

ELECTRONIC INNOVATION: CREATING/REDUCING SPACES FOR FUTURE GENERATIONS

Sustainable Management: *Defined*

Sustainable Management put simply can be defined as managing a renewable resource to meet the needs of the present without compromising the ability of future generations to meet their needs. It can also be put forth as development which satisfies the current needs of society without compromising the needs of future generations. One of the factors which sustainable development must overcome is environmental degradation.

Sustainable management, a relatively young discipline, offers private and public enterprises new development potentials. Its task is to put sustainable development into practice ("Sustainable development is a process to maintain and to develop material, ecological, economic, social, cultural and ethical fundamentals in our lives"). The benefits of sustainable management are becoming increasingly evident: In companies it enhances competitiveness, human capital, innovating capacity and business strategies. In national economies and across the globe it sets up a sustainable framework for economic and social development.

Internet: *A Resource?*

Though many lopsided and need sufficing definitions of resource can be found, resource most simply and most widely can be defined as. *"A person, thing, or action needed for living or to improve the quality of life."*

Putting the said definition as base Internet will be termed as a resource. Before moving on to proving the same it is needful to be told that the words Internet, Web, and Cyberspace will be used interchangeably¹.

¹ For conceptual clarity the difference between the three terms has be explained as under.

WWW: - computer network consisting of a collection of internet sites that offer text and graphics and sound and animation resources through the hypertext transfer protocol.

Internet:- (Note: capital "I"). The Internet is the largest internet (with a small "i") in the world. It is a three level hierarchy composed of backbone networks, mid-level networks, and stub networks. These include commercial (.com or .co), university (.ac or .edu) and other research networks (.org, .net) and military (.mil) networks and span many different physical networks around the world with various protocols, chiefly the Internet Protocol.

Until the advent of the World-Wide Web in 1990, the Internet was almost entirely unknown outside universities and corporate research departments and was accessed mostly via command line interfaces such as telnet and FTP. Since then it has grown to become an almost-ubiquitous aspect of modern information systems, becoming highly commercial and a widely accepted medium for all sort of customer relations such as advertising, brand building, and online sales and services. Its original spirit of cooperation and freedom has, to a great extent, survived this explosive transformation with the result that the vast majority of information available on the Internet is free of charge.

While the web (primarily in the form of HTML and HTTP) is the best known aspect of the Internet, there are many other protocols in use, supporting applications such as electronic mail, Usenet, chat, remote login, and file transfer.

From the above definition it can be said that any thing which is used to improve the quality of life of a person is a resource. There is no doubt about the fact that internet is and for long has improved the quality of work life as well as normal life of a person.

Entertainment, information at a click of a mouse, creation of wireless Hotspots, Finding businesses, products, and services, Job searches, E-business etc are not some but some amongst the many uses of internet which has made the life of people simpler and more meaningful thereby increasing the quality of life of people. The author does not dispute the ill effects of the internet but the benefits certainly overpower the ill effects.

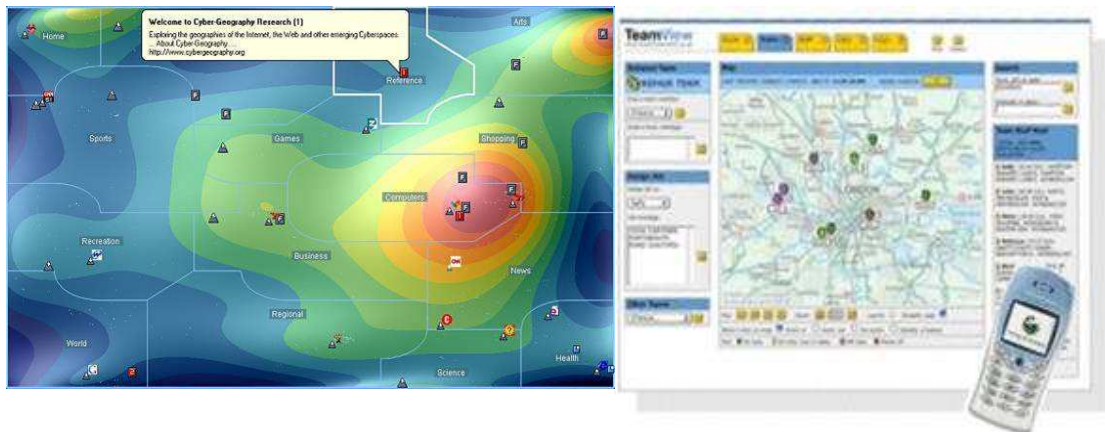


Fig1 Data available on the internet which make the quality of life better

Internet can very well be termed as a resource which is certainly improving the quality of life of the persons.

Internet: Will This Resource Ever Deplete?

All other resources have a peculiar property of depleting with time, they reduce as the time passes by and at a juncture they will end. For example natural resources like coal, natural gas, solar power etc are reducing.

(Note: not capitalized) Any set of networks interconnected with routers. The Internet is the biggest example of an internet.

Cyberspace:- A computer network consisting of a worldwide network of computer networks that use the TCP/IP network protocols to facilitate data transmission and exchange.

It should be observed that in essence all these three terms differ from each other in substance but they are used more so as synonyms. We throughout this paper would be using them interchangeably each would include and envisage the meaning of others.



FIGURE 6.1 Drawing of September 1969 (Courtesy of Alex McKenzie)

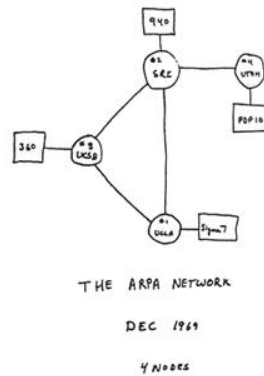


FIGURE 6.2 Drawing of 4 Node Network (Courtesy of Alex McKenzie)

Fig2 Increase of networked computer from an initial army network of two computers.

The author submits that unlike all other resources internet is a resource which will never deplete with time; this is rather a very strange quality of internet. Storage capacity on the internet is increasing with time or rather every day. In a year web space increases many folds², this happens because increase in storage techniques and increase in the number of networked computers³. As the number of networked computer increase so does the storage capacity increasing thus the free space i.e. space for more data.

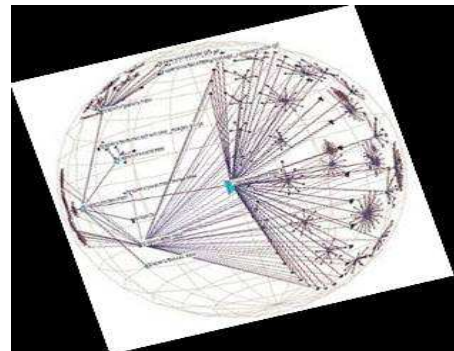
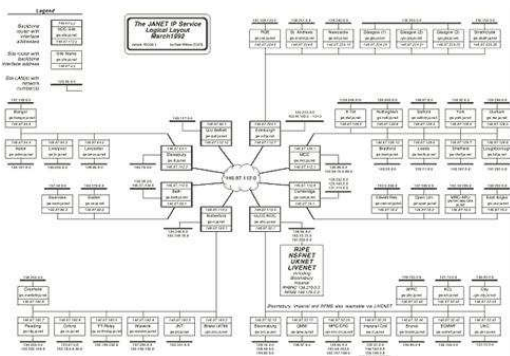


Fig3 Further increase in the number of computers

Hence it is clear that storage capacity increases with time defying the characteristic of conventional resource.

² Research shows that the known Internet - the Internet excluding the Deep Web is growing by more than 10,000,000 new, static pages each day. In contrast, the fastest growing search engine database is increasing at about 10% of this pace. <http://www.metamend.com/internet-growth.html> (Last Visited 20th Dec, 2004), Also see A. M. Noll, *Highway of Dreams: A Critical Appraisal of the Communications Superhighway*, Lawrence Erlbaum Associates, 1997., Also see A.M. Odlyzko, Internet pricing and the history of communications, *Computer Networks*, vol. 36 (2001), pp. 493-517.

³ Users have increased from 16 million in Dec 1995 to 812 million in October 2004. See Annexure

It has also been argued that a resource once used cannot be recovered; the author seeks to refute that theory also. It is very clear that any website is hosted on a server and the files are stored in a storage media⁴. The files can any time be deleted from the media thus increasing the free space hence the resource.

Hence imagining internet as a resource is not thorny, internet as developed from a small army network of 2 computers as it stands today⁵ is a resource which will never deplete.



Fig4 Internet as it stands today

Internet: *Inseparable Part of Life*

It has been repeatedly argued that WWW, Internet and Cyberspace(WIC) has attained the position of a social space i.e. It is so vast that all the properties and parts of social space, as given by one Henry Lefebvre once, are now embodied in *virtual social space*. In the methodology to establish WIC as a Space in itself, the essentials, types and the properties of the space given by Lefebvre with those of WIC will be compared.

At some places, some of the tenets will also be challenged which support the formation of spaces. It is a quest to show that the concept of Absolute and Abstract space exists in case of WIC also.

Absolute Space (WIC)

Henri defines Absolute space as that space which exists in its natural form and human embodiments have not yet been imposed upon it *i.e.* which still exists in its raw and empty form. Absolute space can also be defined as the total space less the abstract space.

When we now take WIC into consideration all the web space which is available on the servers or clients in a network which is still unused and yet to be allotted forms the absolute space. This also conforms to the equation laid down above *i.e.* Absolute Space

⁴ Normally a Hard Disk Drive(HDD)

⁵ See Fig 2-4

= Total Space - Abstract Space, here total space would include all the space available on the WIC⁶ for the files to store or websites to be hosted.

On the contrary though this concept of Absolute space defies the tenant which was laid down by Henri that '*Absolute spaces are decreasing with time and absolute space once lost cannot be recovered.*'⁷

Here absolute space is increasing with time or rather every day. In a year web space increases many folds⁸, this happens because increase in storage techniques and increase in the number of networked computers⁹. As the number of networked computer increase so does the storage capacity increasing thus the free space i.e. the absolute space.

Hence it is clear that storage capacity increases with time defying the characteristic of Henri's absolute space. As regards to the second point i.e. the absolute space cannot be recovered it is very clear that any website is hosted on a server and the files are stored in a storage media¹⁰. The files can any time be deleted from the media, reducing the abstract space and increasing the absolute space.

Abstract Space (WIC)

Definition of abstract space can be simplified by merely stating that it is the inclusion of artificially or purposely made things (material or symbolical) into the absolute space, which make some meaning to somebody.

In the same way existence of web pages suffices the definition of abstract space. Web pages gives meaning to people it is purposely made and does not exist in natural form i.e. it has to be made by somebody.

Explained below are the components of the abstract space.

Representation of space (conceived-or 'ordered' space) (WIC)

As it has been already explained that conceived space is the space for planners, technocrats, etc i.e. it depicts what ideally should be there. It envisages what is originally planned or what a thing is supposed to be. In the same way the idea of internet was also planned to be initially for a military network¹¹ and then to be used for commercial and

⁶ 812 Million users around the world in 2004 as cited from

<<http://www.internetworldstats.com/emarketing.htm>> (Last visited Dec 21st, 2004)

⁷ Lynn Stewart, "Bodies, Visions and Spatial Politics: a Review Essay of Henri Lefebvre's, "*The Production of Space*", in *Environment and Planning D: Society and Space*, vol. 13, 1995

⁸ Research shows that the known Internet - the Internet excluding the Deep Web is growing by more than 10,000,000 new, static pages each day. In contrast, the fastest growing search engine database is increasing at about 10% of this pace. As cited from <http://www.metamend.com/internet-growth.html> (Last Visited 20th Dec, 2004)

⁹ *Supra* note 26. Users have increased from 16 million in Dec 1995 to 812 million in October 2004.

¹⁰ Normally a Hard Disk Drive (HDD)

¹¹ To put in a common man's language, Internet is a global network of computers, all of them speaking the same language. In 1969, America's Department of Defence commissioned the construction of a Super network called ARPANET. The Advanced Research Projects Agency Network (ARPANET), basically intended as a military network of 40 computers connected by a web of links & lines. N. Cochrane, *We're insatiable: Now it's 20 million bytes a day*, *Melbourne*

personal use. That space for the plan is a perfect symbolism for Representation of spaces or conceived space. The ideal use was conceived by the planners to be ideal. Thus it can be easily said WIC also has a parallel conceived space.

Spatial practice ('virtual' lived space)

Lived space simply symbolizes what actually is the reality of the Social space, it encompasses what people do and what actually is there in the same way even WIC's reality is very much different from that of the conceived space.

The WWW today is composed of sites dedicated to pornography¹², hacking¹³, terrorist¹⁴ and illegal music¹⁵ sites with the conceived commercial and personal sites. All the above sites are not meant to be there but now are dominating the Internet. This as we can put is the 'life' as 'lived' by the surfers, thus drawing a perfect parallel to Lefebvre's "*Spatial practice*".

Representational spaces (perceived- or 'sacred' space)

As the name goes this space represents the hypos of a person. It is what the person thinks it is the place for the artists; it is the place for the thoughts of a man. WIC also in the same way keeps such place which hosts such ideas of the persons like philosophers, painters, thinkers or some wild ideas of the person which is totally hypothetical. It is like a place for all.¹⁶

Thus after the above discussion it can be said with affirmation that except some, WIC's space is analogous to that of Henri's social space.

It has to be accepted that space between the people is reduced by way of WIC, if we take the literal definition of cyberspace, it is that space which allows the person to interact with other person in real-time without him/her being present in front of each other personally.¹⁷ Use of telecommunication devices, Satellite phones, VoIP¹⁸ reduces the personal space between the people.

During the past ten years, networked computers have penetrated the daily lives of a range of individuals, becoming a common sight in public schools, libraries, airports, and

Age, Jan. 15, 2001. As cited from <<http://www.it.fairfax.com.au/networking/20010115/A13694-2001Jan15.html>> (Last visited 15th Dec, 2004)

¹² Example <http://www.ultrapasswords.com>

¹³ Example <http://allkuzr.20fr.com/>, <http://www.hackwire.com/>

¹⁴ Example http://www.terrorismfiles.org/organisations/al_qaida.html, <http://www.usdoj.gov/ag/trainingmanual.htm> also see annexure 4

¹⁵ Example www.dezine-solutions.com/hindi_music/mp3_download.html

¹⁶ Example <http://www.engelen.com/>, <http://www.psychoclown.com/>

¹⁷ C. A. Eldering, M. L. Sylla, and J. A. Eisenach, Is there a Moore's Law for bandwidth?, *IEEE Communications Magazine*, Oct. 1999, pp. 2-7. See also CTIA (Cellular Telecommunications Industry Association), Semi-Annual Wireless Industry Survey, June 1985 to June 2000.

¹⁸ Voice over IP - that is, voice delivered using the Internet Protocol is a term used in IP telephony for a set of facilities for managing the delivery of voice information using the Internet Protocol (IP). In general, this means sending voice information in digital form in discrete packets rather than in the traditional circuit-committed protocols of the public switched telephone network (PSTN). A major advantage of VOIP and Internet telephony is that it avoids the tolls charged by ordinary telephone service.

yes, even coffee shops.¹⁹ In the words of Internet pundit John Perry Barlow: "Nothing could be more disembodied than cyberspace. It has reached everywhere from

bathrooms to the bedrooms..."²⁰. Certainly the social space produced by way of networked communication neither begins nor ends at the computer screen.²¹



Fig5 Internet penetrated in the life of people.

It should be known that cyberspace does not exist independently, as it has already been briefed, it is the complimentary existence of physical stuff like fibre optic wires, satellites etc with those of radio and electrical pulses.

Internet has at the time of need has helped people meet there near and dear ones, when lost.²²

¹⁹ Herman, Andrew, and Thomas Swiss, eds. *The World Wide Web and Contemporary Cultural Theory*. New York: Routledge, 2000. P.g 37

²⁰ Anonymous, Computer and Information Science, Projects, Auranet;
<http://www.cs.uoregon.edu/research/wearables/projects.html>

²¹ Excerpts taken from a paper presented at the 1999 Popular Culture Association Conference San Diego, CA, "*The Realities and Virtualities of Cybercafés*" also see Marriott, Michel. "[The Ballad Of the Cybercafe.](#)" *New York Times* 16 April 1998: G1.

²² Fig 6

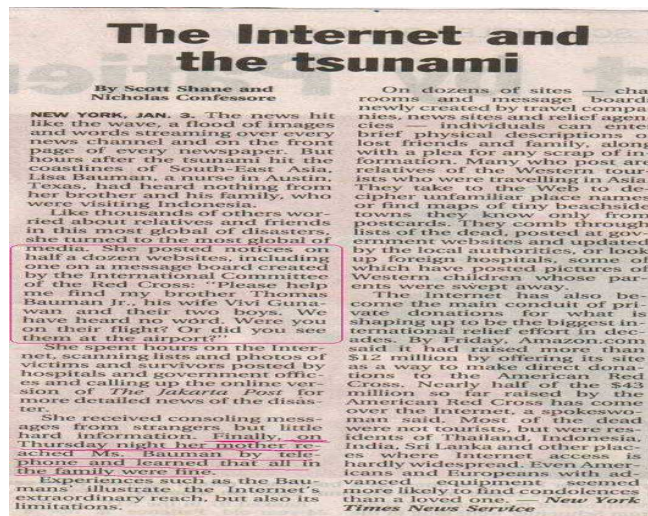


Fig6 Lost and found!!!

E-governance, e-administration and paperless office²³ were utopian ideas, but it is not so for the Tamil Nadu government's IT Department in India. IT has today become an integral part of governance in India also. It is viewed as a tool that will help deliver services, both in the public and the private sector, to the common man. It is especially beneficial for a country like India where the area is vast and the 'space' between the governed and the governor is more.

How does a trainee in the US learn from a trainer in India? As an answer to this question, corporate are turning to **e-learning**²⁴ in a big way. E-learning is implemented mainly due to the convenience involved. It is so because the business now a days functions in a large 'space' and hence the vital information has to be communicated from across boundaries. Thus e-learning is the answer to the increasing spaces between people and corporate.

Another example to this is **telemedicine**²⁵. It connects the doctor to the patients across the real-time.²⁶

Rural India also is touched by technology now. The latest plans and trend indicate towards '**Networking Rural India**²⁷'. Hence it can be seen that a few organisations generate the employment in a few areas through IT enabled services. Also there is another issue of women using the technology for self reliance. Here condition of women is improving the tech way.²⁸

²³ Meera Vankipuram, *IT Cuts Red Tape*, as cited from Digit, November 2004, pp. 119-121

²⁴ Preethi Chamikutty, *Virtual Classrooms*, as cited from Digit, December 2004, pp. 166-167

²⁵ Ram Mohan Rao, *Dial-a-Hospital*, as cited from Digit, November 2004, pp. 171-172

²⁶ It can be used for relief during natural calamities, medical conferencing through videoconferencing, responding to disease patterns, adding healthcare knowledge, emergency of performing surgery with telemonitored specialist assistance and the diagnosis can be confirmed and treatment planned.

²⁷ Meera Vankipuram, *Networking Rural India*, as cited from Digit, December 2004, 171-172

²⁸ Meera Vankipuram & Aparna Krishnakumar, *Women on Top, the Tech Way*, as cited from Digit, October 2004, pp. 127-128

Use of **live hunting**²⁹ with the use of broadband connection to get a view of real scene with paper targets in them, take aim from their computer, and shoot using the mouse. When they shoot a real life rifle goes off.

Another instance of **online cremation**³⁰ can also be seen. This is designing of high-tech crematorium as then screening the funerals online, so that the people who cannot make it to the cremation can also witness it.

We might think how these differing social spaces correlate with the construction of what Benedict Anderson calls "imagined communities," a term he uses to describe the rise of national identity and print-capitalism in the 18th century. The everyday experience of WIC within specific social spaces enacts membership in a "visibly invisible" community. These are the instances of use of WIC in the present age but with the passage of time and with coming of new technology these horizons are bound to increase and the 'spaces' keep on decreasing. For example, **Internet2**.³¹ This is the beginning of an Internet on hyper-steroids. It is a collaborative effort at developing advanced networking technology and this would be enable advanced applications such as digital libraries, telemedicine, virtual laboratories etc. This application is the harbinger of the raw speed, cleaner and more secure Internet for the future.

Relation of WIC to the society and the formation of E-society is coming up in a big way and if things continue to progress at the same pace time is not far when people would meet in a different place altogether probably an e-space.

E-Innovation: An Unconscious Fulfilment of Sustainable Management Principles

The technological innovation has unconsciously developed a system by which this resource will never deplete. There was no conscious act in this field as it has been in all other cases of renewable resource.

Till now the author has talked about Internet being a resource, its nature and its effect on the society, now in short the author will take up the ways and means in which electronic-innovation can help small businesses etc.

In the field of sustainable management, Internet sets up so called Win-Win-relationships, because beyond technical and economic benefits, it also provides innovations on social and ecological levels. IT is par excellence not only a tool to set up links between sectors of sustainable management, but also to stimulate their interaction with almost all spheres of our society. The major benefits which can be reaped through internet by small business organizations can be:-

- Increase of companies' value and of innovative capacities
- Sustainable e-business: Increased added value provided via Internet to customers: display of products and services, communication, real-time survey of shipment, financing, payment, advice and after sales.

²⁹ *Ready, Aim, Click!*, as cited from Digit, December 2004, pp. 187-188

³⁰ *Indian Site to Screen Funerals Online*, as cited from Digit, December 2004, pp. 192-193

³¹ Ram Mohan Rao, *Faster Further*, as cited from Digit, October 2004, pp. 48-50

- Market transparency and real time marketing.
- Interactive platforms for procurement, enabling classification and real time management of suppliers according to sustainability requirements.
- Accelerated and cheaper market introduction of sustainable products and services. More direct relationship with customers via CRM (Customer Relationship Management) and co-creation.
- Opening of new market segments.
- Sustainable management systems, services, business models and networks via Internet
- E-substitution of physical products
- Online expertise networks
- Accelerated and cheaper diffusion of knowledge on sustainable management via Internet, specifically also in developing countries
- Improved and simplified communication on all company levels
- Optimised communication with stakeholders
- Online enquiries of employees' satisfaction
- E-recruiting and online job proposals

Thus it can be easily concluded that Internet is a resource which is now not separate from the lives of the people and has come out as a resource which will never deplete. Thus unlike all other resources people will always be unconscious producers of liberated e-resource.