Human Orientation: Origin, Concept and Applicability to Libraries – Dialogue with Pioneers

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Human orientation (HO) science is a concept coined in the year 1993 and was initially applied to transportation terminals as a public place. It is not yet found to be applied to libraries as public or community places.

The present article portrays the contribution of two pioneering scholars who promoted the concept of Human Orientation Science and applied the same to various areas like transport, health and banking sectors. Further, the article presents application side/features of the concept with the help of interviews of the experts conducted as a part of the research.

Keywords:*Community places; First-time library users; Human Orientation Science; Interviews with pioneers; Libraries; Signage; Wayfinding, Ergonomics.*

0 INTRODUCTION

Human Orientation Science is an innovative concept as the term 'Human Orientation Science' was coined twenty-six years ago, around the year 1993 by Modak and Patkar[1]. This article depicts the contribution of two pioneering scholars who promoted the concept of Human Orientation. SK Modak is a specialized expert in transportation regional planning and labour economics and VN Patkar is a specialized expert in Operations Research and land-use planning. They have vast experience as consultants of the signage system for public organizations. With the seminal contribution in this area i.e. publication titled 'Human orientation: Science and Art'[1], they have advocated human orientation in all public services. As a part of research on 'Human Orientation in libraries' in-depth interviews of these pioneers were conducted. The article covers a

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review of literature on Human orientation associated with libraries, available prior to the emergence of HO science, and describes the focal areas of application of HO science in libraries through interviews of these two scholars. It also illustrates suitable areas to incorporate human orientation aspects in system design for libraries as per the views of subject explorers.

Though the concept of HO science was coined in the year 1993, a few studies were available which focus the application of some of the aspects of HO science using other nomenclatures. The present literature review considers the references published on HO science related to libraries prior to 1993 before the emergence of HO science.

1 REVIEW OF LITERATURE

Veatch [2], facilitates an overview of environmental design in an attempt to provide conceptual and exemplary information pertinent to library building planning with an objective to generate an awareness of the possibilities for and the implications of applying the concepts of environmental design to library buildings. According to author Information from environmental design can be used to make libraries more useful and functional. This is accomplished by making library environments more 'human-oriented'. The authors suggest that environmental psychology and its aspects such as privacy, personal space, and territoriality should be taken into consideration while planning environmental design in library buildings. The article also covers the Ergonomics and human factors in built environments and environmental space planning. According to the author, the theory of Ergonomics is simple, but its application is not quite so easy. Even a single environmental space contains a myriad components each having a different impact upon each individual who uses that space. Additionally, different tasks performed by one individual in the same space may require different sets of ergonomic considerations. Referring to Hall[3] the author stresses the hidden dimensions of space considerations viz. intimate, personal, social and public which have social and behavioural implications for arrangements in libraries. The author concludes by suggesting that the library architect must rely upon the librarian-consultant for input regarding user behaviour and activity.

Detailed interviews with both the experts elicit following significant points issues and concerns and further explore the areas of applicability of HO science in libraries.

2 RESEARCH TOOL

In-depth interviews of the two experts were mainly conducted. Following probes were used as key descriptors.

- Need triggered
- Earlier literature seen in the area
- Human Orientation discipline
- Emergence of HO science
- Enunciation of HO Principles
- Publication and contents of the book
- Principles of HO and applicability to libraries
- Methodology of HO science
- Applicability of HO science in Libraries

Many open ended explanatory, clarificatory, exploratory, and amplificatory questions were asked. Facets of application like first time user, navigation, wayfinding, signage, physical environment and space planning, etc were inquired. The answers gave precision and clarity as well as direction to research.

21 SHARING OF EXPERIENCES: NEED TRIGGERED

The train journey in Mumbai triggered the need for advocating humanely oriented surroundings in public places in India. In the year 1978 when the authors came to Mumbai for their respective jobs from Nagpur and Delhi, as the new users of the suburban trains in Mumbai, authors were disoriented about the directions while climbing the bridges. Since in case of absence East-West directional signage, while climbing the steps towards foot-over bridges passengers do not feel sure about which is East side or West side of the railway station. Another disturbing factor was that there was no assistance provided by railways in the train to inform on which side of the rail coach the next halting station platform would be. The systems and arrangements provided at public places in India lack user-friendliness. An absence and quality of signage made the life of common man in cities miserable. This pricking concern made them share their experiences as neighboursin the late 1970s.

22 EARLIER LITERATURE IN THE AREA

At the same time, at an international level, particularly in the U.S.A., a movement called 'Human Systems Management' (HSM) was launched.

Milan Zeleny, a pioneer in this area was contacted and related research studies were reviewed published through a quarterly international journal entitled, *Human Systems Management*, launched in 1980. Zeleny[4] stressed two complementary facets. One aspect was to optimize and improve the design, management, and performance of any system that serves the people like transport, bank, and hospital or any public place. The other aspect was to manage every system 'humanely'.

At the same time, authors came across a research paper related to transport terminals mainly focusing on the 'visibility indices'. According to Braaksma and Cook [5], changes in layout or signage can be evaluated in terms of visibility and thus human orientation. Visibility indices facilitate passengers at the airport to find out 'where is what'. Due to the application of visibility indices, passengers were able to locate all the required destinations at the airport right at the entrance. This research paper triggered the initial idea of human orientation.

23 HUMAN ORIENTATION DISCIPLINE

According to the experts, the movement called 'Human systems management' led by Milan Zeleny has been the motive behind the emergence of Human Orientation discipline.

231 Human Systems Management

One of the seminal contributions by Zeleny has been his insight that in many real-life decision situations it is important to design an optimal system, rather than optimizing a given system. According to Zeleny[6] decision makers need to always evaluate and re-evaluate the system as well as its environment and always be open to seeking opportunities to plan more efficiently and effectively. It is crucial to never take the current system for granted over time. The system will most likely require adjustment, not only due to changes in the legal and competitive environments but also because the goals and objectives of the organization evolve with time.

This is applicable to libraries also since over the period of time, due to technological advancements and changing demands of library users, libraries have converted themselves from learning spaces to community spaces. Thus, there is a need to evaluate and re-evaluate the transforming system of modern libraries. According to Zeleny[6] Human Systems Management (HSM) has redefined itself incorporating information technology, knowledge and wisdom management, network organization

and human issues of the new economy among its areas of interest. Its three main components, Human-Systems-Management have been meshed and integrated to form a unified organism of thought. Humans are the source of knowledge and systems interactions. The system refers to an integrated whole rather than to separate functioning of specialized parts. Management refers to human coordination of human action in all their effective modes and forms. All three components are equally important. HSM is about the autonomous and purposeful human beings and their interactions with human-created tools of technology and systems - they create it, but do not become it[7].

Thus HSM focused on better indomitable creativity, innovation and knowledge enhancement concern with the management of both human and technological embedding in system or environment.

At a time when a very few people knew or cared what 'human systems' were about and the need of their management, Modak and Patkar realized and visualized its functional applicability not only for technological embedding but also to make the surrounding or built environments more accessible and user-friendly by discovering Human Orientation Science.

24 THE EMERGENCE OF HUMAN ORIENTATION SCIENCE

At the same time a well known quarterly international journal entitled, Human Systems Management was launched in 1980. The journal fostered HSM and continued promoting HO Science.

Being experts in transportation and regional planning, Modak and Patkar started observing passengers' behaviour while searching for destinations at public transport terminals. In the initial surveys, they observed the rail passengers and noted down the spots on which they were confused. Their queries with the fellow passengers and responses thereof were systematically noted and analysed. Their analysis revealed the absence of design and sensitivity in many instances to assist the passenger by the service provider. In fact, it also surfaced through their discussions that there was no awareness about the existence of such problems by the railway staff.

The survey led the scholars giving insights into the practices followed in the developed world where ergonomic physical settings eliminating discomfort and inconveniences at a little cost by adopting the scientific human orientation approach and made them promote HO Science by

enunciating its principles.

25 THE ENUNCIATION OF HO PRINCIPLES

They next expanded the scope of their observation-based surveys to cover many other public places like hospitals, theatres, and banks. They also examined the workplaces, residences, household goods, consumer products and equipments. They found a commonality pervading all those provisions namely, a lack of user perspective being taken into account while organizing and operating those services and/or products. That steered them to the enunciation of the commonly applicable twenty principles of the Human Orientation Science.

26 PUBLICATION OF BOOK

They had carried out such survey-based studies and tested their HO principles in varied places like the transport terminal, bank, hospital, museum and so on in the period 1978-93. This experience of about 15 years convinced them that their principles were sound enough and they should be consolidated in the book form to provide an overall view of the HO science as a subject and its applications to guide the designer and producers of products and services. In the meantime, apart from reading across the subjects and reviewing the wide amount of literature, they had sounded their ideas through publishing research papers and articles, presentations, talks and discussions to sharpen them further. Thus the book titled 'Human Orientation: Science and Art' was published in 1993 cumulating the experiences and nineteen principles of Human Orientation Science. The new Science of human orientation is propounded in this book with the objective of removing shortcomings in the product designs and faults in planning artefacts, work environment, and living spaces, which result in disorientation, confusion, frustration and uncertainty in everyday life of people.

The book 'Human Orientation: Science and Art' discussed how human orientation is an art as well as science. Further, the authors provided definition of the discipline, with its scope, method of study and nineteen principles of human orientation science. Through a series of examples, authors have identified the deficiencies in the guidance system at public places. In the last chapter, the authors have provided case studies of three public places namely Victoria Rail Terminus, St. George's Hospital and Prince of Wales Museum at Mumbai to highlight the basic approach, the main findings, and relatively low-cost recommendations. These case studies help the readers to visualize the real-life situations,

which cause inconveniences and irritations and suggest improvements in human orientation aspects in these public places.

In the new book titled Human Orientation Science, one more principle has been added, which additionally discussed the regulation of queue system and also the research methodology to conduct research while planning and designing pictogram or signage as per the need of built environments and public places[8].

27 PRINCIPLES OF HO: APPLICABILITY TO LIBRARIES

The twenty Human Orientation principles are based on very keen observation of surroundings, extensive personal experience and intensively intuitive thinking on the root causes of disorientation, inconvenience, confusion, uncertainty and irritation that common people undergo every day. The twenty principles which form the foundation of Human Orientation Science are well explained by the experts[8]. According to these principles Human orientation goes much beyond disciplines like ergonomics which basically deals with interaction between man and machine, kinesics which concerns itself with non-verbal communication, semiotics or semiology which concentrates on finer aspects of sign languages, ekistics which focus on human dimension in architectural design and psychology and sociology which look into the human mind and societal behaviour. Its speciality lies in the fact that it lays emphasis on applications and practical aspects. It is also an art which tries to blend individual good with collective good. It traces the origin of irritation and discomfort in everyday life and prescribes a remedy to eliminate it or circumvent it. According to Modak and Patkar (1993)[1], the term Human Orientation is more inclusive and wider in connotation, which incorporates some aspects of Semiology, Ergonomics, and Cybernetics. It takes into consideration from the human orientation angle, not only directional boards and signs but also wayfinding products and situations.

The twenty principles are universally applicable. Even products and services designers, service providers and managers in the private sector can benefit by applying these HO principles and the approach.

Following are the twenty principles which form the foundation of HO science.

271 First-time visitor

According to this principle, it is presumed that every person visiting a public place is arriving there for the first time and the guidance sign should

be designed in such distinct way that the person is not required to make any additional inquiries while finding his way. E.g. university libraries or academic libraries receive freshers or new library users every year. The unfamiliar or unexplored environment creates more tension among first-time library users. Therefore library guidance system should be designed keeping in view the needs of first-time visitors. For example, if a site map is displayed at the entrance of the library building showing the floors, sections, departments, facilities, etc. the first time visitors can also move ahead with surety to the desired location.

272 Location of sign

Location of the sign should be done by identifying the points where visitors tend to get confused and need assistance for choosing the correct direction. E.g. In large libraries information sources are stored in departments that often encompass large open spaces, sometimes, floors. Therefore the placement of appropriate signage at every required point or location is essential. For Example, library floor maps should be available near the main entrance as well as the entry point of each floor of the library.

273 Choice of language and word sets

The choice of words should be simple to understand with the meaning people associate with it. The words should be kept limited in number. E.g. Browsing area, Circulation counter, etc can be a confusing terms for the first time user.

274 Size of letters and colour combination

Size of letters should be decided on the basis of a distance from which the display board is likely to be read. Selection of a different color is not enough; they should also be in contrast with each other. Experts suggested the use of Johannes Itten's 'Color Wheel' for color contrast in different color combinations. For height of letters and the distance for good visibility they provided the table, for instance height of letters should be three inches for good visibility from 30 feet. In large libraries signage with bigger font size and with appropriate colour contrast is essential to facilitate more visibility and readability.

275 Height of display

The information display boards should not be fixed so high that either they escape the attention of the visitor or can be read only by upward stretching of a neck. Boards should be fixed at viewer's eye-level.

Display information on board horizontally to facilitate ease of readability by a natural sideways movement of eyes. For instance if the line of sight is 10 feet, the letter height should approximately be 3/8 inch, if it is 25 feet then 5/8 inch. Libraries serve a wide spectrum of information seekers of varied ages, backgrounds, and educational levels. Therefore the height of the display should be suitable to make displays clearly visible to all kind of users.

276 A Separtae display for each function

Use of separate display board describing each function is advisable.E.g. libraries provide different services to users. It is essential to highlight the functional area for the respective service with the separate display such as Reprography section, photocopy service.

277 Universal applicability of symbols

Standardized symbols should be used for easy identification. For universal applicability, symbols should have two characteristics: readability and quick identifiability. *E.g.* universal sign of libraries are used and recommended globally.

278 One word, one function

It is necessary that one specific word or word-set should be consistently used to describe a specific function or a message. E.g. Words or functions like Book lending or Issue-Return counter or circulation counter is used by libraries to describe the lending function. Therefore one specific word should be used on every signage to describe one particular function to avoid confusion among users.

279 Not to dilute the importance of main information

The existence of less important information in between or in close proximity to main information should be avoided as it draws away from the attention of visitor from the main message.If you are leading the visitor to Membership counter, the signage boards like 'Photocopying services available on the 3rd floor from 11.00 a.m. to 2.00p.m. will distract the first time user in the library.

2710 No overload of information

The quantity of information the visitors may be willing to read should be taken into consideration. Overload of information may result in neglecting information..Lengthy notices regarding baggage counter like 'Readers are requested to deposit their belongings like big bags, umbrellas

and books here' should be avoided. Instead, pictorial description with the signage 'Baggage Counter' will not confuse the newcomer. Librarians being information professionals may tend to provide overloaded information resulting in anxiety and distraction.

2711 Utility more than artistry

The message that is intended to be carried should always be considered more important than beauty and artistry. Functional utility criterion should be given more importance than barely making display attractive. E.g. Libraries with cultural heritage either avoid placement of signage or design the signage in the more artistic form to exhibit their heritage status of library building. Such artistic signs may get neglected or its visibility may get affected.

2712 Use of suggestive word sets

Instead of implicitword-sets simple word-sets or symbols can be used for easy understanding. For example instead of the word 'restroom', use of a simple word like 'washroom' or use of a universal symbol of male/ female indicators for washroom will be easy to identify for users. Keywords for OPAC searching like 'ornithology' may not provide a clear understanding. Instead the use of simple words like 'birds study' will be easy to understand by a layman or any library user.

2713 Order of display

Avoid administrative terms in the initial word-sets of a display. The order of any information provided on display boards should be in conformity with the convenience of readers while the requirement of providers of service should get secondary importance. Signs and displays should be placed logically i.e. progressive from general to specific. In case of academic libraries users use photocopy service for academic purpose only. Forms for students for photocopying should be designed neatly and the copyright rules should follow the personal information.

2714 Avoid technical jargon

Simple word-sets should be used for better understanding by common people instead of the use of technical terms. E.g. Instead of the term Documentation Centre, if we use the terms Indexing and abstracting, it will not be confusing for the first time user of the library. Use of the term late fine instead of overdue charges will be desirable.

2715 Avoid handwritten information on boards

Handwritten information may not be legible enough; it may confuse the reader because letters and numbers sometimes look similar. E.g. Notices for orientation programmes in libraries should be printed in legible fonts.

2716 Oral information to supplement signage

Sign or display information should be supplemented with oral announcements wherever necessary and possible. Though silence is advisable in reading areas, this can be done for the foyer where a welcoming announcement with directional instructions can be given. Special users need audible signage at certain points such as elevators.

2717 Avoid distraction at staircases

Leaving spaces completely blank on all staircase walls are desirable. If circumstances are compelling, only portrait frames may be hung on landing wall facing upstairs movement but never on walls facing downstairs movement. In some heritage libraries, there are photo frames and statues of well-known authors and writers. Placement of the same to the adjoining wall of staircases or near the staircases will distract library users while using staircases.

2718 Layout of forms

The layout and the format of the forms and slips to be filled by users should be neat and simple. A complicated layout should be avoided. Enough space should be provided wherever required. E.g. in case of libraries where still manual system is followed, users need to fill printed slips for issuing books within library premises as well as for photocopying of library material. In such slips, users need to fill class numbers and accession numbers on the provided slips. Such words with technical jargon on forms and slips create confusion among library users.

2719 Distinguishing between similar sides

Users should be able to distinguish the front and back side of the object. If we apply this to library situations, it is advisable to stick the cover page of the books and blurb after binding.

2720 Regulation of queue system

Movement of persons standing in a queue should be regulated in an anti-clockwise direction. The counters or booking offices should preferably be located on the right side of the entrance.This applies to the circulation counter of the libraries.

Thus, to make a user or newcomer more comfortable in a new environment is the main aim of HO science. Therefore according to principles of HO, the researcher should give more weightage to first-time visitors by just observing their behaviour.

28 THE METHODOLOGY OF HO SCIENCE

Modak[8] suggests the following research methodology for HO Science:

According to him, HO Science chooses to concentrate on the mental process. Its basic methodology is to think intensively as well as sympathetically about other people, observe their actions, facial gestures and behaviour very carefully, to anticipate what may be transpiring in their minds, to tie the connections between them and the situations resulting in stress and strains and then work out a strategy which leads to the right solution.

Steps of study and research in HO science, suggested by Modak[8] are: -

(*a*) Empathy

(*b*) Anticipation

(*c*) Identification

(*d*) Way towards solution

Empathy means stepping into the role of the other person to get a feel of what may be going on in the mind of the concerned person i.e. thinking for others through 'You Attitude'.

Once this stage is reached effort is made to envision his thought sequence and anticipate the confusion, irritation, inconvenience or uncertainty that the person may be facing in dealing with the situation.

Reasonable anticipation of various possible difficulties smoothens the process of problem identification.

Normally, a solution automatically suggests itself unless the situation is so complex as to defy solution.

According to experts the HO science believes in a multi-dimensional thought process which comes to grips with problems relating to wayfinding at public places, the usage of things, the physical settings and the situations created around to respond to social and psychological needs[8].

Thus to apply HO Science, one must have a sympathetic attitude, keen power of observation, broad-based thinking skill and ability to perceive and ponder from the point of view of others. Hence keen observation of people along with user studies or surveys will be the best alternative tool to discover peoples' social and psychological expectations and needs from a particular system design or a physical setting or services.

29 APPLICABILITY OF HO IN LIBRARY SCIENCE: EXPERTS' VIEWS

Libraries serve as a knowledge centres as well as a communication hub where people gather and where information comes alive through various forms of information sources and services. In other words, libraries now see success being linked to their role as public places and destinations. The HO science is related to navigation or way-finding at public places, the usage of things, the physical settings and the situations created around us to respond to social and psychological needs. According to the subject experts, quite a few attempts to incorporate human orientation aspects in system design for libraries were made by Pollet and Haskell [9] through studies on signage systems in libraries in developed countries.

They suggested that human orientation science will definitely play an important role here to anticipate and draw out causes of difficulties and irritations experienced by both users of the library as well as library staff in their day to day work.

In order to apply HO science principles in the (physical) libraries, Patkar suggested that librarians map the library activities and service delivery modes against those principles appropriately. That would reveal the gaps and shortcomings. The HO principles would also prompt the possible solutions. User surveys and user studies could further supplement in identifying the problems to execute the necessary actions and check again with the users in due course to validate their usefulness.

He further suggested that similar surveys will have to be designed also for digital libraries. Actions and steps there will be of entirely different nature like improving the look and navigation scheme of the library website.

According to Modak visibility is always lowbetween book stacks of libraries. Further, in the case of libraries, he has observed that the shelves in the libraries are very high, and the books are shelved right from the bottom till the ceiling. Users prefer searching and referring books which

are at eye level and easily accessible to search. Therefore a survey should be conducted to find out users' behaviour and preferences while searching for books on the shelves. Since users are not able to read the titles of books shelved on higher shelves and even those shelved at the too lower level. Modak further specified that there are Laws of Library science by Dr S. R. Ranganathan viz., 'Books are for use' and 'Every user his/her book'. Therefore it should be a topic of research for library professionals to compare the visibility level and ease and comfort level of library shelves from the point of view of users.

They have provided a number of examples with illustrations to apply HO science in academic institutions and its libraries. Display of site map and floor maps at the entrance of the college building to indicate the location of the principal's office, library, teachers' common room, etc. to avoid time-consuming inquiries at the entrance gate is one such suggestion (p. 31-32)[1]. Another example explained by them is about excessive commercialization and attractive packaging. Due to excessive commercialization manufacturers and publishers often do attractive packaging of their products, yet after removing this attractive packaging the real product may create confusion while using or searching the same product or information source in case of libraries. For example, in the case of hardcover books having book jackets, the publishers often make the book jackets more attractive and colourful. But when the jackets are removed the plain hardcover of both sides makes it difficult for readers to search for the same book. Further, they suggested that Library Science researchers can study and survey the visibility and utility of library signage system in different types of libraries.

3 CONCLUSION

According to the experts, there are many gaps awaiting to be filled by putting a step towards applying HO principles in many public places in India including libraries. They specified that human minds should be trained to anticipate or identify the situation where a state of indecision, confusion, and discomfort is encountered by people but how that skill of intuition can be developed for capturing human orientation angle is yet to be discovered. According to them by assuming that no product, process or system is perfect, analyzing complaints, examining product specifications, visualizing the difficulties in their usage and then altering or creating better designs will aid in capturing and measuring HO angles.

In the case of libraries, the scope is immense to observe and measure

HO angles and principles. Libraries are unique in their own way in the sense that their floor plans and architectural designs are totally different according to the type of library. Libraries are very spacious and often multi-storied. There are very few rooms housing the collections. Most of the items are stored in departments that often encompass large open spaces, sometimes, floors. Due to this, it is difficult to identify small spaces with names, to help patrons isolate specific locations of items. The items in the collection create an additional problem. Many of them are of the same size and shape. They are stored in large number of linear feet of shelving. Even though the collection is organized with the help of a classification scheme, new visitors are not much familiar with the classification scheme and the numerical arrangement of the collection. Neither the items in the collection nor the shelving have many differentiating features to aid in the finding process such as use and allocation of the different colour for bound books and journals as per different subjects. Just getting information about where the items are stored in the building is often a challenge.

In any library, users belong to varied age groups, backgrounds, and educational levels. Many of them do not have experience of using such libraries; some may have never visited a large library before. It happens when the students move from schools to colleges and colleges to universities. In schools they hardly use libraries and if they use, they are too small. In addition, every year libraries add new users. Users unfamiliar with the libraries engage in wayfinding and navigation and this process can be either aided or frustrated by the environment they encounter. Application of HO principles in libraries will help in creating a comprehensive, clear and consistent visual communication system with concise messaging. How well people are able to find their way and the level of accessibility in libraries has an impact on their ability to successfully use library facilities to accomplish information needs. By observing the user behaviour, by visualizing their reactions to the surroundings of libraries, librarians can make their libraries more accessible and user-friendly.

These interviews offered valuable insight with reference to the research on human orientation in libraries. Everybody accepts that a Customer is a King, the customer has so far seemed to have been restricted to be a passive recipient of products and services from libraries. Library professionals need to apply 'you attitude' to find out customer perspectives and need to facilitate user-friendly and welcoming libraries.

Note:

Pioneers of Human Orientation Science

Dr Shankar. K. Modak formerly worked as Principal of Sydenham College of Commerce and Economics, the Elphinstone College, and Tolani College of Commerce, Mumbai. He has taught at various colleges for over three decades and besides authoring eight books, he has contributed over eighty articles on transport, telecommunications, town and regional planning and labour economics. He was the Dean of Faculty of Commerce and also a Chancellor's Nominee on the Senate of the University of Mumbai. He was a recipient of the State Teacher Award of Government of Maharashtra in 1991. He is also associated with a large number of academic and professional societies.

He prepared a report entitled West Coast Transport Network- An Optimal Inter-Modal Mix for the National Transport Policy Committee. He has been a member of working groups constituted by the Government of India and was also a member of the Maharashtra State Planning Board.

Dr Vivek Patkar was Professor of Quantitative Methods and Operations Management at the ICFAI Business School, Mumbai. He worked for 25 years as an Operations Research Specialist in the Planning Division of Mumbai Metropolitan Region Development Authority (MMRDA) and was involved in various schemes and projects related to land-use planning, infrastructure financing, and area and transport development. He also initiated the computerisation of technical, administrative and library systems within MMRDA. A comprehensive Regional Information System employing a geo-referencing tool like Remote Sensing (RS) and Geographic Information System (GIS) for urban planning and management were established in MMRDA by the unit guided by him. At present, he is an Independent Researcher and engaged in research on different aspects of research. He has conducted several workshops on research methodology for both natural and social sciences. He is a Visiting Faculty to the Department of Library & Information Science of Mumbai University since 1985. He has authored, co-authored and edited eleven books on Mathematics and Research Methodology. To his credit are over 300 research papers and articles in reputed international journals, professional magazines and newspapers and also a variety of other publications.

Dr Patkar is a Member of the Editorial Board of the international journals entitled, Human Systems Management and Journal of Geomatics. He is a Member of the Monitoring/Steering Committee for Education and Content Development of the Rajiv Gandhi Science and Technology Commission.

He contributed 38 research papers (including one convocation address) in the field of LIS. His research papers in LIS mainly focus on computerisation and use of ICT in LIS.

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