 'I don't know how a computer works...' In reality, it is not a very difficult proposition. Leave out the examples in (sic) developed countries; some of your colleagues have learnt this technology quite well within a few days. They too did not know the basics of computers.... Even then if you fear (sic) you are not confident...ask for training.

In indicating the councillors' political position, power and responsibility the brochure concludes in this dramatic vein:

Whether you want to continue as subservient (sic) to the traditional system in the future or assert your own rights to fulfil the genuine expectations of your electorate, the final decision is yours.

In an ideal scenario such encouraging messages need to be disseminated, in different content and tenor, among the ordinary people to make them direct users of IT and ensure civic responsiveness. This is also where the developing countries markedly differ from their developed counterparts. The latter have reached a stage in human development, well-supported by relevant public policies, which by itself facilitates mainstreaming of IT among ordinary people.

Interestingly, the publicity material of GIS reflects an awareness on the part of the policymakers and administrators to generate people's awareness. One can substantiate the point by quoting a message, tailored to induce housewives' interest in the GIS:

Let us presume...your husband's earnings are meagre. In a needed household, you are beset with numerous anxieties regarding (sic) your two infants.... You forget when they need to be immunized. With the new technology, municipality itself will inform you when it is to be done even if you become forgetful (sic) with your other duties. (Brochure 2, 2001, pp.4-5)

The whole question of making ordinary citizens familiar and direct users of IT, for instance through much-publicised *G2P* ("government to people") *Internet portal*, ultimately boils down to the issue of receptivity as well. The officials and workers associated with the linkage assert that in some cases they were 'surprised' to have found eagerness in ordinary people who wanted to know about IT. However, the point may be qualified with the observation that even in the locality of the model municipality, New Barrackpore, interviews with local people did not reveal any noticeable urge among them to make use of technology. Even those who are familiar with the term [thanks largely to the municipality's own mouthpiece *Purosambad* (tr. *Municipal News*) publicizing the introduction of new technology in the municipality] view it largely as 'office work', others remaining ignorant. However, eagerness can be generated by a conscious *interventionist* strategy of selecting, from among the local people, a number of *surveyors* and/or *enumerators* who, alongside the collection of relevant data by door-to-door visits and face-to-face communication, can simultaneously familiarize the target-groups in terms of the 'material benefits' they can reap from familiarizing themselves with the technology.

To refer back to the 'trickle-down' strategy of IT, the question is how far does it serve the twin goals of civic responsiveness and democratization of technology? This has become a concern even for the minister for Municipal Affairs and Urban Development of Left Front government, who observes (Bhattacharya, 2002) that in the absence of substantial development in citizens movements, citizen initiative, work culture, training and political will the technological improvement might lead to 'one way development'. The problems and dangers of making the urban space a 'high-tech hub' too fast by technocratic interpretation of the reality are highlighted in yet another study (Sinha, 2002). The study notes: '...such technocratic optimism is part of the problem and not the solution itself. Only if policymakers are ready to view information revolution as a social revolution can they find possible and effective clues to establishing a humane city with more equitable vision.... The way forward, though strewn with challenges of complex nature, is to reinstate and reiterate the 'political'— as expressed through reciprocity, conviviality, competition and contest...'. A far more pessimistic argument is that in the socio-economic scenario IT connectivity, especially in rural areas, is an 'absurd dream'. Such argument makes a correct diagnosis of the factors responsible for the limited reach of the IT in the state but in the process it undermines the possibility of utilizing the strategy of expansion or that of 'trickle down' for greater number of people who at the moment are not in a position to make direct use of IT.

What is needed under the given circumstances is not an immediate quantum jump in the number of direct users of IT but to bring Panchayat institutions – at all three levels – under the purview of GIS in line of urban local government institutions. If there is political and administrative will and concurrent public policies, even without an immediate increase in the

direct users of IT, it is possible to disseminate their impact through increasing the flow of information from and towards the limited number of 'direct users' to people by way of direct face-to-face contact. Simultaneously, however, sustained efforts have to be made – in order to make a much-needed breakthrough – to promote *capacity-building* of the ordinary people in terms of both human development and infrastructural development so that in foreseeable future IT finds a greater reach in terms of direct users. This of course reveals the significance of enhancing social capital and equitable access to social institutions.

IT Education

From the foregoing discussion one can discern two vital points regarding *e-readiness* of the policymakers and citizens. First, even where GIS is being implemented in an efficient manner the major thrust remains technological in nature, with citizen participation acknowledged as "very important" but viewed more as a "future task". Second, in areas where GIS is not being implemented properly citizen participation does not even enjoy minimum recognition. This brings us to the question of IT education. Can IT education play a crucial role in utilizing human capital for creating an enabling environment in WB? If yes, what are the pros and cons?

Even if one finds a better understanding of IT in industrial circles there seems to be a yawning gap as far as the 'reality out there' and the mainstream academic domain of WB are concerned. The mainstream social scientific establishment generally remains indifferent to the importance of IT, with another section of it subscribing to IT hype. Such indifference or subscription to IT hype has its origin in the fact that the 'field reality' is not being brought under mainstream social scientific purview, at least not the extent it should be. This is precisely where IT education can act as the bridge between the academia (in terms of both segments – research and classroom teaching), field reality and policy establishment. In institutional terms WB has an untapped base for IT education. Apart from conventional mainstream educational institutions in the form of secondary and higher secondary schools, colleges, universities, WB also has engineering colleges, polytechnics, Indian Institute of Technology, Indian Institute of Management, Indian Institute of Information Technology which constitute high-potential bases for media education. The mutual feedback, based on interactions of such institutions with policymakers, technocrats and field-level workers involved in implementation of IT would explode many myths, stereotypical ideas and misperceptions and lead to a more practical, action-oriented understanding of technologies suited to the soil.

IT education has yet another dimension. In the field itself, there is need to promote IT literacy as a kind of *people's movement*. Despite the state having a strong tradition in people's movement since colonial days, IT literacy has never been a priority-item in such movements. IT literacy is the 'ability to choose, to understand – within the context of content, form/style, impact, industry and production – to question, to evaluate, to create and/or produce and to respond thoughtfully to IT we are supposed to adopt. It is mindful reading, listening and viewing accompanied by reflective judgement'. In having as its objective the enhancement of the ability of the people 'to access, analyze, evaluate and create information' it also establishes itself as the crucial pre-condition in the initiation to the establishment of *Community-Integrated* and Public Participatory GIS which would rest on an inclusive technology. To make IT literacy a people's movement one needs to take into account two points. First, there is an impending need to inject the literacy movement which is being forged in the state, with *critical literacy* movement. It is because critical literacy facilitates 'discovering the deep meaning of any event, text, technique, process, object, statements, image, or situation (by) applying the meaning to your own context' (Shor, 1993). Second, the need is to accord due importance (Kasoma, 1994; Hochheimer, 1999)

to traditional media (technologies) which at times are grossly undermined by zealous exponents of the IT. Thus, there is need for realization among those concerned with bringing IT close to the people that utilization of radio, newspapers, magazines, television is important for generating greater popular awareness. Despite the fact that WB again has an impressive base in traditional media the interface referred to here is yet to be visible. To integrate IT with traditional media technology lot of spadework is required. This calls for greater coordination between different categories of people mentioned in the following box:

National, state and local government administrators: responsible for preparing e-readiness strategies and designing e-Government programs.

IT specialists of government: responsible for IT system management and e-Government development.

Officials from various agencies/NGOs: promoting or financing e-Government and on-line educational programs.

Private Sector IT specialists: providing hardware, software, and consulting services to government.

Government officials from human resource development (HRD) departments, HRD consultants and instructors: responsible for HRD planning and execution in government agencies.

Concluding Observations

The preceding discussion provides certain 'practical' clues to IT deployment keeping the positive and negative experiences of GIS at the forefront. We have noted that notwithstanding certain limitations the deployment of GIS scheme in WB has the possibility of ensuring better governance in future and the spadework has begun, perhaps silently. The prime generalization one can draw from the field surveys is that in 'localities' of developing societies such deployment has to be *slow but steady*. It is not only because GIS, or for that matter any kind of IT deployment, is an expensive, ongoing process with needs of constant updating; it is also because any effort to adopt a 'fast track' approach in this regard without taking people along would be counterproductive. The whole process involves multi-layered communication, which in a major way includes various intersections arising out of ground-level, face-to-face, *organic* interaction among policy makers, community members/leaders/opinion-makers at local levels, and the potential and/or actual users/stakeholders. While no one would deny that 'information drought' lies at the base of social exclusion and marginalization of ordinary citizens in Third World countries it is also true that a technologically-inclusive society cannot take effective shape unless it is backed up by the construction of a socially-inclusive order. To take advantage of the Information Age to utilize human capital for creating enabling environment, not just WB but the whole developing world needs to have a *cultural understanding* of technology, without which there can only be mechanistic development of good governance – governance without greater access and participation of the ordinary people.

Notes

1. Even if one remains aware of the developing countries themselves having wide variations among themselves the commonalities among them are too evident to ignore insofar as the 'technology question' is concerned.
2. To provide a brief background, WB is the western part of Bengal which was bifurcated during the Partition of India in 1947, with East Bengal (now Bangladesh) accommodated in Pakistan. The Partition and its trauma left its imprint on the political, social and cultural processes, with its economy particularly hard hit. The radical political culture in the state is rooted to a considerable extent in this. Today no longer among the top economically progressive states WB nevertheless is recognized as having substantial cultural capital and a large pool of talent suitable for exploiting the power of new technology.
3. Technically put, the GIS, primarily an innovation of the geographers, is an evolving process of management of information with a geographic component primarily stored in vector form with associated attributes. In simpler terms, it is based on vectorization techniques to collect and store information from satellite images, topography charts and maps. In the process it simulates and depicts real life scenarios and surroundings which are used in conjunction with other data bases to form 'attribute data'. The digitized blueprints, maps and project plans, stored in computers, help the makers and executors of public policy as vital guidelines. Source: Use of GIS in West Bengal , Environment Cell, CMDA, Calcutta, date not stated. To repeat, in this paper, however, the GIS is viewed less in terms of leading-edge mapping technology and more as a technological support to citizen participation.
4. Before the renaming of the city of Calcutta as Kolkata it was known as Calcutta Metropolitan Development Authority (CMDA). However, the organization still prefers to use CMDA as its logo.
5. It can be noted that in the 'new look' Left Front government -- often compared to the "new look' Labour government of Britain -- senior ministers, including the chief minister, periodically refer to the days when militant and periodically violent trade unionism in their opposition to IT had put WB 'years back' compared to states like Andhra Pradesh (touted as the cyber-state of India) and Karanataka (which has Bangalore, its capital, widely recognized as the Silicon Valley of India). However, such argument has its share of detractors even among the coalition partners of the Front.
6. Percentage of rural population in WB is 72 with 57,734,690 out of the total population of 80,221,171 living in rural areas. Source: Census of India 2001 (Provisional Data) . New Delhi: Government of India.
7. Census of India 2001 (Provisional Data) . New Delhi: Government of India
8. The blocks are: Bijanbari-Phulbazar, Sukhia Pokhri, Rangli Rangliot, Kurseong, Mirik District Development Block, Kalimpong I, Kalimpong II and Gorubathan. Source: Handbook on the Community- based Disaster Preparedness.

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