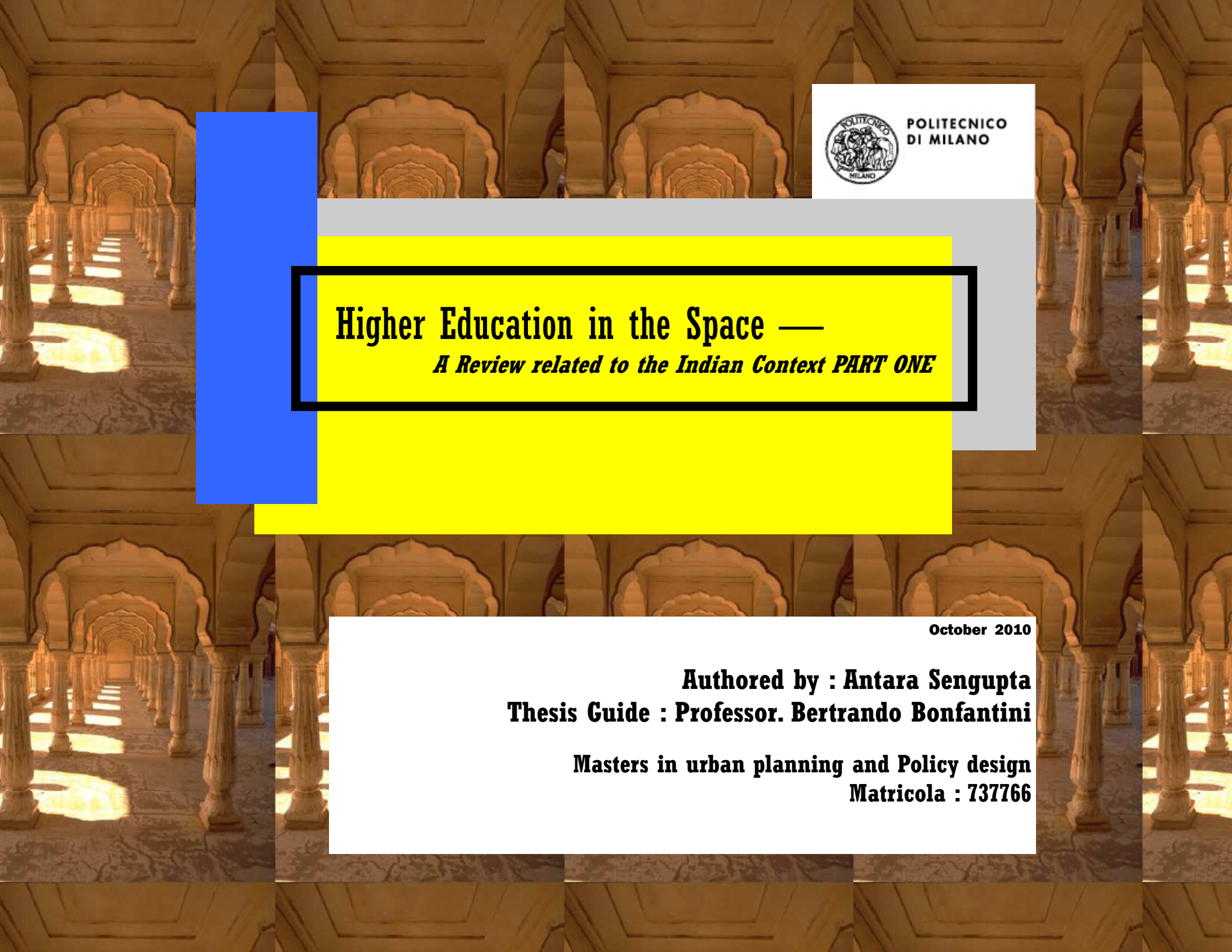

POLITECNICO DI MILANO

Higher Education in the Space —

A Review related to the Indian Context PART ONE

October 2010

Authored by : Antara Sengupta
Thesis Guide : Professor. Bertrando Bonfantini

Masters in urban planning and Policy design
Matricola : 737766

Education in the space:

Related to the Indian Context

PART ONE

A THESIS REPORT
Submitted by

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OCTOBER 2010

The work on this thesis is like the pie on the well baked cake,

I have had an excellent time

Pursuing the two year masters course,

On Urban planning and Policy design.

I thank wholeheartedly my

DEAN OF THE ARCHITECTURE FACULTY

Professor. Piercarlo Palermo

And my THESIS GUIDE

Professor. Bertrando Bonfantini

For their excellent support and guidance throughout.

I am grateful ever.

Two years is a pretty long period, but when it is all over it appears to be a short time though sweet.

I dedicate this thesis of mine to my most revered saint "SAI BABA"

AND

My dearest parents

Without whose expert support I could not have come this far.

Abstract

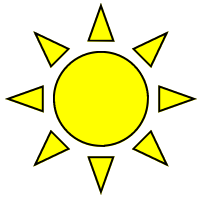
1.Why educational institutions are important :Education and literacy are the most important elements of life, right after the basic necessities of food, clothing and shelter.

- Education and knowledge alone helps a person to comprehend and react in the best possible way to a challenging situation.
- In a country like India where the level of illiteracy is very high, the creation of more and more educational institutions is an absolute necessity.
- Europe is an excellent example of educational citadels with the presence of many traditional educational institutions that are more than a 1000 years old.
- India was also an important educational destination thousands of years ago, but the knowledge was lost in time after many colonisations and conquests of the country.
- Education through visual media is the fastest way to impart education, especially in the Indian scenario. It is the most favorable form of imparting fast and effective knowledge to common people as most of the population of India reside in rural and agricultural zones and they rely solely on television and the visual media to learn about new advancements in society and technology.

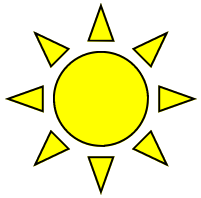
2.Urban planning, Education and research:An educational institution is a Shrine to students.

- An educational institution creates upliftment in society and it is a temple to look up towards.
- It has a direct and beneficial influence on many generations of students and also inspires others.
- An educational zone comprises not only the buildings meant for teaching, with lecture halls and classrooms, but also administration buildings, offices, student hostels, restaurants, shops, auditoriums, theatres, laboratories, libraries, research centres, playgrounds, stadiums, green spaces, parking spaces, community centres and student clubs and associations.
- Monumental buildings such as existing concert halls form a part of this scenario.

PART ONE

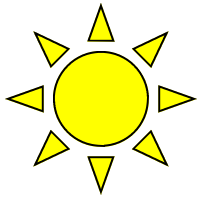


PART ONE



- History of education in India and foreign shores
- Theories of spatial planning
- How to design an educational institution - A THEORY
- Views of famous Sociologists
- Modern education in India

PART ONE



“REDEFINING THE PAST TO RECREATE OUR FUTURE”

1. Educational Citadels: Introduction

"SARASWATI NAMATHUBHYAM

VARADEY KAMAROOPINI

VIDHYA RAMBHAM KARISHYAAMI

SIDDHITH BHAVATHUMEY SADHA"

An ancient Sanskrit sloka meaning that Knowledge is the only means to liberation.

Fig.1 Opposite right : Vinayaka Mission University, India. India is home to many world class universities and colleges with commendable reputation in the field of education. This is an example of a well-known private university set in the outskirts of a major city. Most of these universities are located as " residential campus" facilities far away from urban settlements, creatinga settlement pattern of their own.

Student communities are among the most active agents in the transformation of European and Indian cities.

While student landscapes are determined in the first place by the structure of the city and university settlements, they undergo a peculiar dynamic which, may or may not lead to a decoupling of education spaces and the habitats where students spend the rest of their time, depending upon the vernacular rules and regulations.

Using evidence from many cities around the globe, indications have been derived for the planning of new higher education

facilities and student settlements that may produce more coherent student landscapes.

Government policies of many countries acknowledge that students who begin in an open access institution will, if successful, be able to move to other institutions providing different and more advanced opportunities.

Poorer people, more minorities, and more immigrants live in cities where the college age population is still less than half as likely to enrol in college as their suburban counterparts.

There is a correlation between income and education achievement. Low income students do not achieve as well, persist as long, or complete programs of study in the same proportion as students from middle and upper income groups.

Students in the latter group typically have the advantages of greater encouragement and support at home, as well as attendance at better schools, which offer more academic preparation and instil in students the cultural expectation of a collegiate education.

Responsibility for the higher education needs of the city population falls primarily to the public urban universities and community colleges.

Both the types of learning situations are tied organically to their cities, and share the problems of the urban environment. Urban community colleges confront enormous problems, and they are sometimes the only alternative for most of the students they serve.

The actual academic course offerings are narrower and more limited in the city colleges than in their suburban counterparts.

Fig.2. Top Right : Savitha Dental college, India.

(Private college for dentistry) India is known to have tried and tested medical procedures many centuries ago and have excellent medical facilities to the current date. Students are very well trained and pass out of major universities and colleges both private and government owned.

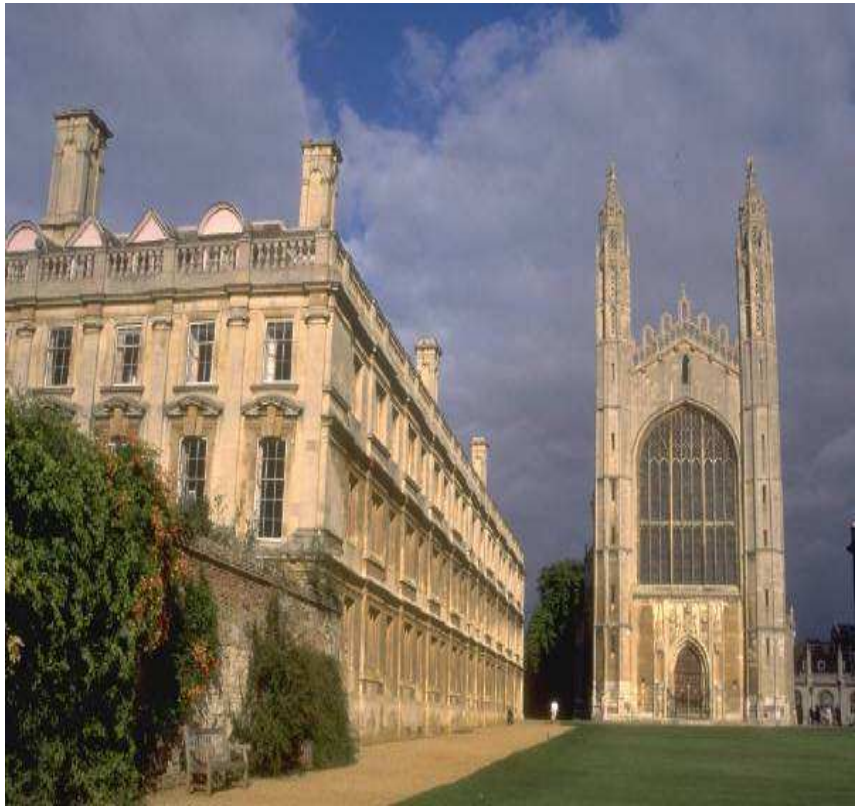


Fig.3. Top Left : Oxford University , London. England is well known for centuries of stringent and rigid educational standards. Oxford University in London is a dream for many students who wish for excellent standards in teaching, learning and residential facilities, it is an all-round institution and available only to a selected cream of students from around the world.

Fig.4. Top Right : Hyderabad technological University, India. Hyderabad is known as the cyber-tech capital of India and counted among the silicon valley cities of Chennai, Bangalore and forming a trinity. Studying in the vicinity of such a famous city both technologically and touristically adds to the amount of knowledge and experience gained for this location.

Fig.5. Top : Kings College, Cambridge, United Kingdom.

Continuing with the comparative study of Universities in Europe and India, it is imperative to consider the most well-known college of the United Kingdom, which is the Kings College in London and Cambridge. It is famous not only for its architectural design and spatial planning enhancement, but for the extremely high standard of education and lifestyle for all students who are able to gain entry here.

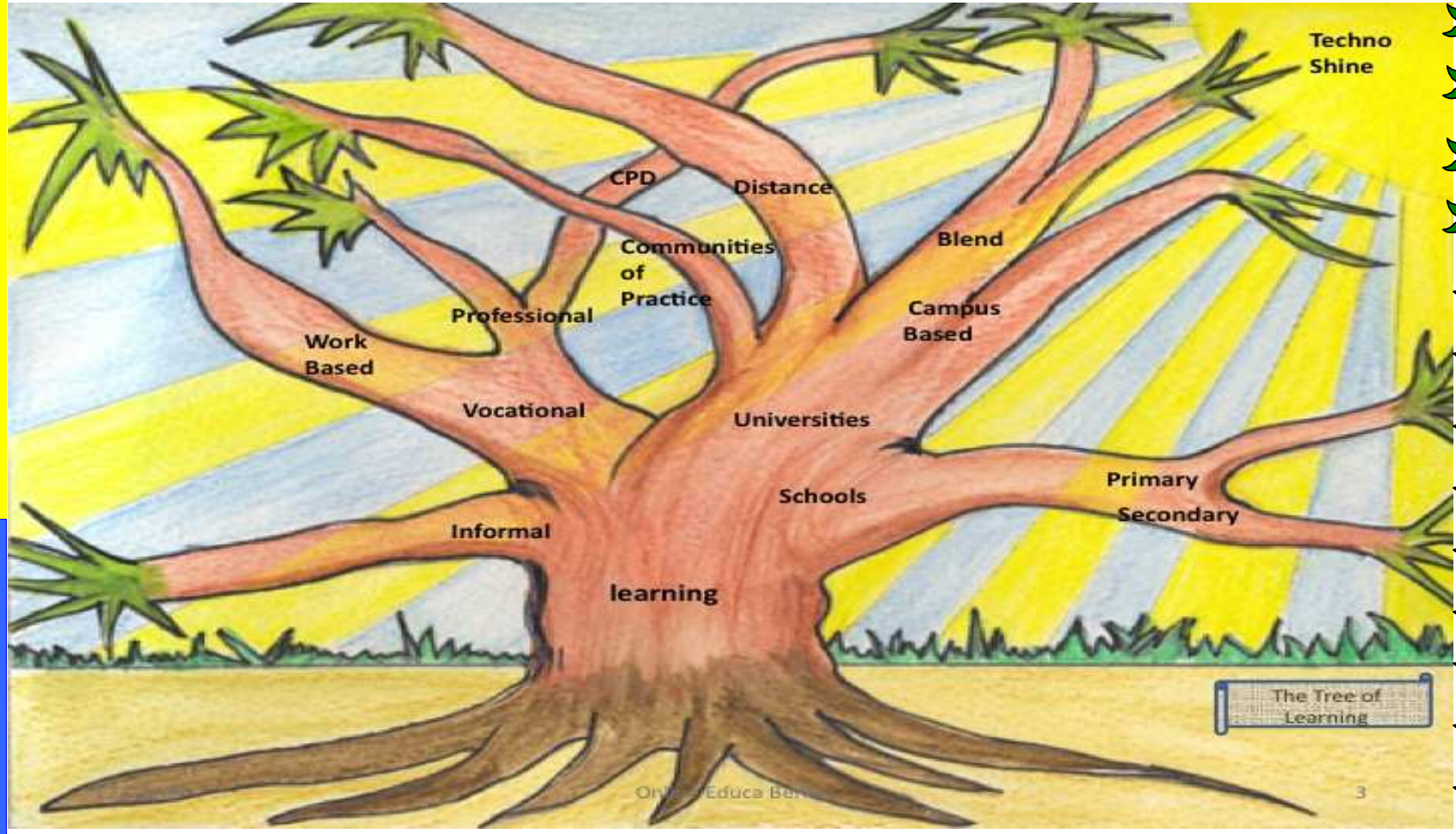


Fig.6. Above : The education tree. Before analysing the nature of design and spatial planning techniques of a university settlement, it is first important to know how and where the different branches of the system lie and how to bring them all together under a single facility so that we can study them individually and also maintain a certain goal towards achieving the unity of the combination.

Fig.7. Above left: Student hostel facilities,

Sathyabama College, India. A very famous private engineering college on the outskirts of Chennai, India, which is the fourth major metropolitan city of the country. It has excellent student residential facilities seen above, this being an important factor in helping students feel at home and study well as peace of mind and good living ambience are very important factors that invoke a student to work hard and achieve good results.

Fig.8. Above Right : ETH, Zurich.

European government run institutions are very good as far as facilities provided to students are concerned. ETH is a contemporary of the Politecnico di Milano in Milan, Italy. The technical university is designed very beautifully and accommodates a huge number of students and is very well known around the world. The ambience is also favorable for good study.

Fig.9. Top left : ETH , Zurich Another view of the famous university in Switzerland. Although the country has scarce accommodation facilities and is more well known for tourism and chocolates, it is recommended to note that ETH is a government run university and therefore a safe place to study.

Fig.10. Top right: Student recreation facilities, University of Madras, India. It is very important for students to have adequate sports and other recreational facilities such as theatres, open air auditoriums, congregational facilities, seminar and conference rooms. This enables students to gather peacefully to pursue some activities that help in balancing the tight and demanding work schedules of a typical university.

Fig.11. Top : Government University, Czechoslovakia.

It is interesting to note that this University is designed more like a castle from the medieval times. This design technique however creates an old-world charm and looks like a University of considerable standing and existence for many centuries. It should be noted here that many universities in Europe are almost 1000 years old and they still maintain their historical and cultural identity.

Fig.12. Top Left : Military school, India. Spatial planning and design of a military school is much different than that of an ordinary university that teaches engineering or the arts. A military school requires much more space and must be planned keeping in mind various sports facilities and practical use of weapons and armaments.

Fig.13. Top Right: School of fashion design, India. Another exciting career option for many youngsters today is fashion design, as this launches their career in a global scenario. Universities that are designed to accommodate fashion and the arts must be designed with much more space dedicated to exhibitions with wide galleries and arenas.

1.1 Students in Urban Settings

The presence of a University citadel means there is a consistent emphasis on the economic development of the urban area involved as well as a significant commitment to professional and technical programs. Larger numbers of urban minorities turn to the private city colleges in India rather than the University as their point of access to higher education. Many, because of their educational background, are more likely to enter vocational programs.

Some of the strategies implemented in private colleges in India include: Offering university courses on community college campuses, concurrent enrolment at universities and community colleges, improved orientation programs, peer counsellors, mentors, special courses, and outside speakers as role models who assist students in defining career objectives and developing educational plans designed for the students' achievement. From the Vedic age downwards the central conception of education of the Indians has been that it is a source of illumination giving us a correct lead in the various spheres of life. Knowledge says one thinker, is the third eye of man, which gives him insight into all affairs and teaches him how to act.

The history of education in India is very rich and interesting. One can trace ancient Indian education to the 3rd century BC.

Research shows that in the ancient days, sages and scholars imparted education orally, but after the development of letters, it took the form of writing. Palm leaves and barks of trees were used for education, and this in turn helped spread the written literature.

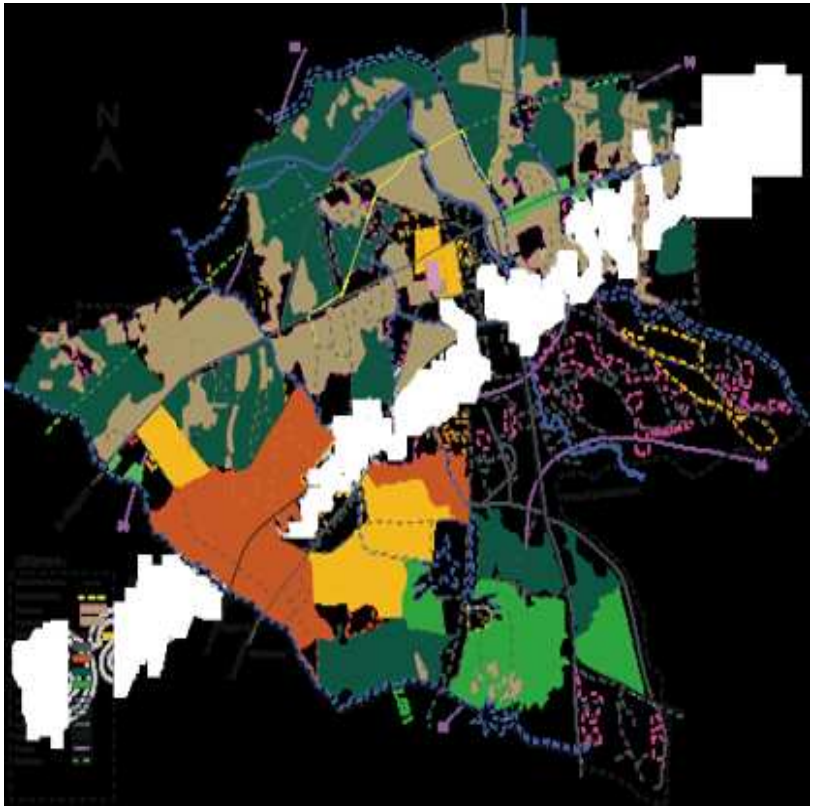


Fig.14. Top Right : Urban planning development around government university site in Assam, India.
It is imperative to note that whenever a university is planned away from the city, then scattered developments start mush-rooming in and around by themselves. Here we can see (green) agricultural spaces flanked by highways in (pink) and railways in (blue), (yellow) university site scattered around (orange) urban architecturally planned residential settlements. (white) unplanned development.

Fig.15. Top Left : Carnegie Mellon University, USA. The United states of America has been for decades a very important hub of knowledge and educational based activities. It is home to many major and renowned universities churning out scholars and academics of the highest standards. The spatial planning employed in many American universities has been by habit a scattered “campus life” format spanning huge spaces, different buildings for different departments, adequate sports , leisure and residential facilities all located far away from major cities.

Fig.16. Top Right : Student protests, Spain

It is a well known fact that the presence of large areas inside the college campus and vicinity to major television or newspaper offices can cause the spontaneous student uprisings and protests although which can be of peaceful nature. However it is better to design small conference halls and congregational facilities right inside the campus as this renders student activities more manageable and peaceful.

Fig.17. Polytechnic University of Stuttgart. Germany, Germany is well known for excellence in the field of design and automation, it is an extremely developed country and by far the most financially stable among the European nations. It is therefore very important to note the kind of design principles adopted in creating university settlements here as they are responsible for creating innumerable students who graduate with exceptional intellectual skills.

1.1.1 Historical evolution:

In ancient India, temples and community centres often took the role of schools. When Buddhism spread in India, education became available to everyone and this led to the establishment of some world famous educational institutions Nalanda, Vikramshila and Takshashila.

These educational institutes in fact arose from the monasteries. History has taken special care to give Nalanda University, which flourished from the fifth to 13th century AD, full credit for its excellence. This university had around 10,000 resident students and teachers on its roll at one time. These students included Chinese, Sri Lankan, Korean and other international scholars. The medieval period saw excellent interaction between Indian and Islamic traditions in all fields of knowledge like theology, religion, philosophy, fine arts, painting, architecture, mathematics. medicine and astronomy.

A famous quote from one of the famous literary and religious works of Hindu mythology states that :"He, who is possessed of supreme knowledge by concentration of mind, must have his senses under control, like spirited steeds controlled by a charioteer." - Katha Upanishad

When the British arrived in India, English education came into being with the help of the European missionaries. Since then, Western education has steadily advanced in India. With hundreds of universities and thousands of colleges affiliated to them, in fact scores of colleges in every discipline, India has positioned itself comfortably as a country that provides quality higher education to its people in specific and to the world in general.

Fig.18. Above right: An artistic representation of a typical gurukula wherein all the students are seated around the guru (teacher) in a circular fashion, so that everyone gets equal attention from the teacher and is able to fully concentrate on the lesson that is being taught. This is an important design aspect and we can also see in modern universities that bigger classrooms are shaped in circular or semi-circular fashion so as to enable every student to gain a good view of the teacher.

1.1.2 Ancient India

Fig.19. Opposite left : Buddha in the state of mediation.

It is believed strongly in India that meditation is the key to a very active mind that can focus sharply on the task ahead. It was suggested in ancient times that constant meditation for at least half and hour everyday helps bring every detail in focus and is especially useful for students who take up difficult examinations as their minds gets cleared and they are able to absorb more information in a clear and compact way in a very short span of time and also retain it for longer periods and the information gets stored in the subconscious mind of the individual. Therefore may universities in India have separate classes and areas designated solely for the purpose of meditation and yoga (a form of physical and mental exercise) and these meditation halls are part of the design and spatial planning of many major university citadels in India.

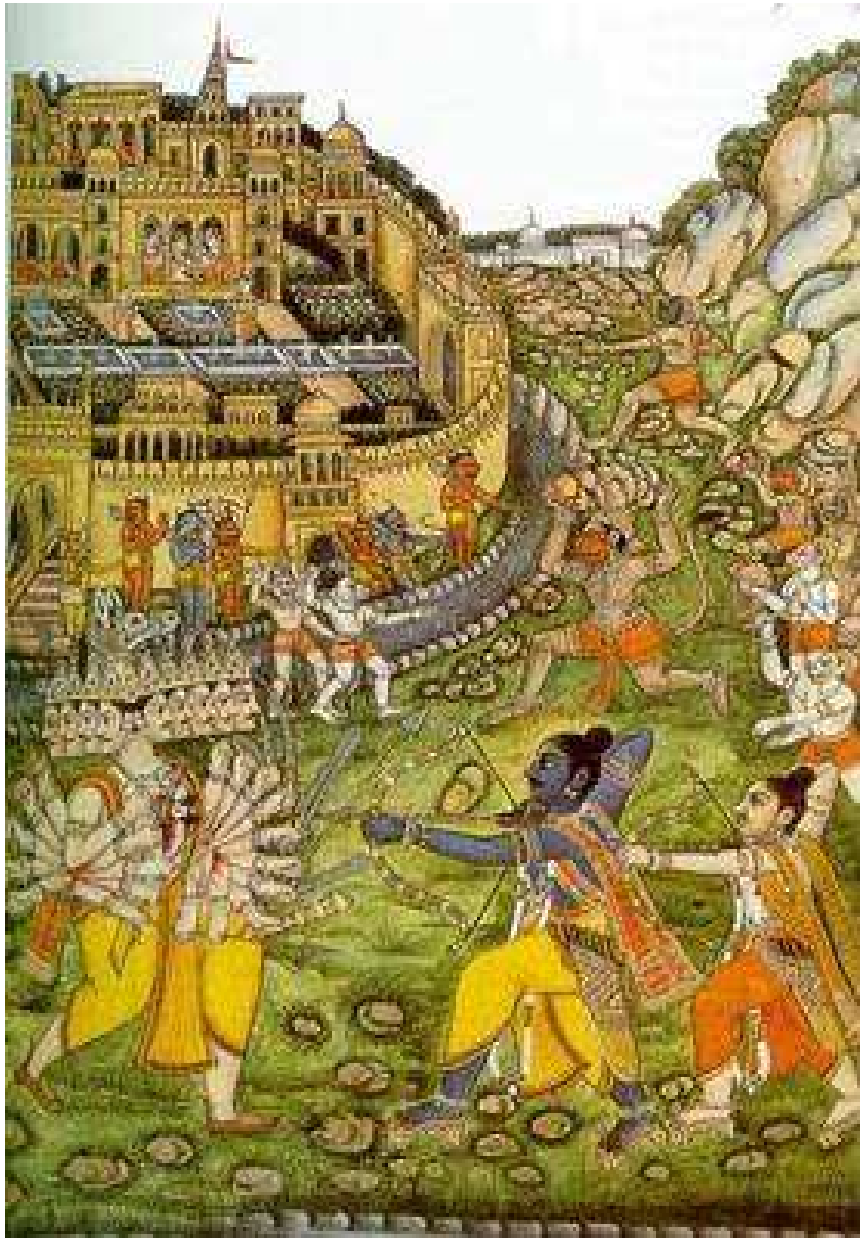


Fig.20. Opposite left: Lord Rama winning the war in Sri Lanka.

Ancient Indian mythological sentiments point to a war seemingly fought in Sri Lanka around 3000 years ago, which was won by the Indian King (God) Lord Rama, with extremely advanced warfare techniques and weapons used. There are situations mentioned that include flying machines and super advanced construction of bridges to reach the island nation. This fact finds relevance in this book as warfare was an art that was taught in universities in ancient India as a mandatory subject. Although all universities in India are not engaged in war studies at the moment, but military schools and colleges that serve the armed forces are certainly built and designed in a different way than conventional subject oriented colleges.

1.1.3 The Gurukula System

The Gurukula System was an important concept associated with pursuit of studies in ancient India.

A gurukula was a place where a teacher or a guru lived with his family establishment and trained the students in various subjects. The gurukulas usually existed in forests. Admission into the gurukula was not an easy process. A student had to convince his guru (teacher) that he had the desire, the determination and the required intelligence to pursue the studies. Ancient India had a number of universities and centres of education, where not one guru but several lived together and taught to groups of students different subjects. The emergence of Buddhism and the migration of gurus to towns and cities contributed to this new movement. Hinduism emphasizes the importance of verification of truth through personal experience, and regards the external world as a great illusion. In ancient India a number of subjects other than religion were taught to students as a part of their occupational study or even general study. These included subjects such as mathematics, medicine, metallurgy, magic, music, art of warfare, sculpting, temple building, commerce, pottery, weaving and so on. Since the occupations were based upon castes, children were initiated into the secrets of their traditional vocations from a very early age. In a Gurukula, the student had to serve the teacher for years before he was admitted into the school and initiated into the subjects, and was subjected to rigorous discipline. They had to live in a very austere environment and practice yoga and meditation under the supervision of the master and also perform many menial jobs for the master's household. On specific occasions they had to undergo fasting as a necessary means of purification and mastery of the body and mind.

Fig.21. The university of Nalanda. Nalanda was one of the most famous universities of ancient India. It is said that a large number of foreign students studied here from many countries across the ancient world ranging from Persia, Africa, China, and Arabia. All the students studied under Indian professors (gurus) who were excellent in their respective fields of study. All major subjects ranging from science, physics, chemistry, biology, medicine and hundreds of other branches of study were taught here.

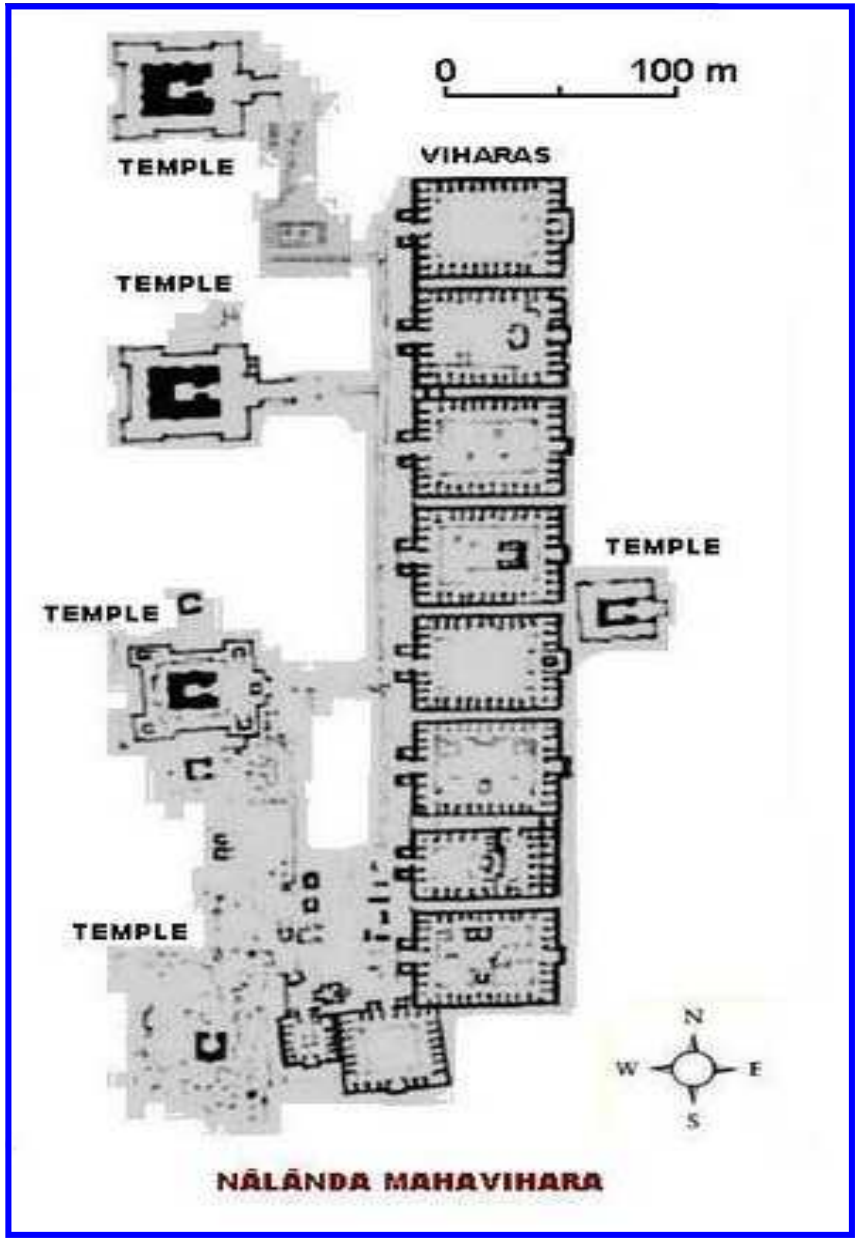


Fig.22. Opposite left: The ancient university of Nalanda.

The urban planning design of this very academically acclaimed and successful university in ancient India shows a linear plan. The centres are arranged to the left signified as “temple”. These departmental centres are located at equal distances from each other. They are then linked by smaller rooms called “viharas” that are the representation of modern day classrooms. All these spaces are connected by corridor or passageways. The buildings are oriented on the north-south axis so as to allow maximum light to penetrate all the classrooms even without electricity. Cross ventilation makes sure the classrooms are cool in the summers as India has a predominantly hot climate. Thus the spatial design of this university can be considered very advanced and student friendly.

Fig.23. Top Left : A typical “aranyaka” - forest university. It was considered extremely important in ancient India to be one with nature and to respect nature in all forms. As a result most of the high quality education was gained in the fresh and invigorating ambience under the shade of trees.

Fig.24. Top Right : Construction technique of Nalanda. It is clearly visible from the ancient ruins that the architectural systems were very advanced even around 3000 years ago as he building has been constructed in multistoried fashion, complete with anthropometrically designed steps, corridors and doorways.

Fig.25. Opposite left: The well-planned structure of Nalanda University helped generate extremely advanced urban planned settlements around this university, giving rise to a university town or in other words, a “university citadel”. The surrounding areas developed greatly into important centres of business and communication with foreign sands. Many famous travellers of that time from far –reaching continents arrived here to enjoy a greatly knowledgeable culture. Travellers as far away as Europe are said to have come here. The construction shows steps, corridors , multi-storeyed structures, classrooms, lecture halls, prayer rooms, kitchens, dining halls, and even sports and recreational arenas, all of them well covered and well ventilated to allow the entry of required heat and breeze coupled with maximum light.

Fig.26. Top Left : Another famous statue of BUDDHA in the state of meditation. As highlighted earlier, meditation is an important part of Indian education both in the past and also in the current times. Meditation need not be a mandatory subject but it is pursued in order to enhance the understanding of other difficult theories..

The fundamental principles of social, political, and economic life were welded into a comprehensive theory which is called Religion in Hindu thought. The total configuration of ideals, practices, and conduct is called Dharma (Religion, Virtue or Duty) in the ancient Indian tradition.

India is the first country to rise to the conception of an extra-territorial nationality and naturally became the happy home of different races.

Each cultural group arrived with its own ethno-psychic endowment, and each carrying its social reality for “Hindus” is not geographical, not ethnic, but a culture-pattern.

Learning in India through the ages had been prized and pursued not for its own sake, but for the sake, and as a part, of religion. It was sought as the means of self-realization, as the means to the highest end of life, that is, Emancipation.

Ancient Indian education is also to be understood as being ultimately the outcome of the Indian theory of knowledge as part of the corresponding scheme of life and values. All education was passed on to the future generations in a brief yet detailed manner. Of all the people of the world the Hindu is the most impressed and affected by the fact of death as the central fact of life.

The individual's supreme duty is thus to achieve his expansion into the Absolute, his self-fulfilment, for he is a potential God, a spark of the Divine. Education must aid in this self-fulfilment, and not in the acquisition of mere objective knowledge.

University education on almost modern lines existed in India as early as 800 B.C. or even earlier.

Fig.27 Top Left : Urban planning : The university citadel in ancient times was spatially planned akin to a raised structure that had many different levels-the outer level housed the common citizens of the city, the next higher level contained business and commercial districts, the next higher level contained educational zones and the last highest level contained the palace and temples.

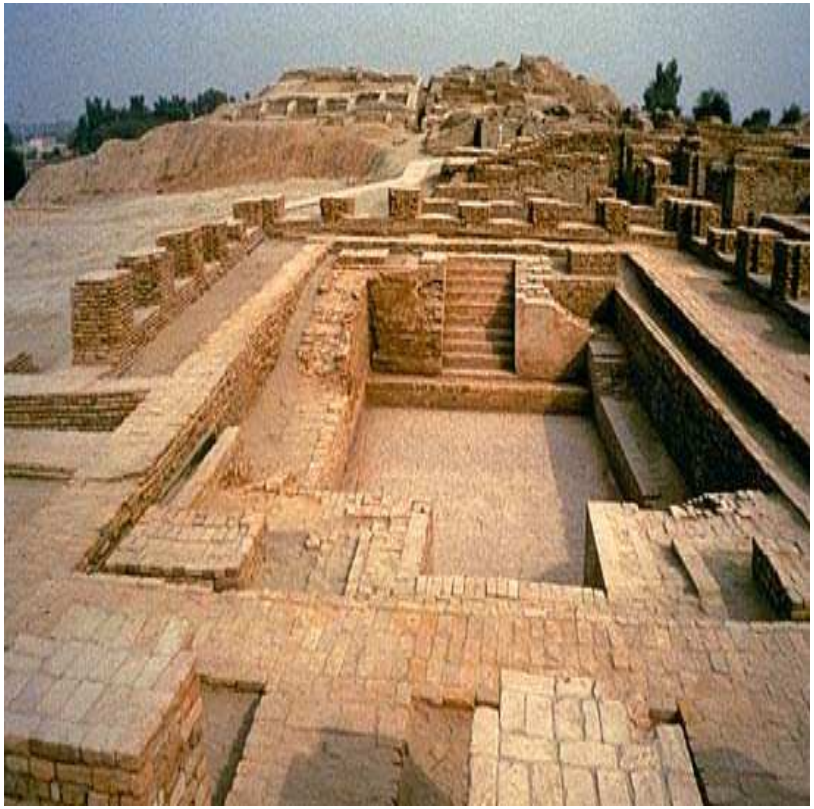


Fig.28. Top Right: The Great Bath:One of the most well planned structures in the mohenjodaro and harappa civilizations is the great common swimming pool that had extremely advanced plumbing and drainage facilities on par with modern times. It is an architectural marvel that people of those times 5000 years ago could conceived and constructed.

Fig.29. Top Left : Grain silos: Further excavation of the great ancient civilization of India led to the discovery of grain storage structures that are extremely important to any settlement as food is the main source of livelihood and commerce. In relation to spatial planning of universities, it is important to have food storage facilities albeit in smaller scale for use by residents of the university. This is more useful in cases of campus planning and scattered university settlements.

Fig.30. Top Right : Temple structures were mandatory requirements in a university settlement in the past as well as in current universities, It is a designated zone for prayer ,almost similar to western universities which contain a chapel where students can gather or pray in case they are resident inside the campus.

Fig.31. Opposite left: The ancient stone carvings.

The stone carvings of ancient structures add to the architectural beauty of the walls and enhance visual impact. They also have associated meanings as most of these are representations of deities, gods and goddesses who according to Indian mythology have human forms and are associated with different powers and actions. Therefore every design creates an unusual visual impact that helps distinguish various zones within a university settlement. In this case the structure of the Indian goddess durga is associated with power and therefore an indication of the power of gaining knowledge to ward off all evils.

Fig.32. Opposite left: Entrance gate, Chaitanya hall.

The entrance gate is an important feature in campus university settlements as these are located outside the city areas and therefore a prominent entrance enhances the conception of a university situated within. Also campus facilities that include residential facilities for students, teachers and other staff, that are situated far away from major cities and have no other habitation nearby are constructed with a walled-in construction that has a predefined boundary of the site and therefore a prominent gate is an important feature of such a university settlement.

It may be said with quite a good degree of precision that India was the only country where knowledge was systematized and where provision was made for its imparting at the highest level in remote times. Whatever the discipline of learning whether it was chemistry, medicine, surgery, the art of painting or sculpture, or dramatics or principles of literary criticism or mechanics or even dancing, everything was reduced to a systematic whole.

The history of the educational institutions in ancient India shows how old is her cultural history. It points to a long history. In the early stage it is rural, not urban. The whole educational method is based on plain living and high thinking pursued through eternity. The school is a natural formation, not artificial constituted. It is the home of the teacher. It is a hermitage, amid sylvan surrounding, beyond the distractions of urban life, functioning in solitude and silence. The constant and intimate association between teacher and taught is vital to education as conceived in this system. The pupil imbibes the inward method of the teacher, the secrets of his efficiency, the spirit of his life and work. These ideals are too subtle to be taught, and the knowledge was to be got, as the Bhagavad-Gita says, by obeisance, by questioning and serving the teacher. India has believed in the domestic system in both Industry and Education, and not in the mechanical methods of large production in institutions and factories turning out standardized articles. A most wonderful thing noticed in India from ancient times is that here the forest, not the town, is the fountain head of all its civilization.

British Sanskrit scholar Arthur Anthony MacDonnell (1854-1930) author of "A History of Sanskrit Literature" says "Some thousands of years must have been needed for all that is found" in her culture.

Fig.33. Top Right : Students of a primary school in India pursuing education in the ancient methodology of being one with nature and sitting under the shade of trees to have a better absorption of the concepts and ideas taught to them. There are many modern universities like "shantiniketan" near kolkata that still use the same techniques for teaching and learning. Many Europeans and Americans frequent such places of study in India till this date for a different learning experience.

Fig.34. Opposite left: The ancient scriptures written on stone tablets.

Written data in the modern form was not available in the ancient times and all the knowledge was imparted through recitals. That is the reason why all Indian scriptures are available in the form of poetry that can be recited and learnt the same way as written data. Many centuries later, inscriptions were formed on stone tablets when man started associating alphabets for the sounds that he were reciting an therefore an elaborate attempt to convert all oral knowledge into written form was carried out . Writing is an important part of education in the modern times and both written and oral exams are mandatory to judge the extent of knowledge gained by a student.

Education in the Epics
Hermitages
Period of Panini

When we study how these institutions grew we find that students approached the learned souls for the acquisition of knowledge. Parents, too encouraged it and sent their boys to the institutions. When their number began to increase the institutions formed with these students began to grow gradually. With the lapse of time these institutions turned into Universities and were maintained with the munificent gift of the public and the state. In this way many institutions were formed of which Taxila, Ujjain, Nalanda, Benares, Ballavi, Ajanta, Madura and Vikramsila were very famous. Taxila was famous for medicine and Ujjain for Astronomy. Both were pre-Buddhist. Jibaka the well known medical expert and the state physician of the King of Magadha of the 6th century B.C. and Panini the famous grammarian of the 7th century B.C. and Kautilya, the authority on Arthasastra, of the 4th century B.C. were students of Taxila.

Education as revealed in the grammatical Sutras of Panini, together with the works of Katyayana and Patanjali. The account of education in the Sutra period will not be complete without the consideration of the evidence of the grammatical literature as represented in the works of Panini and his two famous commentators, Katyayana and Patanjali. Panini throws light on the literature of his times. Four classes of literature are distinguished. Bhagiratha in Meditation - Pallava relief of 7-8th century A.D. at Mamallapuram. The Yogi (who was a king) appears to be petrified by his prolonged penance and has become a part of the rocks round him. His penance moves Goddess Ganga who melts and descends from Heaven to Earth, pouring out Her bounty in streams of plenty.

There is evidence that girls have been admitted in Vedic schools or Charanas. Panini refers to this specially. A Kathi is a female student of Katha school. There are hostels for female students and they are known as Chhatrisala. Each Charana or school has an inner circle of teachers known as Parisad. Their decisions on doubts about the reading and the meaning of Vedic culture are binding. Pratisakyas are said to be the product of such Parisad.

The academic year has several terms. Each term is inaugurated by a ceremony called Upakarnmana and ends by the Utsarga ceremony. Holidays (Anadhyayas) are regularly observed on two Astamis (eight day of the moon) two Chaturdasis (fourteenth day of the moon), Amavasya, Purnima and on the last day of each of the four seasons, called Chaturmasi. Besides these Nitya (regular) holidays there are Naimittika (occasional) holidays due to accidental circumstances, eg. storms, thunder, rain, fog, fire, eclipses etc.

Buddhist Education

Buddhism as a phase of Hinduism

Buddhist education can be rightly regarded as a phase of the ancient Hindu system of education. Buddhism, itself, especially in its original and ancient form, is, as has been admitted on all hands, rooted deeply in the pre-existing Hindu systems of thought and life.

Max Muller in Chips from a German Workshop, "To my mind, having approached Buddhism after a study of the

ancient religion of India, the religion of the Veda, Buddhism has always seemed to be, to a new religion, but a natural development of the Indian mind in its various manifestations, religious, philosophical, social, and political."

Auguste Barth (1834-1916) in The Religions of India, calls Buddhism: "a Hindu phenomenon, a natural product, so to speak, of the age and social circle that witnessed its birth", and "when we attempt to reconstruct its primitive doctrine and early history we come upon something so akin to what we meet in the most ancient Upanishads and in the legends of Hinduism that it is not always easy to determine what features belong peculiarly to it."

T. W. Rhys Davids (1843-1922) in Buddhism calls Gautama Buddha "the philosopher of his times", of whose philosophy it must not be supposed that "it was entirely of his own creation." He wrote: "The fact we should never forget is that Gautama was born and brought up and lived and died a Hindu. On the whole, he was regarded by the Hindus of that time a Hindu. Without the intellectual work of his predecessors, his work, however, original, would have been impossible. He was the greatest and wisest and best of the Hindus and, throughout his career, a characteristic India."

Edward Washburn Hopkins (1857-1932) goes so far as to assert (The Religions of India p. 298) that "the founder of Buddhism did not strike out a new system of morals; he was not a democrat; he did not originate a plot to overthrow the Brahminic priesthood; he did not invent the order of monks."

Hermann Oldenberg (1854-1920): "For hundreds of years before Buddha's time, movements were in progress in Indian thought which prepared the way for Buddhism."

(Source: Ancient India - By V. D. Mahajan).

The school is "in a verandah in his father's palace; Gautama Buddha being instructed, with three other boys, by a Brahmin teacher. On their laps are tablets...caged birds, musical instruments, a battle-axe, bows. Gautama, a prince, was given, along with literary education, education in music and military arts like archery.

The Buddha was a product of the Hindu System

The thesis also receives a most conclusive confirmation from the details of the Buddha's own career as preserved in the traditional texts. The details show how largely Buddha was himself the product of the then prevailing Hindu educational systems. We see how in the very first step that he takes towards the Buddhahood, the renunciation of the home and the world, the world of riches to which he is born, he was not at all singular but following the path trodden by all seekers after truth in all ages and ranks of society. Our ancient literature is full of examples of the spirit of acute, utkata, vairagya under which the rich, the fortunate, and the noble not less than the poor, the destitute and the lowly, the young with a distaste for life before tasting it as much as the old who have had enough of it, even women and maidens, as eagerly leave their homes and adopt the ascetic life as a positive good as their dear ones entreat them to desist such a step. The Buddha's next step was to place himself under the guidance of two successive gurus. The first was the Brahmin, Alara Kalama, at Vesali, having a following of 300 disciples who taught him the successive

stages of meditation and the doctrine of the Atman, from which the Buddha turns back dissatisfied on the ground that it "does not lead to aversion, absence of passion, cessation, quiescence, knowledge, supreme wisdom and Nirvana, but only as far as the realm of nothingness". Next he attaches himself to the sage of Rajagaha with 700 pupils, Uddaka, the disciple of Rama but "he gained no clear understanding from his treatment of the soul." As Rhys David points out "Gotama, either during this period or before must have gone through a very systematic or continued course of study in all the deepest philosophy of the time."

Taxila - The Most Ancient University

Takkasila was the most famous seat of learning of ancient India. Takkasila was also the capital of Gandhara and its history goes back into hoary antiquity. It was founded by Bharata and named after his son Taksha, who was established there as its ruler. Janamejaya's serpent sacrifice was performed at this very place. As a center for learning the fame of the city was unrivalled in the 6th century B.C**.** Its site carries out the idea held by the ancient Hindus of the value of natural beauty in the surroundings of a University. The valley is "a singularly pleasant one, well-watered by a girdle of hills." The Jatakas tell us of how teachers and students lived in the university and the discipline imposed on the latter, sons of Kings and themselves future rulers though they might be! The Jatakas (No. 252) thinks that this discipline was likely "to quell their pride and haughtiness". It attracted scholars from different and distant parts of India. Numerous references in the Jatakas show how thither flocked students from far off Benares, Rajagaha, Mithila, Ujjain, from the Central region, Kosala, and Kuru kingdoms in the North country. The fame of Takkasila as a seat of learning was of course due to that of its teachers. They are always spoken of as being " world renowned" being "authorities", specialists, and experts in the subject they professed. Of one such teacher we read: "Youths of the warrior and brahmin castes came from all India to be taught the art by him" Sending their sons a thousand miles away from home bespeaks the great concern felt by their parents in their proper education. As shown in the case of the medical student, Jivaka, the course of study at Takila extended to as many as seven years. Jataka No. 252 records how parents felt if they could see their sons return home after graduation at Taxila. One of the archery schools at Taxila had on its roll call, 103 princes from different parts of the country. King Prasenajit of Kosala, a contemporary of the Buddha, was educated in the Gandhara capital. Prince Jivaka, an illegitimate son of Bimbusara, spent seven years at Taxila in learning medicine and surgery.

Taxila a Center for Higher Education: The students are always spoken of as going to Taxila to "complete their education and not to begin it." They are invariably sent at the age of sixteen or when they "come of age".

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Fig.35. Opposite left: The statues of “Lord Krishna” - the creator of the universe, along with his consorts, as envisioned in Indian tradition.

According to Indian tradition the creator of the universe and all objects lying therein is Lord Krishna, represented n the sculpture opposite. This also means that he is the deity to turn to in any situation for strength and support This is relevant while considering the construction of a university settlement because it a vernacular concept and an important part of the sentiments of all Indians therefore the sculpture of this nature finds form and relevance in the construction of any university as there is always a designated area for prayer and congregation even in modern university campuses.

Fig.36. Top Left : Students leaning from a ‘GURU’ “The ‘GURU’ was the person who knew all.” He was the one who taught students in all categories, from children to adults. He was an exponent in mathematics, astronomy, physics, chemistry, medicine and the arts. There were various teachers for various subjects and they all lived together with the students inside a residential study campus.

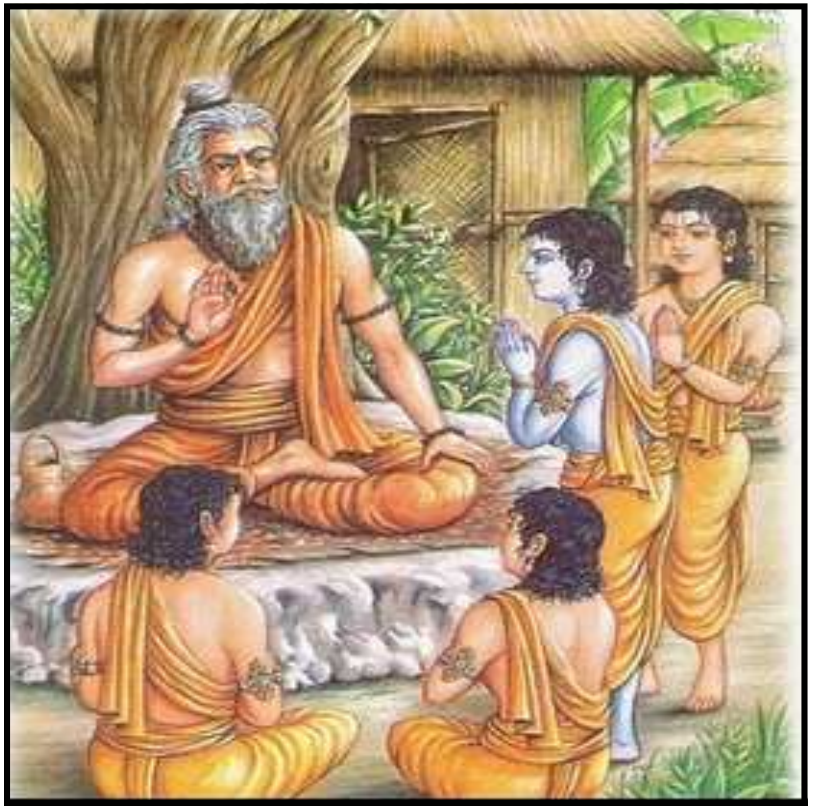


Fig.37. Top Right : Continuing with the representation of a gurukula, it is learned that all the students, teachers, cooks, attendants and other staff lived together within the university / school campus. The campus was thus spatially planned in such a way as to accommodate residential facilities as well as teaching areas, sports and recreational areas and dining spaces, in an aesthetic and compact composition.

Different Courses of Study

The Jatakas constantly refer to students coming to Takkasila to complete their education in the three Vedas and the eighteen Sippas or Arts. Sometimes the students are referred to as selecting the study of the Vedas alone or the Arts alone. The Boddisatta (Buddha) is frequently referred to as having learned the three Vedas by heart. Takshila was famous for military training, wrestling, archery and mountain- climbing.

Science, Arts and Crafts: The Jatakas mention of subjects under scientific and technical education. Medicine included a first hand study of the plants to find out the medicinal ones. Takkasila was also famous for some of its special schools. One of such schools was the Medical Schools which must have been the best of its kind in India. It was also noted for its School of Law which attracted student from distant Ujjeni. Its Military School were not less famous, which offered training in Archery. Thus the teachers of Takkasila were as famous for their knowledge of the arts of peace as for that of war.

Next, to Takkasila ranks Benares as a seat of learning. It was, however, largely the creation of the ex-students of Takkasila who set up as teachers at Benares, and carried thither the culture of that cosmopolitan educational center which was molding the intellectual life of the whole of India. There were again certain subjects in the teaching of which Benares seems to have specialized. There is an expert who was "the chief of his kind in all India."

Hermitages as Centres of Highest Learning

Lastly, it is to be noted that the educational system of the times produced men of affairs as well as men who renounced the world in the pursuit of Truth. The life of renunciation indeed claimed many an ex-student of both Takksila and Benares. In the sylvan and solitary retreats away from the haunts of men, the hermitages served as schools of higher philosophical speculation and religious training where the culture previously acquired would attain its fruitage.

There are accounts of education written by eye witness who were foreigners, like the pilgrims from China who regarded India, as its Holy Land. The very fact of the pilgrimage of Chinese scholars like Fa-Hien or Hiuen Tsang to India testifies to the tribute paid by China to the sovereignty of Indian thought and culture which made its influence felt beyond the bounds of India itself in distant countries which might well be regarded as then constituting a sort of a Greater India. The duration of Fa-Hien's travel in India was for fifteen years. "After Fa-Hien set out from Ch'ang-gan it took him six years to reach Central India; and on his return took him three years to reach Ts'ing-chow. A profound and abiding regard for the learning and culture of India was needed to feed and sustain such a long continued movement. Indeed, the enthusiasm for Indian wisdom was so intense, the passion for a direct contact with its seats was so strong, that it defied the physical dangers and difficulties which lay so amply in the way of its realization. Besides, Chinese scholars, I-tsing refers to "the Mongolians of the North" sending students to India.

It is interesting to note that the study of Sanskrit was continued in Buddhist monasteries. At the Pataliputra monastery Fa-Hien stayed for three years "learning Sanskrit books and the Sanskrit speech and writing out the Vinaya rules." Archery is found mentioned in the Jataka stories. The Bhimsena Jataka tells that Boddhisatva learnt archery at Takshila. Wrestling was popular and descriptions of such breath-holding bouts in wrestling are available in the Jataka stories. Two kinds of games called Udyana Krida or garden games and Salila Krida or water sports are also mentioned. Archery was also popular among the women during this period, as can be seen from the Ahicchatra images. Hunting, elephant fighting, Ram fighting, and Partridge fighting were the other important games of this period.

Takshashila, the most ancient Hindu University, was destroyed by the barbarian White Huns in 455 A.D. Sir John Marshall, Director General of Archaeology in India, has given a most interesting account, but he says regretfully,
"The monuments of Taxila were wantonly and ruthlessly devastated in the course of the same (fifth) century. This work of destruction is almost certainly to be attributed to the hordes of barbarian white Huns, who after the year 455 A.D. swept down into India in ever increasing numbers carrying sword and fire wherever they went, and not only possessed themselves of the kingdom of the Kinshans, but eventually overthrew the great empire of the Guptas. From this calamity Taxila never again recovered."

(Source: India: Bond Or Free? - By Annie Besant).

Universities of Ancient India

1. Taxila - also known as Takkasila

2. Mithila - Mithila, was a stronghold of Brahminical culture at its best in the time of the Upanishads, under its famous Philosopher-king Janaka who used to send our periodical invitations to learned Brahmins of the Kuru-Panchala country to gather to his court for purpose of philosophical discussions. Under him Eastern India was vying with North-Western India in holding the palm of learning. In those days, the name of the country was not Mithila but Videha. In the time of the Ramayana, the Mahabharata, and Buddhist literature, Mithila retained the renown of its Vedic days.

Its subsequent political history is somewhat chequered. When Vijaya Sen was King of Bengal, Nanyadeva of the Karnataka dynasty was King of Mithila in A.D. 1097. King Vijaya defeated him but was defeated by his son Gangadeva who recovered Mithila from him. This Karnataka Dynasty ruled Mithila for the period c. A.D. 115-1395, followed by the Kamesvara Dynasty which ruled between c. A.D. 1350-1515. It was again followed by another dynasty of rulers founded by Mahesvara Thakkura in the time of Akbar, and this dynasty has continued up to the present time.

Mithila as a seat of learning flourished remarkably under these later kings. The Kamesvara period was made famous in the literary world by the erudite and versatile scholar, Jagaddhara, who wrote commentaries on a variety of texts, the Gita, Devi-mahatmya, Meghaduta, Gita-Govinda, Malati-Madhava, and the like, and original treatises on Erotics, such as Rasika-Sarvasva-Sangita-Sarvasva.

Fig.38. Opposite left: The ancient university of Nalanda.

The urban planning design includes designated spaces that can seat a large number of people in such a way that all the students get a good view of the teacher and are not out of sight or neglected while a session is in progress. Since in the ancient times scriptures and knowledge was recited orally therefore there is no provision for writing boards. Instead palm leaves and stone tablets were used wherever necessary. The space has been planned in such a way to offer seclusion from noise and the outside world plus a congenial environment that is not too forbearing and pressurising on the student . Students find such areas compatible and friendly, therefore it enables them to perform better.

The next scholar who shed luster on Mithila was the poet Vidyapati, the author of Maithili songs or Padavali generally. He has inspired for generations the later Vaishava writers of Bengal.

Mithila made conspicious contributions in the realm of severe and scientific subjects. It developed a famous School of Nyaya which flourished from the twelfth to the fifteenth century A.D. under the great masters of Logic, Gangesa, Vardhamana, Pakshadhara, and others. This School of New Logic (Navya Nyaya) was founded by Gangesa Upadhyaya and his epoch-making work named "Tattva Chinatmani", a work of about 300 pages whose commentaries make up over 1,000,000 pages in three centuries of its study. Gangesa is supposed to have lived after A.D. 1093-1150, the time of Ananada Suri and Amarachandra Suri, whose opinions he has quoted.

By its scholastic activities Mithila in those days, like Nalanda, used to draw students from different parts of India for advanced and specialized studies in Nyaya or Logic, of which it was then the chief center.

3. Nalanda

Nalanda was the name of the ancient village identified with modern Baragaon, 7 miles north of Rajgir in Bihar. The earliest mention of the place is that in the Buddhist scriptures which refer to a Nalanda village near Rajagriha with a Pavarika Mango Park in Buddha's time. The Jain texts carry the history earlier than the Buddhist. IT was the place where Mahavira had met Gosala and was counted as a bahira or suburb of Rajagriha where Mahavira had spent as many as fourteen rainy seasons. Nalanda, when Fa-hien visited it, was called Nala and was known as the place "where Sariputta was born, and to which also he returned, and attained here his pari-nirvana. (The eternal truth)

Free education: Out of the income of the state.

In Nalanda, swimming, breathing exercises and yoga formed an integral part of the curriculum. Harshavardhana, of the Gupta dynasty was a great sportsman and he encouraged his subjects as well. Another great contemporary of Harsha, Narasimhan or Mamallah was also a great wrestler. He belonged to the Pallava dynasty.

4. Vallabi

Valabhi, situated near modern Wala in Kathiawar, was the capital of an important kingdom and a port of international trade with numerous warehouses full of rarest merchandise. During the 7th century, however, it was more famous as a seat of learning. I-tsing informs us that its fame rivaled with that of Nalanda in eastern India.

5. Vikramasila

Like Nalanda and Vallabhi, the University of Vikramsila was also the result of royal benefactions. Vikramasila, found by king Dharmapala in the 8th century, was a famous center of international learning for more than four centuries. King Dharmapala (c. 775-800 A. D) was its founder, he built temples and monasteries at the place and liberally endowed them. He had the Vihara constructed after a good design. He

also erected several halls for the lecturing work. His successors continued to patronize the University down to the 13th century. The teaching was controlled by a Board of eminent teachers and it is stated that this Board of Vikramsila also administered the affairs at Nalanda. The University had six colleges, each with a staff of the standard strength of 108 teachers, and a Central Hall called the House of Science with its six gates opening on to the six Colleges. It is also stated that the outer walls surrounding the whole University was decorated with artistic works, a portrait in painting of Nagarjuna adorning the right of the principal entrance and that of Atisa on the left. On the walls of the University were also the painted portraits of Pandits eminent for their learning and character.
Grammar, logic, metaphysics, ritualism were the main subjects specialized at the institution.

Destruction of Vikramsila by Moslems: In 1203, the University of Vikramasila was destroyed by the Mahomadens under Bakhtyar Khilji. As related by the author of Tabakat-i-Nasari:

"the greater number of the inhabitants of that place were Brahmins and the whole of these Brahmins had their heads shaven; and they were all slain. There were a great number of books on religion of the Hindus (Buddhists) there; and when all these books came under the observation of the Musalmans, they summoned a number of Hindus that they might give them information respecting the import of these books; but the whole of the Hindus had been killed. On becoming acquainted (with the contents of those books), it was found that the whole of that fortress and city was a college, and, in the Hindu tongue, they call a college a Bihar (Vihara)."

After the destruction of the Vikramsila University, Sri Bhadra repaired to the University of Jagadala whence he proceeded to Tibet, accompanied by many other monks who settled down there as preachers of Buddhism.

A typical Brahmin with a high chignon, beard, short garments, seat of mat, round leafy hut; four fellow denizens of his hermitage, a dow, a crow, a kneeling doe, and a coiled snake, all living at peace as friends in the atmosphere of non-violence.

6. Jagaddala

Its foundation by King Rama Pala. According to the historical Epic Ramacharita, King Ram Pala, of Bengal and Magadha, who reigned between A.D. 108-1130, founded a new city which he called Ramavati on the banks of the rivers Ganga and Karatoya in Varendra and equipped the city with a Vihara called Jagadala. The University could barely work for a hundred years, till the time of Moslem invasion sweeping it away in A.D. 1203. But in its short life it has made substantial contributions to learning through its scholars who made it famous by their writings.

7. Odantapuri

Very little is known of this University, although at the time of Abhayakaragupta there were 1,000 monks in residence here. Odanatapuri is now known for the famous scholar named Prabhakara who hailed from Chatarpur in Bengal. It appears that this University had existed long before the Pala kings came into power in Magadha. These kings expanded the University by endowing it with a good Library of Brahmanical

and Buddhist works. This Monastery was taken as the model on which the first Tibetan Buddhist Monastery was built in 749 A.D. under King Khri-sron-deu-tsan on the advice of his guru, Santarakshita.

8. Nadia

Nadia is the popular name of Navadvipa on the Bhagirathi at its confluence with Jalangi. Once it was a center of trade borne by the Bhagirathi between Saptframa)on the river Sarasvati near Hoogly) and the United Provinces, and in the other direction by the Jalangi between Saptagrama and Eastern Bengal.

9. Madura - in the south was a seat of learning.

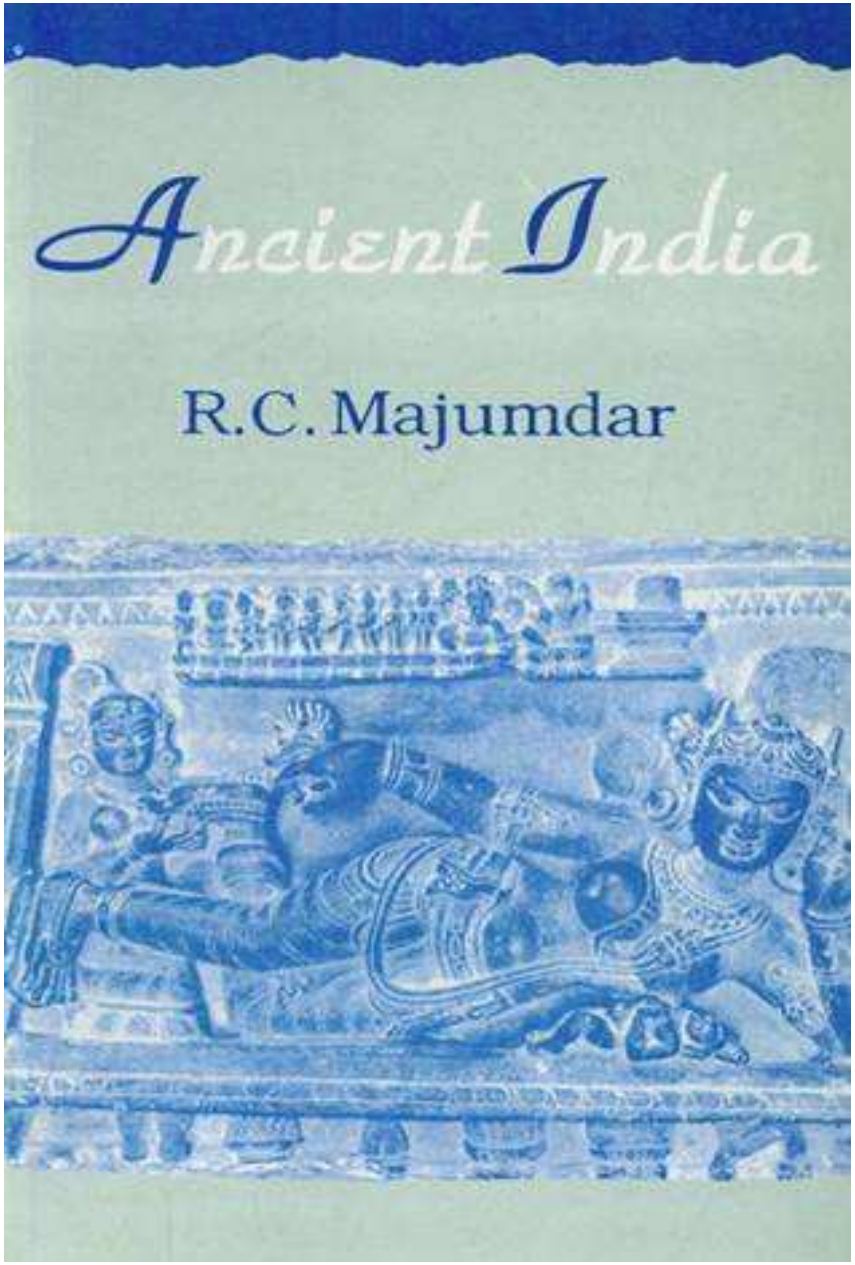
10. Benares - Benares has always been a culture center of all India fame and even in the Buddha's day it was already old. Though not a formal university, it is a place unique in India, which has throughout the ages provided the most suitable atmosphere for the pursuit of higher studies. The method of instruction as also the curriculum followed there in early times was adopted from Taxila. Benares University was famous for Hindu culture. Sankaracharya as a student was acquainted with this university. Benares is the only city in India which has its schools representing every branch of Hindu thought. And there is no spiritual path which has not its center in Benares with resident adherents. Every religious sect of the Hindus has its pilgrimage there. In ancient days, Sarnath figured as a recognized seat of Buddhist learning. Rightly, therefore, it is this holy city the very heart of spiritual India.

(Note: Many of these universities were sacked, plundered, looted by the Islamic onslaught. They destroyed temples and libraries and indulged in most heinous type of vandalism. These were particularly heinous crimes. The burning of the Library of Nalanda ranks with the destruction of the Library of Alexandria as the two most notorious acts of vandalism in the course of Islamic expansion. Nalanda, Vikramshila, Odantapura, and Jagddala as the universities destroyed by Mohammed Bakhtiar Khilji around 1200 A.D. For more refer to The Sack of Nalanda).

Later when the British came there was, throughout India, a system of communal schools, managed by the village communities. The agents of the East India Company and the Christian missionaries destroyed these village community schools, and took steps to replace education by introducing English and western system of education. In October 1931 Mahatma Gandhi made a statement at Chatham House, London, that created a furor in the English press.

He said, "Today India is more illiterate than it was fifty or a hundred years ago, and so is Burma, because the British administrators, when they came to India, instead of taking hold of things as they were, began to root them out. They scratched the soil and left the root exposed and the beautiful tree perished".

Mr. Ermest Havell (formerly Principal of the Calcutta school of Art) has rightly said, the fault of the Anglo-Indian Educational System is that, instead of harmonizing with, and supplementing, national culture, it is antagonist to, and destructive, of it.



Sir George Birdwood says of the system that it “has destroyed in Indians the love of their own literature, the quickening soul of a people, and their delight in their own arts, and worst of all their repose in their own traditional and national religion, has disgusted them with their own homes, their parents, and their sisters, their very wives, and brought discontent into every family so far as its baneful influences have reached."

(source: Bharata Shakti: Collection of Addresses on Indian Culture - By Sir John Woodroffe p 75-77).

The present education system is, in effect, a legacy of the colonial rule. For more on this tragic destruction of ancient education, please refer to the chapters Islamic Onslaught and European Imperialism. Also refer to Education: A Beautiful Tree - Indiatogether.com and The Beautiful Tree - Shri Dharampal - an associate of Mahatma Gandhi (Biblia Impex, Delhi, 1983).

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Wherever in India its earliest and most wonderful manifestations are noticed, we find that men have not come into such close contact as to be rolled or fused into a compact mass. There, trees and plants, rivers and lakes, had ample opportunity to live in close relationship with men. In these forests, though there was human society, there was enough of open space, of aloofness; there was no jostling. Still it rendered it all the brighter.

It is the forest that nurtured the two great ancient ages of India, the Vedic and the Buddhist. As did the Vedic Rishis, Buddha also showered his teaching in the many woods of India.

The current of civilization that flowed from its forests inundated the whole of India. The very word "Aranyaka" affixed to some of the ancient treatises indicates that they originated in, or were intended to be studied in, forests. The Rig Veda is established as the earliest work not merely of the Hindus, but of all **Indo-European languages** and humanity.

The history of the most of the known civilizations show that the further back we go into antiquity, the more unsatisfactory is found to be the general position of women. Hindu civilization is unique in this respect, for here we find a surprising exception to the general rule.

The further back we go, the more satisfactory is the position of women. The Mahabharata tells of numerous hermitages where pupils from distant parts gathered for instruction round some far-famed teachers.

A full-fledged Ashram (Monastery-University) is described as consisting of several Departments which are enumerated as following. These were the major subjects taught at a theory-based subject oriented university, with the exception of martial arts and military skills that were mandatory and required larger spaces. In the order of the subjects taught and their relevance to the student community prevailing at that time, the various departments of study were classified as follows :

Indian names of departments with explanation:

1.Agnisthana, the place for fire-worship and prayers

2.Brahmasthana, the Department of Veda

3.Vishnusthana, the Department for teaching Rajaneeti (Politics)

4.Vivasvatasthana, Department of Astronomy

5.Somasthana, Department of Botany

6.Garudasthana, Section dealing with Transport and Conveyances

7.Mahendrasthana, Military Section

8.Kartikeyasthana, Section teaching military organization, how to form patrols, battalions, and army.

The spatial design of the university settlement was designed keeping in mind the different subjects taught and the spatial requirement for each subject according to number of students.

Fig.39 Top Left : “Bharatanatyam” - The national dance of India. Learning this dance form requires immense patience and perseverance and takes years sometimes as long as ten or fifteen years to master this art. The schools required to impart this beautiful dance form are designed differently than schools of theory based educational subjects.

Fig.40. Top Right : The “Shikhar” or the “Spire” of the temple. All Indian temples are constructed in such away as to incorporate the spire as in western churches, mainly to direct all heavenly energies into the built form and also to create a focus. Scientifically known to ward off lightning during tropical thunderstorms.

Professional and Useful Education

Medical science

Medical science is no doubt of hoary antiquity in India. The Vedic literature refers to the healing feats of Asvins, who though originally human beings, were later deified by a grateful posterity. This science was fairly well developed by the 4th century B.C., for the Greeks, who had accompanied Alexander, were very well impressed by the skill of Indian doctors in curing the cases of serpent bites. The Jatakas refer to the medical students at Taxila treating for cranial abscesses and intestinal displacement. Medical education was usually imparted by private teachers. The student had to be well versed in Sanskrit, for most of the books on medicine were written in that language. Practical training in surgery and pharmacy and constant discussion were some of the important features of the training.

Training in Surgery: Sushruta was the first plastic surgeon in this world. The beginners were taught how to hold and use the surgical instruments by practicing upon pumpkins, water melons etc. under the teacher's direction. Puncturing was demonstrated on the veins of dead animals, the manner of holding the probe on dry Alabu fruits, application of bandages on stuffed human figures and the use of caustics on soft pieces of flesh. Sushruta emphasizes on the importance of dissection for perfecting the student's knowledge; and points out that mere book learning cannot give a clear idea of the actual internal constituents of the human body. Corpses used to be decomposed in water and students were then required to dissect them and visualize the nature of skin, muscles, arteries, bones, internal organs, etc. Anatomical knowledge that was imparted was fairly high when compared with the contemporary standards elsewhere.
Smallpox inoculation is an ancient Indian tradition and was practiced in India before the West.

In ancient times in India smallpox was prevented through the tikah (inoculation). Kurt Pollak (1968) writes, "preventive inoculation against the smallpox, which was practiced in China from the 11th century, apparently came from India". This inoculation process was generally practiced in large part of Northern and Southern India, but around 1803-04 the British government banned this process. It's banning, undoubtedly, was done in the name of 'humanity', and justified by the Superintendent General of Vaccine (manufactured by Dr. E. Jenner from the cow for use in the inoculation against smallpox).

Dharmapal has quoted British sources to prove that inoculation in India was practiced before the British did. In the seventeenth century, smallpox inoculation (tikah) was practiced in India. A particular sect of Brahmins employed a sharp iron needle to carry out these practices. In 1731, Coult was in Bengal and he observed it and wrote (Operation of inoculation of the smallpox as performed in Bengall from Re. Coult to Dr. Oliver Coult in 'An account of the diseases of Bengall' Calcutta, dated February 10, 1731):

" The operation of inoculation called by the natives tikah has been known in the kingdom of Bengall as near as I can learn, about 150 years and according to the Bhamanian records was first performed by one Dununtary, a physician of Champanagar, a small town by the side of the Ganges about half way to Cossimbazar whose memory in now held in great

esteem as being through the another of this operation, which secret, say they, he had immediately of God in a dream.'

(source: Indian Science And Technology in the Eighteenth Century; some contemporary European accounts - By Dharampal 1971. An Account of the manner of inoculating for the Smallpox in the East Indies. Mapusa, Goa: Other India Press. The Healers, the Doctor, then and now - By Pollack, Kurt 1968.English Edition).

Sage Vasistha

The Hindus were the first nation to establish hospitals, and for centuries they were the only people in the world who maintained them. The Chinese traveler, Fa-hien, speaking of a hospital he visited in Pataliputra says: "Hither come all poor and helpless patients suffering from all kinds of infirmities. They are well taken care of, and a doctor attends them; food and medicine being supplied according to their wants. Thus they are made quite comfortable, and when they are well, they may go away."
Excavations at Kumrahar near Patna have revealed in 1953 the existence of one university-cum hospital named Arogyavihara. Indian hospitals were well organized, for Hindu doctors were invited by the Abbaside Khalifas to supervise their own hospitals in the 8th century A.D. The medical course at Taxila was fairly long, for his physician Jivaka was permitted to go home very reluctantly by his teacher, though he had spent seven years at that University. The completion of the course was followed by an examination. This is implied by the observation of Charaka and Sushruta that it is the king's fault, if incompetent doctors practice as a doctor without possessing king's license.

India continued to be famous for its medical skills throughout the ancient period. Her doctors could perform surgical operations for cataract, hydrocele, abscesses, extraction of dead embryos etc. They were in demand in Mesopotamia and Arabia for guiding and training the physicians there. Khalifa Harun sent several scholars to India to study Hindu medicine and pharmacology and induced about 20 doctors to come to Baghdad to become chief medical officers of state hospitals and to translate Sanskrit medical works into Arabic. Most celebrated among them was Manaka (Manikya) who was originally invited to cure an ailment of Sultan Harun, which defied the sill of Arabian physicians. He succeeded in his treatment and was later induced to become the director of state hospitals and translate the work of Susruta into Arabic. Arabic system of medicine owes a great deal to the Ayurvedic system. (refer to S. K. Nadvi - Arab aur Bharat ke sambandha).
Veterinary Education had been developed in India fairly early. Since animals were regarded as a part of the same cosmos as humans, it is not surprising that animal life was keenly protected and veterinary medicine was a distinct branch of science with its own hospitals and scholars. Salihotra is its traditional founder and two of the Pandava heroes, Nakula and Sahadeva are said to have been experts in it. Numerous texts, especially of the postclassical period, Visnudharmottara Mahapurana for example, mention veterinary medicine. Megasthenes refers to the kind of treatment which was later to be incorporated in Palakapyamuni's Hastya yur Veda and similar treatises. Salihotra was the most eminent authority on horse breeding and hippiatry. Juadudatta gives a detailed account of the medical treatment of cows in his Asva-Vaidyaka.

(Source: Indian and World Civilization - By D. P. Singhal).

According to Stanley Wolpert, " Veterinary science had developed into an Indian medical specialty by that early era, and India's monarchs seem to have supported special hospitals for their horses as well as their elephants. Hindu faith in the sacrosanctity of animals as well as human souls, and belief in the partial divinity of cows and elephants helps explain perhaps what seems to be far better care lavished on such animals... A uniquely specialized branch of Indian medicine was called Hastyaurveda ("The Science of Prolonging Elephant Life").

(Source: An Introduction to India - By Stanley Wolpert).

Military Education

In modern times military training is usually given only by the state authorities when recruits join the army. Such was not the

case in ancient India. The average citizen and villager was expected to be able to defend his own hearth and home: The Arthasastra expressly lays down that every village ought to be able to defend itself. That such was actually the case in several parts of India would become quite clear from the accounts of Alexander's invasion, as given by the Greek historians. In several places the Macedonian was opposed not so much by state forces as by the whole population in arms. There can be no doubt that in many of the republican states of the Punjab, the Kathas, the Malavas, the Sibis, etc. every adult used to receive military training of a fairly high order.

Military Training: There were also some cities in the country, famous as centers of military training. Taxila, situated in the north-west, had naturally become a center of military training. Kshatriyas and Brahmins from all over the country used to go to this frontier city for getting mastery in the military profession. In one military college of the city there were 103 princes receiving training in the different branches of the
military art, which included elephant-lore, horsemanship, and cavalry training, and the instructions in the use of the different weapons then in use.

Commercial Education

There was considerable inter provincial and foreign trade going on in the ancient times. The maritime activity of ancient India were considerable, and the trade with South East Asia, Egypt, Greek and Rome was very profitable to India during the early centuries.

Conclusion of Indian educational citadel systems:

The Hindu Synthesis of the Transcendental and Education:

Author Benoy Kumar Sarkar writes: "The ideal of realizing the infinite in the finite, the transcendental in the positive, manifested itself also in the educational system of Hindu India. The graduates trained under the 'domestic system' of the
Gurukulas or preceptors' homes were competent enough to found and administer states, undertake industrial and commercial enterprises; they were builders of empires and organizers of business concerns. It was because of this all-

round and manly culture that the people of India could organize vast schemes of colonization and conquest, and not content with being simply confined within the limits of mother India, could build up a Greater India beyond the seas, and spread culture, religion and humanity among the subject and hospitable races. If it is not for education, how else can we account for the remarkable progress of the nation in architecture, sculpture, medicine, dyeing, weaving, mathematics, ship building, chess, navigation, military tactics, and implements and all such aspects of socio-economic and economico-political life as have to depend on the help of physical and natural sciences?"

(source: Creative India - By Benoy Kumar Sarkar).

The percentage of literary people in India was more than that at present. At least up to the 7th century A.D. this system worked most satisfactorily. People showed brilliancy in all departments. eg. Mathematics, Astronomy, Medicine, Chemistry, Poetry, Drama, Grammar and Philosophy. No nation could excel these people at that time. From the 4th century B.C. to the 11th century A.D. all foreigners who came in contact with India and studied her civilization critically were very much impressed by it. They spoke highly of Indian character specially their truthfulness, honesty, and sense of justice. The influence of the system of education was very great among the people in general. Megasthenes, the Greek ambassador who came to India in the 4th century B.C. remarked " for whereas among other nations it is usual in the contests of war, to ravage the soil, among the Indians it is on the contrary. They never use the conquered as slaves." Idrisi, the Arabian traveler and scholar in his Geography written in the 11th century A.D. says, "The Indians are naturally inclined to justice and never depart from it in action. Their good faith, honesty and fidelity to their engagement were well known and they were so famous for their qualities that people came to their country from every side." Abul Fazl, the author of Aini Akbar, in the 16th century notes, "The Hindus are admirers of truth and showed unbounded fidelity in all dealings."

The Hindus were conscious about their ideal. Though spirituality is their goal they never neglected the material affairs. They were in the words of Wordsworth, "true to the kindred points of heaven and home' and knew fully that matter and spirit are interrelated, one cannot be conceived without the other. This ideal is maintained by the system of education which is based on a sound method.'

Dwelling on this wonderful effect of this system of education unparalleled in history Sir Monier Williams says, "And here I may observe circumstances in the history of India are more worthy of investigation than the antiquity and perseverance of her institutions. It has existed almost unaltered since the description of its organization in Manu's code two or three centuries before Christian era. It has survived all religious, political and physical convulsions from which India suffered from time immemorial. Invader after invader has ravaged the country with fire and sword but the simple self-contained township has preserved its constitution intact, its customs, precedents, and peculiar institutions unchanged and unchangeable amid all other changes." (Source: Brahmanism and Hinduism).

England's debt to India in Pedagogics - The So-called Bell-Lancasterian Pedagogics

During the formative period of the modern educational systems in Europe and America, the pedagogy of the Hindus, especially on its elementary side, has played an important part.

It is well-known that primary education was grossly neglected in America during the first half-century of her independence.

In England even so late as 1845, 3.2 percent of men and 49 per cent of women had to sign their names on the marriage register with a cross. In the age of paucity of "public schools" private educational efforts naturally elicited the people's admiration. And none drew more sympathy and support than Andrew Bell's (1775-1823) "mutual-tuition" or "pupil teacher" or "monitorial" system of school management.

What, now, is the origin of this much-applauded mutual instruction or monitorial system, the so-called Bell-Lancasterain "discovery" in pedagogy. Historians of education are familiar with the fact that the plan of making one boy teach others has been indigenous to India for centuries.

Bell, himself, in his Mutual Tuition describes how in Madras he came into contact with a school conducted by a single master or superintendent through the medium of the scholars themselves. And, in fact, in England the monitorial system or the method of making every boy at once a master and a scholar is known as the **"Madras system."**

Bell, a Christian missionary in Madras took the Indian system of education back to England, and introduced it there. Until

Fig.41 Top Right : Construction technique of Nalanda.

The many corridors and interlinked spaces provide ample opportunity for students to meet, interact, converge, discuss and acts like a gallery of sorts even for displays of student art work, announcements, posters and events. Interlinked spaces are an important spatial feature of an urban planning design.

then, only the children of the nobles were given education there and he started education for the masses in England. So, we gather that it is from India that the British adopted the system for educating the masses. England's debt to India in pedagogies has been fitly acknowledged in the tablet in Warminister Abbey, which describes Andrew Bell as "the eminent founder of the Madras System of Education, which has been adopted within the British Empire, as the national system of education for the children of the poor."
(source: Creative India: From Mohenjo Daro to The Age of Ramakrsna-Vivekananda - By Benoy Kumar Sarkar p. 108-110 and Education in India Under The Rule of the East India Company - By Major B. D. Basu 1934 2nd edition. Calcutta and The Destruction of The Indian System of Education).

Link between Myths of the Scandinavians and the Hindus:

The Scandinavians are the descendants of the Hindu Kshatriyas. The term Scandinavian and the Hindu “Kshatriya” or the Warrior caste is identical, “the former being a Sanskrit equivalent for the latter: “Scanda Nabhi” (Scanda Navi) signifies Scanda Chiefs (Warrior Chiefs).
Colonel James Tod says: “The Aswas were chiefly of the Indu race, yet a branch of the Suryas also bore this designation.” In the Edda we are informed that the Getes or Jits who entered Scandinavia were termed Asi, and their first settlement was Asigard (Asi garh, fortress of the Asi).”
John Pinkerton says: “Odin came into Scandinavia in the time of Darius Hystaspes, 500 years before Christ, and that his successor was Gotama. This is the period of the last Buddha or Mahavira, whose era is 477 before Vikrama, or 533 before Christ. Gotama was the successor of Mahavira.”
“In the martial mythology and warlike poetry of the Scandinavians a wide field exists for assimilation.”
“We can scarcely question,” says Count Bjornstjerna, “the derivation of the Edda (the religious books of ancient Scandinavia) from the Vedas.” The principle on which the seven days of the week are named in India is the same on which it has been done in Scandinavia:
Sunday is called by the Hindus Aditwaram, after Addit, the sun, after which also the Scandinavians call the day – Sondag.
Monday is called by the Hindus Somawaram, from Soma, the moon. Among the Scandinavians it is called Mondag.
Tueday is called Mangalwaram in India after the Hindu hero, Mangla. It bears the name Tisdag amongst the Scandinavians, after their hero, This.
Wednesday is termed Boudhawaram by the Hindus, after Boudha; by the Scandinavians, it is denominated after Odin (Wodan, Bodham, Budha), Onsdag.
Thursday is called Brahaspativaram by the Hindus, after Brahspati, or Brahma, their practical god; it bears the name Thorsdag amongst the Scandinavians, after the principal god, Thor.
Friday is called by the Hindus Sucrawaram, after Sucra, the goddess of beauty; it is named by the Scandinavians after Freja, the goddess of beauty, Frejdag.
Saturday is called Sanivaram by the Hindus after Sanischar, the god who cleanses spiritually; it is named Lordag by the Scandinavians from loger, bathing.
“We have here,” says Count Bjornstjerna (author of The Theogony of the Hindoos with their systems of Philosophy and Cosmogony p. 169), himself a Scandinavian gentleman, “another proof that the Myths of the Scandinavians are derived from those of the Hindus.
(Source: Hindu Superiority - By Har Bilas Sarda).

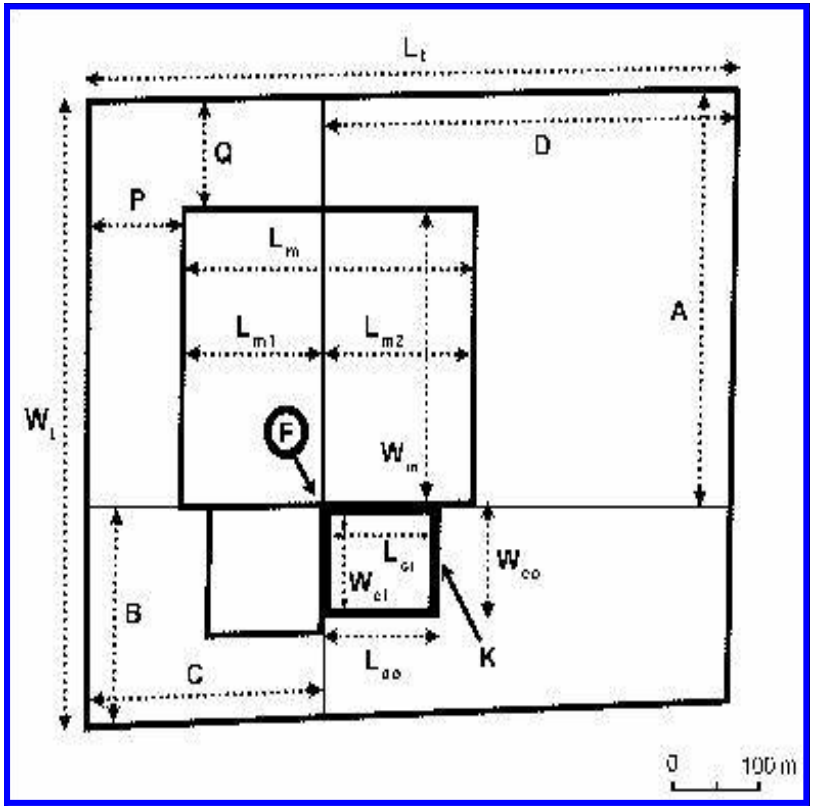

Fig.42. Top Left : Spatial planning of an ancient University. Spatial planning techniques in India were quite advanced as is visible from the above illustration. All spaces are constructed at right angles intersecting orthogonally at regular geometric intervals. There are no irregular road s or built forms. Everything is mathematically measured in proportion to one another.

Fig.43 Top Right : Plan of the educational institution in ancient Orissa, a culturally creative state of India. As seen from both the skyward view and the plan it is an advanced format of recurring geometric shapes mainly perfect squares intersecting at right angles. The larger plan is a formation of interlocking squares and linked spaces.

Fig.44. Top Left : ***The Samrat Yantra, at Jaipur, designed by Jai Singh, measuring 147' at its base and 90' high could calculate time within two seconds accuracy per day.***

Short story about Taxila:

Takshashila was a noted centre of learning. The story is told of one of its teachers named Dhaumya who had three disciples named Upamanyu, Aruni, and Veda. The most important of such hermitage was that of the Naimisha, a forest which was like a university. The presiding personality of the place was Saunaka, to whom was applied the designation of Kulapati, sometimes defined as the preceptor of 10,000 disciples.The hermitage of Kanva was another famous centre of learning, of which a full description is given. It is situated on the banks of the Malini, a tributary of the Sarayu River. It was not a solitary hermitage, but an assemblage of numerous hermitages round the central hermitage of Rishi Kanva, the presiding spirit of the settlement. There were specialists in every branch of learning cultivated in that age; specialists in each of the four Vedas; in sacrificial literature and art; Kalpasutras; in the Chhanda (Metrics), Sabda (Vyakarana)-Vocabulary, and Nirukta. There were also Logicians, knowing the principles of Nyaya -Justice, and of Dialectics (the art of establishing propositions, solving doubts, and ascertaining conclusions). There were also specialists in the physical sciences and art. Education in India has a history stretching back to the ancient urban centres of learning at Takshila and Nalanda as described previously.Western education became ingrained into Indian society with the establishment of the British Raj.Education in India falls under the control of both the Union government and the states, with some responsibilities lying with the Union and the states having autonomy for others. The various articles of the Indian constitution provide for education as a fundamental right.

Most universities in India today are Union or State Government controlled.

Fig.45. Top Left : The temple university in Bengal. Universities that teach the arts and cultural studies require vast space and have a certain design format that is unique from an urban planning perspective. They have visibly larger courtyards, galleries and corridor spaces for ample lighting with grand entrances and high ceilings.

Material progress was never the end in itself but was considered as a means to the realization of the end.

Apara Vidya dealing with material progress could never bring peace. From all these it appears that the aim of education was not only material progress but also spiritual growth. Regarding the system of education in ancient India it is known from the account of Ewan Chowang, the Chinese traveler, that boys at the age of seven began studying grammar, arts, painting, logic and scriptures and Brahmin and Buddhist teachers were highly efficient and persevering.

The doors of education were open to all whether they belonged to the order of monks or of householders.

Ramesh Chandra Dutt, in his Civilization in Ancient India, p. 127, writes: “Buddhism had never assumed a hostile attitude towards the parent religion of India; and the fact that the two religions existed side by side for long centuries increased their toleration of each other. In every country Buddhists and orthodox Hindus lived side by side. Hindus went to Buddhist monasteries and Universities, and Buddhists learned from Brahmins sages.

The same Kings favored the followers of both religions. The Gupta Emperors were often worshippers of Shiva and Vishnu, but loaded Buddhists and Buddhist monasteries with gifts, presents and favors.

One king was often a Buddhist and his son an orthodox Hindu; and often two brothers followed or favored the two religions without fighting. Every Court had learned men belonging to both the religions, and Vikramaditya ‘s Court was no exception to the rule.”

Mr. Ernest Binfield Havell says that the system of education during the seventh century was very much improved and better than was under the British. Even up to the fifteenth century, the educational institutions in every Hindu village were maintained either from the income of some temple or from the produce of land set aside for the purpose in villages.

From this, a picture of the educational system of ancient India can be derived and also come idea of the high standard of civilization then prevailing in the society.

The realization of the ultimate reality was the ideal of India.

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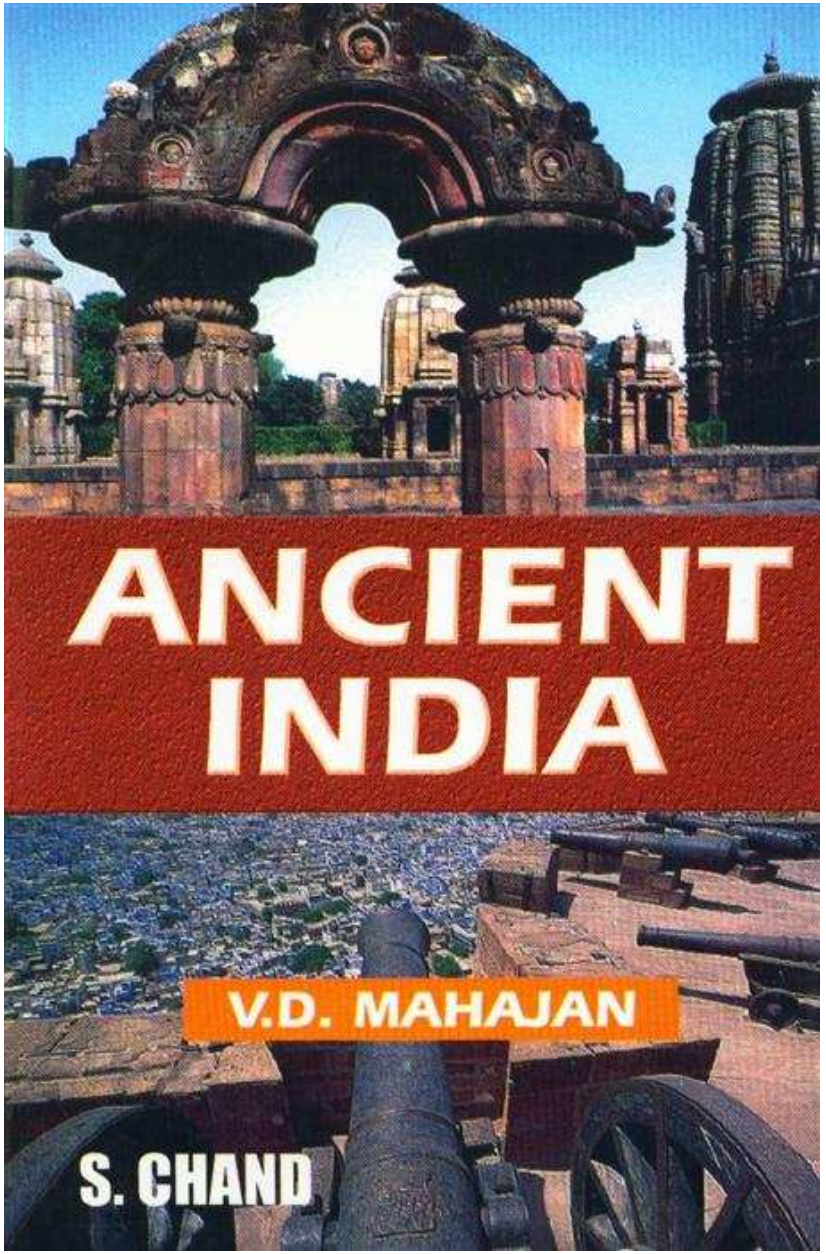

2. Principles and references of spatial composition

This part of the review relates to the spatial composition data related to architectural design of spaces related to higher education. It is a mathematical representation of design principles and guidelines.

2. Principles and references of spatial composition

Positive Spaces : Figures, chairs tables, me , you etc.

Negative Spaces : Background, empty space.

This is called the unity of opposites without this, nothing exists.

The positive spaces are punctuated by the negative spaces.

Spatial Relationships

4 Types :

Space within a space

Inter locking space

Adjacent space

Space linked by a common space

Space within a space :

A larger space can contain within itself a smaller space. The effect is that, the characteristics of the smaller space will depend on the larger space. When the internal space is increased, the residual space gets reduced. So when the distance between the enclosing space and the internal space is decreased the result is reduction in utility.

Even the shape of the internal space can be changed.

Example : Moor house

Interlocking Space :

When two spaces share some corner or some part is creates a zone > inter locking.

If they are inter locking at right angles, the zone created will be in harmony with the other two shapes. Otherwise by interlocking the two spaces in different angles, you can interest.

Illusionary :

Inter locking space is created although the two shapes are not interlocking.

If the two spaces are in such a shape that, when put together, both the shapes automatically create an interlocked space or zone between them.

Adjacent Spaces :

Here the spaces have their own individuality. The two spaces don't depend on each other.

How the vertical space is infused in between the two spaces is only important.

i) These types of partitioning (small opening) > you have two functionally distinct spaces. Physical and

visual continuity is reduced. Individuality of the space is increased.

ii) Visual continuity is increased. Access is also increased. It stands as a free standing element.

iii) No visual barrier as such (very less) Visual continuity is increased even more. There are two spaces, which

can have the same function.

iv) Common function room. There is no vertical barrier, only a level difference. Full visual continuity.

You can change the surface texture also to differentiate between the spaces.

Space linked by a common Space :

When there is a space linked by a common space, the functions of the rooms linked together may be totally different. It may be corridor or a room.

i) Linear Sequence : Since all the three rooms have the same size, it is more like a chain of rooms.

ii) Here the shape, size of the linking space is in itself linear.

iii) If it links too many spaces, it becomes a dominant linking common space.

The shape of the adjacent spaces determines shape of the linking space.

Spatial Organisation :

In any building, there should be a specific manner in which we organize the interior spaces :

Each space might have a specific function.

There might be similarity or difference (any relationship) between the two spaces.

Some spaces might require more air, light and ventilation.

Some spaces require greater access. According to all these arrangements, we get a building program.

All these requirements might change / vary according to the topography of the site.

Different Spatial Organizations :

- Central Organization
- Linear
- Radial
- Clustered
- Grid

Centralized Organization :

1. Stable, concentrated composition, where you have a number a

secondary spaces around commo centralized space.

2. Introverted composition.

3. Usually the central space is a regular geometrical form.

4. This has no directional quality because it is all it introverted., You can't make an entry without making won't know which side to enter.

5. These secondary spaces may be regular in shape, size and function or they need not be.

Advantages :

1. Everything is properly arranged.

2. Circulation can be radial, loop or spiral (rare)

Linear Organization :

1. When a number of spaces are arrange in series, we say it is linear organization.

2. Each space can be interrelated to the other or it can be connected by a commo linear space.

3. Spaces can be repetitive or different in function, form, shape and size.

4. To show some difference in the spaces, you can articulate it or you can articulate for a specific requirement.

5. It has some directional quality. To terminate the directional quality we can again articulate the series (by making the last space more dominant)

Advantages :

Linear organization is more flexible because you can use it according to the topography of your site.

Radial Organization

Clustered Organization

Grid Organization

- Symmetry
- Rhythm
- Hierarchy
- Balance
- Pattern
- Axis

Pattern :

Can be with meaning or without. The single individual unit might itself form a pattern.

Hierarchy :

A system, which gets developed slowly > slowly growing, slowly reducing down, changing shape.

Symmetry :

One object is identical to another object. When an axis is passing through the pattern and when one side of the axis is identical to the other side of the axis.

Asymmetry :

Opposite to symmetry.

Rhythm :

When something, some single shape is there throughout > one single unit gets repeated, like the beats in music, arches in windows, ornamental decorations. This can be considered as a pattern too.

Axis :

When a line passes through the center of the object (or) when a line divides the object into two. Any obj > one major axis and one minor axis. There can be many axes according to the object's shape.

There are two main axes for an obj > horizontal axis and vertical axis.

Symmetrical through the vertical axis > Tajmahal.

The Taj Mahal has been planned according to the golden rectangle principle > very important and interesting . The length and breath of the structure is perfectly proportionate > looks beautiful.

Difference between a rectangle and circle :

When we see two different rectangles, we can say it is tall, short, etc.

Circle is unique we can't say it is tall, short, wide or anything.

Principles of Composition :

1. Dominance
2. Unity
3. Harmony
4. Contract
5. Monotony
6. Punctuating effect
7. Dramatic effect
8. Climax
9. Fluidity

Dominance :

Overpowering than other elements. Changing the form, color, texture and size can create dominance.

Unity :

Not interrelated in any way, apply same colour, shape or texture.

Harmony :

To create peace, gradual variation, harmony in size

Contrast :

Actually not a principle of composition. Contract in size, unity in shape.

Monotony :

If the same object is repeated for a long time. To break the monotony use harmony and contract.

Punctuating Effect :

To create interest > 3D objects. To cut the monotony.

Dramatic Effect :

Almost similar to punctuating effect, create something which cannot naturally exist.

Climax : Reveal something after a big experience.

Fluidity :

Composition must have some fluidity / flow. There must be some link.

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Basic elements of architecture > mass and space.

Mass :

Quantum of Matter (science)

Sense of weight (general sense)

Visual effect of an object (in architecture)

Definition :

Mass is the visual three - dimensional effect of a body (object)

Architecturally speaking mass has some relationship with size and not weight.

When a huge tent is compared with a small hut, the tent looks like it has more mass although when weighted the tent may be less heavy than the hut.

A and B are two cubes of same size. A is perforated ; B is solid.

Visually speaking, the solid cube feels like it has more mass than the perforated cube because we feel there is no mass inside the holes.

So, mass depends on two determinants : (both are necessary)

1. Volume (connection with size)

2. Surface qualities

3. Rough surface looks more massive than smooth surface.

Can increase the volume horizontally, vertically, spherically or polygonal.

Surface qualities : Light or heavy, texture, color.

Note : According to mass, buildings are described as light horizontal structure, heavy neutral structure, etc.

Urban Planning :

Conscious creation of utilitarian space with the help of building materials to fulfill the primary and secondary needs.

Space :

Purpose of the mass is to have some space in it. Definition of architecture > creates space.

Concept of space :

1. Utilitarian Space :

Space that can be used by an individual. Minimum space required for a human being to perform some activities / actions.

2. Aesthetic Space :

Connected to emotionally satisfying space. Length, breadth and height should be proportionally increased. That is, a space with proper proportions.

3. Urban Planned Space :

Combination of both utilitarian space and aesthetic space. For example to reach the min. space req. is 0.6m by 1m but it should also be emotionally satisfying.

Space :

Anything > it has no dimensions, the whole universe is a space, and it totally depends on the mass. Eg. if the mass is rectangular, then the space inside it is called rectangular space.

Space is categorized into two :

1. Internal space

2. External space

Interior space : Space inside the mass. Anything which has overhead mass is called internal space.

Exterior Space : Space around the mass.

Narrow / broad space : When the space between two enclosing masses is very small, it is narrow. Emotional effects of the masses (internally and externally) Sphere, Cube, Pyramid, Cone.

Sphere :

1. Consists of regular, continuous surface, unbroken by any lines, edges or corners.

2. It has got no directional quality Dir. quality makes people see upward, etc.

3. No horizontality or verticality. The body is totally static and neutral.

4. Overall body is closed to itself.

External Appearances :

1. The overall form is convex. Convex form leads to lack of concentration, and it has visual repulsion – feels like something is coming out to hit us and the person turns back. (Concave surfaces are more inviting)

2. The observer, from whichever side sees only the profile, which is static, diffused circle. It is called static, because if it rolls it is dynamic, but whichever way you roll it looks like a circle. No other kind of profile is seen.

3. To see if there is anything interesting, the observer goes on seeing around the sphere > lack of concentration.

4. Against the background, it looks like an immense dot.

Internally :

1. The form is concave. Everywhere it will be inviting the person, all the surfaces meet at a single point which the observer tends to see and imagine.

2. Totally vice – versa of the external appearance.

3. Emotional quality is totally opposite to whichever you experience outside.

Utility :

1. When the eye goes to find the center, it is of no use.

2. Since the floor is concave, no activity can be done on it.

3. So, internally the sphere is of no architectural value, except when a platform is placed inside forming the chord of the sphere > this gives rise to hemisphere.

Hemisphere – Half Cut Sphere :

When a sphere is cut centrally, you get a hemisphere. External visual and emotional quality will be the same as sphere. Same lack of concentration externally.

The observers will tend to see if there is any focal pt. After seeing the curve, the eyes come directly to the flat rim, so the emphasis is more on the flat rim.

Visual tendency > to go around because it is a flat circle. He will go around and get bored. On the outside, the hemisphere is more static than the sphere.

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Internally :

In sphere you had a central imaginary point. So, now the center is present exactly and the man directly goes and stands in the center. Openings will create visual change.

By creating openings in the hemispherical surface as shown in the following visual changes occur :

1. Visual impact of the rim will get reduced.
2. Convex surface breaks externally
3. There will be continuity > a link between exterior and interior
4. Openings create an interruption in the domical surface.
5. Reduced diffuseness and reduced taking of the circular path
6. Visual impact of the center is also reduced, because of the flow of spaces.
7. Mild visual excitement > when I am inside, I tend to go outside ; when I am outside, I tend to go inside.

Geodesic Dome :

Architect : Buck Minister fuller

Made of units like triangles. He thought he could cover the whole country or earth with this dome.

Concept :Create large spanned structures without using columns but architecturally you can't co any work in it.

Note : for question on sphere, answer with all the variants included.

Eg : hemisphere

Sphere > no sense of orientation

Hemisphere is a variant of sphere. Useful form for keeping something in the middle.

1. Tilt the hemisphere > slightly unstable - looks like a bowl. Not of much use because of the visual instability.
2. Elliptical variant of the hemisphere > more useful for team sports - two focuses, so two points of interest or concentration.
3. Quarter of a sphere Imaginary line passing through. Surface quality tells it is inviting. Spatial quality tells us to go out because as we enter, it feels like the top might fall. Useful for performing music, music just radiates out while the audience just sits and watches / keep a statue there.

4. More useful as cinema hall / auditorium

5. Elliptical arch > variant of hemisphere. Observer views beyond the arch ; useful as visual barrier from one scene to another. Division of two spaces.

6. Domical part and rim part gets separated totally. Seems to stand on a slender pillar structures > fear that it might fall.

But in the other example, it looks like single structure.

Cube :

Externally :

- This mass consists of plane surfaces, which has got lines and corners.
- Vertically on the ground level we can see only the vertical planes on the four sides. We can't see the horizontal planes.
- Since the surface is very plain, the eye searches for focal points. So the eye moves to the edges and then to the corners. So the vertical edges get more visual emphasis and then the corners.
- Each edge joins two vertical planes and each corner joins three vertical planes (2 vertical, 1 horizontal)
- Each side the observer forms an imaginary axis.
- All these edges and corners give a clearly defined area, which is a square – there are four such squares.
- Has a sense of orientation because the surface has some direction, but the mass as a whole has got no directional quality > imp, because all the sides are square. (Neutral, static mass)
- The eyes go to the top corners, which gives a slight tension as it is moving away equally in 2 different directions.

Cube > static, tense mass – externally.

Internally :

The corners get more emphasis and the corners seem to recede away from you. No focal points at all and all plane surfaces create monotony emotional depression. (Jails where there is a small window – cause suffering) Opening in the cube the focal pt will increase.

Variations of cube – rectanguloids.

Openings in Cube :

Axis gets more emphasis

Focal pt gets increased

Bus Shelter :

If the opening is wider, then it will look like just a shelter – more links between inside and outside. When you go inside, you feel like standing inside only for around 5 or 10 minutes and then coming out.

By creating openings in the hemispherical surface changes occur :

1. Visual impact of the rim will get reduced.

2. Convex surface breaks externally

3. There will be continuity > a link between exterior and interior

4. Openings create an interruption in the domical surface.

5. Reduced diffuseness and reduced taking of the circular path

6. Visual impact of the center is also reduced, because of the flow of spaces.

7. Mild visual excitement > when I am inside, I tend to go outside ; when I am outside, I tend to go inside.

Cantilever :

Opening like this tends to look unstable.

Resembles a cantilever, porch, temporary stand – where cars can come and go. More like a sunshade. Here you don't stand even for 2 or 3 minutes.

Pyramid

- Made up of flat, inclined surfaces.
- All the sides are triangular
- All the inclined sides meet at a point called apex culmination of the whole mass. As soon as you see this object you tend to see the apex. (Max. emphasis)
- Directional Quality : Unique, dynamic, going upwards. Has more dir quality than the rectangle.
- Directional Quality : Unique, dynamic, going upwards. Has more dir quality than the rectangle.
- In a rect. U feel like climbing up, but in pyramid, not so.

Used in temples 'cause it gives some devotional effect - like there is someone above us.

Section of a Pyramid :

Here u have an imaginary apex. So there is visual emphasis on the shaded area. So this type is used for stages.

Inside - uncomfortable, because the walls keep tapering towards U

Courtyard - three corners get equal emphasis. Can't use this for courtyard. All 3 corners show different directions so they create tension.

Transformation of a Pyramid :

Converging trapezoidal shape - cone of vision - more concentration - used in cinema halls, lecture halls.

Diff bet pyramid and prism - you have an apex for pyramid, none for

prism.

Hexagonal Prism

Hexagonal Prism

Even though has a directional quality, but because of the length, both get mingle and it doesn't tell the dir. Properly - used for pitched roof why ? to prevent rainwater, snowfall, etc. one of the best types of roofs.

Difference between sciography, shade, shadow

Shadow - whichever falls to the ground

Shade - part where light is not there

All variations of pyramids

Cylinder :To construct a cylinder :

Synthesis of circles or rectangles

Series of circles one on top of another

Rotate a rectangle

So it is synthesis of two forms - rectilinear, circular

How does an individual feel in this space ?

From far away, we see the rectangle only : as we go nearer shows the curvilinear form. Create restlessness inside and I will come to rest at one point.

Cone :

With reference to cylinder , rotate a triangle or series of circles with common center. Here also apex gets conc. But the circular surface reduces the impact of the apex.

Colour in Urban planning:

- Expresses emotions.
- Expresses something - concept, idea, background, theme.
- It makes an aesthetic appeal, adds beauty.
- Gives different visual impact.
- Climatic effect no building is painted black 'cause it will absorb all the heat, so most of the buildings are painted with light colors.
- Defines spaces, differentiates between them. Two spaces, if there is no wall, just paint the same wall in different colors.

Break monotony.

Hospital - white, very light colors

Operation theater - green

Bed covers - white

Scientific - the color reflected by an object

Hue - Actual color.

Tint - shades (add black)

Also if u add white to any color > intensity of any color.

Link spaces in Urban planning:

Link spaces can be defined as spaces that link spaces, areas of volumes, spatially & visually thus enhancing user activity & interaction.

Spatial Linking of Spaces :

Three main points of Link Spaces

To enhance "Interaction" with

1. Built environment
2. Landscape
3. Other fellow beings.

The path of our movement can be conceived as the accepted thread that Links the spaces of a building, or any series of interior & exterior spaces together. We move in "Time" through a "Sequence of Spaces"

Movement Through Spaces :

Path of movement is the perceptual thread that links space.

1. Approach
2. Configuration of path
3. Form of the link space

Approach :

The approach and entrance to a building & could be direct, sudden or take a circuitous path. Based on the Visual continuity and "Time of Movement" approaches could be

Frontal / Direct

Direct and Sudden

The entrance approach is indirect.

Eg : National Institute of fashion Technology (NIFT) , Hyderabad.

c) Spiral

Prolongs the path of movement and may not reveal the entry.

Eg : Ronchamp, Falling waters etc.

Levels :

The degree to which continuity is maintained between & elevated space and its surroundings depend on the scale of the level change.

Edge of Field well defined.

Visual continuity maintained

Spatial continuity intimated.

Physical success requires stair or ramp.

Creates a domain within a wager spatial context.

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As we move on to the guidelines to design an educational institution, we are able to appreciate the views of many social planners and architects over the many generations. The standards and practices vary from time to time and place to place. Many are vernacular in nature and many follow rigid mathematical compositions.

3. Guidelines to design an educational institution

Scope & Intensity of Study in Specialized art, design & drama subjects vary from college to college. Facilities likely include selection of

Drawing & Painting : Fine Art

Ceramics

Sculpture

Industrial Design Engineering

Furniture & Interior Design

Theatre & Television design

Graphics & related visual arts including photography

Silver & Jewellery

Textile design both Plint & Weave

Stained glass

Drama

Music

Schedule of arch include design studio, work & practice room, technical workshops & admin off.

Communal lecture may be used as exhibitor centre display areas for 2 & 3d work may be provided.

3.1 Design Studios :

Spare for plan rent to appropriate work or workshop, exclude noise & dust.

Spare for plan sheets, wardrobes or clothes lockers, reference books & models should be included together with eqp. for copying drawing & documents.

Fine Art Studios :

Studios for painting & sculpture require large area must have good natural daylight with high level windows, equal to atleast 25 – 33% of floor area, with Nor E aspect.

Rooflight may provide ancillary light, windows must be fitted with some form of daylight control.

Surfaces should be durable & easy to clean.

Workshops :

- Sitting depend on type of work done. Light work allied with graphics, silves & jewellary, Photography & FAshion may be placed on higher floor.

- Metal wood & plastic workshops where large machines may be installed best sited on ground or basement level.

- Good workshop layout must conform to work flow & safety, provide ample spare round machines & for gungways to allow necessary movement without inclusion on workspace.

Non slip floor finishes should be specified, workshop technician should be able to survey whole area from partially glazed off.

3.1.1 Practice Rooms :

May be wed for individual study or group practice.

Should be well insulated against passage of round from one to another.

Stores :-

Methods of storing wide range of goods & materials needed support each activity should be closely studied.

Studio must be sited next to appropriate workshop consider proper conditions of heat & humidity where these may be determined to materials being stored if not held within limits eg : timber, clay, plaster.

Special racking needed for paintings & large canvarses ; timber & timber based board materials plastic sheets, metal sections, rolls of textiles glass & paper.

Ancillary Accommodation :

This includes off for teaching staff, common room, lave & possibly showers.

Lectures Rooms & Theatres :

- Lecture room and theatres are traditionally low in relation to spare requirements and cost. Designing flexibility has to be considered.

- Spares could suit lectures, stage productions, demonstrations & cinema.

- Large theatres must be divisible to anomodate different sizes, with retractive seating system, large lecture room can be converted into assembly hall or gymnasium.

Ancillary spaces such as changing room, studios may be adjoined depending on No & extent of activities.

Improved spare standards & environmental conditions needed if theatre is to be hired to outside organisations.

Min ar / d : 0.46 m2 (Based on moveable seats, armless 450 centre to centre)

0.6 m2 (fixed seats with arms at 500 centre to centre)

Basic Shape :Square flexible but fan shape preferred for large threatres where plan from relates to adequate sight lines or audio visual presentations, cinema etc.,

Small capacity lecture room upto approx 80 persons quite satisfactory with flat floor

Larger halls require either ramped floor (Max 1 : 10) or stepped floor, dependent upon achieving adequate sight lines.

Uniform change of eye land should be achieved t each seat row, min being 60 & median 125

Lecture Rooms : Seating

Seating Types

Categories

Individual chairs capable of being linked together in rows, stacked & stored away, with or without arms, with or without tablets.

Fixed seating of various degrees of comfort with or without tip up seats, with or without arms.

Retraceable seating systems capable of folding down on to tired staging, whole arrangement being retracetable & stored in relatively small area flat auditorium floor capable of being used for other purposes.

Seating Min Dimensions

Back to back distance between rows of seats.

(With tip up seats)

Width of seats linked without arms - 460

Width of seats with arms - 500

Unobstructed vertical space between seats – 300

Seating Arrangements :

Relate to function of halt or threatre

Lecture :

Audience should be able to see & hear lecturer where chalkboard or screens needed desirable having requirements affect seating plan.

Students should be close to lecturer as much as possible. Can be achieved by U shaped seating arrangements which reduces no of rows required.

Cinema : Criteria for good viewing.

Max horizantal viewing Angle	-	30
Max Vertical viewing angle	-	35
Critical angle of projector	-	12
Max viewing distance	-	6 x w of screen
Mini viewing distance	-	2 x w of screen

Demonstration : Requires steeply raked floor to ensure good viewing to top of demonstration benches.

Seating can be set round demonstration area in semi circular formation if no requirements for chalkboards or screens, as with anatomy. demonstrations theatres.

Lecturer Rooms : Fire regulations

Design should conform to safety regulations like fire & means of escape.

No. of seats permissible in any row upon clear distance apart of rows (back to back dimensions) resultant clear section (dimension E measured b/ w perpendiculars) & distance of seats from gateway (D=w of seat)

Clear width of gangways & No. within hall must be related to no of persons to accommodated.

Acoustics :

The hall must be acoustically isolated from other noise sources.

No centennial acoustic treatment required for room less than 300 m2 but as size & windows increase, shape of hall becomes more important.

Design of ceiling as reflector of sound from original source is important in achieving even distribution throughout hall.

Design of wall surfaces & finishes also important consideration in either reflecting or absouting sound according to their relationship to stage or dais.

3.2 Student Hostels : Planning Factors

Hostel (dormitories) building usually financed by university or college from funds, govt. grants or loans ; annual income raised has to covert interest, amohisation, running & maintenance costs.

Grants can be supplemented by letting conferences, educational courses holiday visitors.

Educational establishments & students unions have formed business provide off building for letting so that income can subsidise hostels.

Size of hostel room, amenities depend on uses the building can be put to & on annual income obtained.

Single students need a room for 30 – 33 weeks / year married for 50 – 52 weeks Accommodation should cater for children outside play spare & be placed near shopping & social amenities.

Many students prefer small independence sharing some variety of institutional residential communities.

First year students rooms generally close to staffroom, laundry & ironing room, dining hall.

Halls with shared dinning & social services planned as large no of study bedrooms with central bathroom & small kitchen with a room for staff member to provide supervision.

Provision may be made for groups of students who take meals with their social groups. The no's do not exceed 12 generally.

Conference use requires washbasin in each room with good access car parking, lecture & dining room ; alternative area for few student at residence during vacations & so for possessions needed.

Independent housing or hostel units favored by final year & post graduate can be in purpose groups, located in urban community as converted house.

3.2.1 Accommodation Requirements :

- 1 – Bed / Study spare 9 – 15m2
- 2 – Bed / Study spare 13 - 19 m2
- Areas may be slightly reduced in family flats to allow more room for amenity space.
- Room to be furnished with bed / divan , desk chair shelves & hanging for clothe 0.8 - 1 m2 open adjustable shelving & pin board, easy chair small table, beside table, mirror, bin, rm light & desk / bedlam 2 power points, heater, carpet, dense curtains / blinds.
- Washbasin to provide towel rail, mirror, cupboard or shelf, shaver point.
- Room showers & we sometimes included on individual or shared basis.
- Some room should be larger to provide for entertaining & meetings.
- Provide proportion of in-suitable for physically handicapped.
- Married student area should comply with normal housing spare standards, some will have families.
- Provide background heating supplemented room heater controlled buy occupant.

Ensure good sound insulation, especially round service pipes.

Sanitary :

- IWC / 6 students : 1 Bath / 6 students or 1 Shower / 12 students (preferably 50% baths) 1 wash basins / 3 students if not provided in room.
- Spare standard 1.2 - 1.6m2
- Prefabricated sanitary units

Hot water heating local or centralized.

Student Hostels : Accommodation

Amenity Space : Dining kitchens not intended for full meal service with utility space allow 1.2 – 1.6m2 / student with full meal service allow 1.7 - 2 m2 / student (len for more than 6 students)

Incase of common service used, dining kitchen may be only shared social space cooking & dining areas should be separated with dining room located where all students pass it.

New accommodation more likely provide self catering. Equipment self catering shared by 6 ; Cooker & refrigerator, single bowl double drained sink, 2000 – 3000 work top with cupboards under & over.

Provide equipment for washing, drying & ironing for group.

Residencies on campus we communal amenities where accommodation dome distance from other university building allow building hostel m2 / student.

large common rm	-	0.9 - 1.2
Large common rm	-	0.4 – 1.8
Indoor games	-	0.2 – 0.4
Hobby rm	-	0.2 – 0.4

within these areas also coffee bar / shop, ante-room / coffee lounge, place for debates & society meetings, TV, music practice, large for visitors as appropriate in accordance with local reg. Large residences away from campus need some off with approx areas (m2)

Warden / Supervisor 20, Secretary / archives 20, management committee / consult room 30, house keeper 9, Cleaner's changing room 9, poster 9, students union.

Staff :

- Design to suit single, married & married with family categories.
- Separate area in houses or flats most economical warden needs (m2) 67 – 93.
- Single academics staff & house keeper each 56 – 67
- Single supervisory staff 46 – 56

Single domestic staff as for students

Ancillary :

- Allow baggage storage 0.3 m2 / student
- Provide storage for household & cleaning equipment, linen, furniture & refuse, on each floor storage for cleaners & equip with sink & water supply.
- Provide laundry chute
- Circulation areas & duets amount for 2 – 5.7 m2 / student ensure passages for trolleys & carrying suitcases.

Provide entrance hall ; bell system or loudspeaker will serve to transmit messages in conjunction with some telephone points.

Finishes : Materials should be durable, hard & need little maintenance.

3.2.2 Layout & Building Form :

Single row arrangement : Width of building 5500, 3500, corridor 1500, double row arrangement ; width 10m, 2room each 3500, Corridor 2000, triple row each 1500 with artificially let & ventilated centre block for wash etc.

Type of access available : by stairs to room, by stairs & short considers by stairs to central consider.

Adequate means of escape in case of fire must be provided.

With 4 Floors & more elevator required ; more economical build upto 3 storeys.

Car parking : Min ratio / spare / 3 students ; so for bicycles & motor cycles also.

Site footpaths away from ground floor windows & maintain privacy.

Libraries :

Close rapport b /w libraries & architect needed for largest schemes library consultant required.

Types :

Community : Primarily lending books to adults & children & general reference section.

Specialized : Primarily used for reference.

National University : Used for reference & research. Increasing leisure time & literacy plans information explosion make it important to plan for max flexibility & for future expansion.

Pattern :

3 main elements, materials, readers, staff are related in varying ways depending on organizations. Policy ; eg community, School & Hospital, Libraries require pre-dominantly 'Open access' i.e. readers have direct access to books ; catalogues a necessary adjacent.

Large No of people circulate among spread – shelving units.

Large Lib. commentates storage in "open stack & put reading spares nearby"

"Closes access no contact b/w readers & books through staff in a catalogue. Used for major storage in national / large city & country reference. Collections for rare & valuable books & as ' back up' storage in any library 'closed stock'

Specialized / large libraries have separate subject dept each with enquiry service ; catalogue to remain centralized unless computer based reference & loan section catalogue divided.

Space Standards :

Appreciable differences to be found among national & international authorities. Following generally based on International Urban Planning standards.

Children :

Floor at 75 – 100 m2 for populations upto 1000 & 100 – 105 m2 for 10000 to 2000 people.

Basis as for adults ; but does not include space for study / talks / story hours.

Separate entrance sometimes provided, but control becomes difficult.

Reference :

Allow 10m2 as need for generous circulation.

1 Study space of 2.32 m2 / 1000 Populations, with some degree of privacy to avoid distraction. None of the adult, children or reference figures include provision for periodicals, STO of audio visual materials.

Entrance :

- Community libraries should be welcoming.
- Lobby should reduce entry of noise / draughts
- Provide visual stimulation
- Adequate control needed for preventing high losses of books etc through exit. Needs of disabled people like ramps / elevate etc. must be present.

Control Area :

Close to / within building entrance, with space to absorb congestion at peak hours.

Located to allow max visibility for supervision.

Function : To register new reader, issue & receive loan books deal with reservation & line, handle reader's enquires.

Guide Area :

Card index / book shelves / computer print out books – located near control / enquiry / reroute to all dept served, also close to catalogue work area.

If card index, allow say 12m2

Enquiry Desk :

Near catalogue guide & bibliographic can help to share supervision with control.

Materials :

Books are the primary material.

Spare is required for newspapers & periodicals, discs, tapes & music scores, microfilms, maps & pictures. Flexibility of layout necessary.

Shelving Units : Most widely used - metal shelving, individually adjustable, single sided & double sided (island)

Unit Height 2000 (Loan Area)

1500 (Children's area)

2300 (Book stack areas)

Shelf Depth 200 – 300 (Children's books)

200 (Fiction, literature, history, politics, economics, law)

300 (Scientific, technical, Med)

Main routes in 'Open Access' areas 1800 dear width & minor routes 1200.

Book Stacks :

- Optimum length of shelving 6 units (5400) to max 8 units (7200) 4 units, when arranged from one end.
- Centres of islands where 'Open Stack' are 1280 – 1520 (Vol 164 vol / m2)
- Closed stack centres are 1060 – 1280 (200 – 215 vol / m2)
- Economic structural grid dimensions at centres of 5400, 6000, 6850, 7310, 7620, 7750 & 8350.
- Optimum column sizes contained within 450 x 450 len finishes & tolerances, clear ceiling height approx 2400.
- Multi - floor closed stacks exhibit flexibility & require book hoist.
- Large area stack more flexible. Max horizontal distance from bookshelf to exit approx 33m
- Variation for 'closed stock' storage : compact movable shelving of which most common is 'right angle roller' type same 50% of floor space compared with statue units but expensive.

Division into compartments of about 450 m2 use temp or smoke detectors, not sprinkler system.

Reading / Study :

- Work table of 900 x 600
- Student - 2.32 m2 including circulation space
- Screened on 3 sides (Open carrel)
- Research worker 3m2 / more screened on 4 sides
- In university libraries, large reading room separated from book stacks are present. In community libraries trend away from formal reading room towards scattered books. Work Areas :
- Unpacking & dispatch, accessories & cataloguing, binding & repairs, photography & typing offices.
- Staff rest in locker, laboratories.
- Mobile lending service ; weather protected off loading, vehicle garaging, store for book stock.

Ancillaries :

Study room for reference materials.

Typing / photocopy

Projection for slides, cine film, microfilm

Exhibition space, chair, stolen for group meetings

Theatre (Film, Lecture, Music)

Junior activity areas, group projects, story telling ,cloakrooms.

Laboratories (Locate to avoid use by general public) telephones.

Flexibility :

Larger the library greater the need for freedom of future change with interchangeability of stacks.

Fixed elements to be grouped. Future expansions on primary building to be considered

Partitions should be removable. In medium & small community libraries some flexibility desirable. Avoid built in fittings.

Beware of lack of acoustic separation loss of identity for areas of different function.

Finishes & Services :

Carpet general floor areas except stack & work areas

Pale cover floor in stack to reflect light to books on lowest shelves.

Book spines decorative for walls & columns consider natural wood / fabric / quiet paint colours.

Underfloor coil or directed warm air heating ; at least 3 air changes / hour. For older books & manuscript him controlled to 55%

In reading areas give temp of 20 – 22C

Large building provide air conditioning at outside or plan for future installation.

Avoid entry of direct sunlight, minimize solar heat gain.

Lighting by fluorescent tubes generally but additional lighting to indicate changes of function

Emergency lighting also required artificial lighting control / enquiry 600 lx

Readings tables 400 lx , in lending but 600 lx in reference

Book tacks 100 l on vertical surfaces cataloguing & work in 400 lx.

Shelf with in lending areas need special measure

Reflectance of 80% (walls & ceilings) & 30% (Floors & Furniture)

Roof Light Systems :

Spacing as well as size, of roof lights is important consideration for

adequate daylighting in general DF easier to predict than for side lit room but some variables apply, example area and position of glazing, shape and size of space to be day lighted, reflectance, of interior surfaces.

Co-efficient depends on roof light design, shape and size of interior space and reflectances of ceiling, walls and floors.

Rm Index as tabulated = $\frac{1\ W}{(l-w)h}$

Where L = Length of rm, W- Width of run h = height above working plane to centre of glazing.

Sunlight :

Siting, Orientation & Spacing of building.

Check orientation of facades and spacing of building in relation to required standard of isolation. Some compromise on ideal orientation of fascades will be unavoidable on congested sites or in areas of mixed development.

Isolation of Outdoor Spaces : Where possible site large building so that extensive and continuous shadowing of ground round then avoided ; otherwise growth of vegetarian will be inhibited, problem dynamic and seasonal pattern of sunlight and shadow should be examined.

Orientation of Windows :

Orientation size and shape of individual windows may require checking on drawings by reference to sun path diagrams to determine sunlight penetration and effectiveness of required sun controls.

Private Indoor Pools :

Pool basins mainly re-inforced concrete, in separate, layers. Expansion joints not necessary with lengths under 12m Important ground water equalising valve essential to prevent damage to basin. Lining cement, ceramic glass mosaic or paint on single layer of waterproof concrete, PVC film min 1 : 5 thick as sealing.

Floor Lining :

Ceramic material or stone recently also water permeable carpet. Floor heating pleasant addition but not essential.

Walls :

Surface lining material must be dams resistant and unaffected by splashing.

Air Conditioning :

Essential

Hostel Swimming Pools : Basin of 60m2 normally sufficient , exceptions irregular period of use, winter sports hotels.

Bathing Process :

Alternate application of hot and cold, dry hot air, hot clean guests of water vapor. Can be supplemented with interruption application of cold water, followed by massage and rest.

Construction :

Usually blocks of timber, good insulation necessary for enclosing walls since heat difference between inside and outside can often be more than 100 in winter.

Smoke Sauna :

Layered stones heated with smoke removal, heated inwardss when stove bricks heated to about 500C

Fumigating Sauna :

Layered stones heated to high temp by wood fire, smoke being sprangily drawn off through open down.

City Sauna :

With special heater, heat regulation of el heated stones with press button.

Temperature :

At ceiling 95C dropping by 60C down to floor.

Cost : If main consideration use standard window

Performance :

Check against reports of tests in strength, air leakage and resistance to water penetration.

Fixed Windows :

Do conditions justify ? will there be access to outside for cleaning ?

Shading devices - Windows :

Internal shades fixed on or behind windows less effective than external shades for reducing solar heat gains because proportion heat they absorb release to run have advantage of protection against weather and accessible for control and maintenance, when not require during sunloss periods can be easily retracted, when fully drawn at night can improve interior illumination.

Corridors and Ramps

Corridors Capacity : Limit of free flow – condition about 0.3P/m2 greater densities individuals not able always walk at their natural speed max density for circulation area - 14P /m2. Ramp for disabled : Except for very short ramps gredient should not exceeded 8 ½ % (1 : 12) and should be not greater than 5% (1 : 20) level platform 1800 long should be provided at top, in long ramps, rest platforms desirable at changes of direction. Handrail required when total rise exceeds 600.

Stairs :

Short flights of stairs rarely climbed at speed which minimizes energy expenditure but walking speeds on stairs lower in corridors.

Sun of going and twice rise must not be less then 550 and not more than 700.

Projections of nosing not exceed 15

Fine escape stairs must be built within enclosed shaft with walls of given fire resistance and free shelf closing doors. Doors must open into shaft at all floors except final exit level ; stairs from upper floors must not continue in unobstructed light past ground Floor to basement. Windows generally not permitted.

Clear headroom of 2000 must be maintained, from pitch line.

3.3 Man & His Buildings :Colour :

Colour in building is both aid to vision and means by which architect creates pleasant, stimulating appearances. Good colouring and good lighting interdependant.

Noise and Acoustics :

High levels of noise an lead to damage t hearing. At lower levels noise interferes with verbal communication. At still lower levels noise may be disturbing or annoying. Acoustic design controls intrusive noise and by choice of materials, dimensions and shape of auditorium speech and music to be enjoyed.

Access & Circulation :

Space required around for access and circulation of people, prams, wheel chairs, trolleys, carts etc. access to buildings or groups of building also for private cars, delivery vans, moving vans, etc. space may be required for parking, short or long term. Separate space may be required for parking of mopeds, cycles, motor cycles etc.

Shared Surfaces :

Usual to separate circulation of pedestrians and powered vehicles, but in certain situations shared surfaces may be adopted. Their design should be based on. Start of shared surface clearly distinguish from normal carriageway by change in texture or surface or change in level. Provide clear zone free from parked cars to allow vehicles and pedestrians to circulate comfortably.

Footways :

To design footways safe, convenient and secure necessary ensure that they are private and shortest, routes between dwellings and community services.

Are kept separate from heavily traffic roads and are protected from wind and rain, are wide enough to avoid need for pedestrians when passing to step out into carriage way on planted areas for emergency vehicles access. Example ambulance.

Lighting :

Lighting inside a building must fulfill two functions to illuminate the interior and its contents b) where there is some task, eg : reading, performing a delicate movement, walking up or down stairs, to illuminate the task appropriately and to appropriate extent so that visual mechanism can function at high level of efficiency.

Definitions :Luminous Flux :

Radiant power emitted from source evaluated in terms of its visual effect is called luminous flux and measured in lumens. Effectiveness in converting input power (measured in watts) to lumens is called the efficiency and expressed in lumen / w.

Illuminance :

Amount of luminous flux falling on unit area of surface is called Illuminance. Illuminance can not be directly appreciated by eye, which sees effect of illuminance in making surface of object more or les bright according to magnitude of illumience and reflecting power.

3.3.1 Sport Golf :Site :

Generally courses between 40 & 60 Hs

Golf holes should not pass close roads or through narrow tongues between houses.

Layout :18 holer normally, after prudent start with 9 holes

Tees : May be combined on length course but may be separated into championship, medal club, ladies, at progressively shorter distances. Allow 300 m2 (400 m2 oct par 3 holes)

Greens :

Size to suit approach shot & need to spread wear by changing holes : say 400m2 to 600 m2.

Fairways :

Width normally 30 - 40 start 100 m from men's tee. Playing width / hole : 60m (90 m on boundaries)

Rough :

Carry rough : tee to fairway

Bunkers :

Sand areas averaging perhaps 100m2 but of all shapes & sizes.

Indoor Schools :

Location : Preferably at town edges directly connected by bridlepath the wood & pasture, health - land or other tracking out.

Siting & Access :

Essential requirements for any site.

Goods access for heavy vehicles as well as cars. Access to open country

or bridgepaths. Adequate water supply, possibly including fire hydrants. Loose boxe should be protected from prevaility winds.

Min clearance ht – 36500 for hay lorries 4500 all gate opening min width - 3000 clear.

Planning & Layout :

3 Main groups

- Instructor, horse management, admin

Other general principles

Preferable school not so near stable that voice command.

Space Required : Size of indoor school dictate y ability of fact moving horse 10.0 - 11.0 m.

W of School floor for single circuit - 12.0 m

W of school for groups - 15.25 preferably 20.117m

1 of school floor ratio 2 : 1 to w eg : 40.0 : 20.0

1 can be increased : 20.0 x 60.0 - 80.0

4 of building ; 4000 – 5000

3.3.2 Sports Athletic Tracks :

Arena : Circuit track, sprint straight, runways & jumps site for shot putt.

Nature : Surfaced with wood or such other material as allows normal use of spiked shoes.

Circular Track :

11ap of track shall measure 160m - 200m is length. Each bend shall be 35m is length & banked at an angle >10 < 18 each straight > 35m. Where no raised border, measurement shall be taken 200 outwash from inner edge of track. Track shall be > 4000 < 6100 wide shall include 4 lanes.

Sprint Track :

Sprint straight shall have > 6 lanes : Width of each 1220 : extension beyond finishing line > 15m.

Events :

Runways for long & triple jumps & pole valut : > 40m long & 1220 wide.

Swimming : (Indoor Pools)

Changing room : Accessible from hall, separated by sec : not inside pool area. 1 C/o. unit /1 - 1.5m2 pool area : common changing room as extra space.

Pre - Cleanse : Basefoot passage past we to showers : 1 Sho / 8 clo spaces sho space required 1.35 - 2.15m2 in some countries.

Toilets : Min 2 WC. Male 1 / 15 - 20 Female 1/7 - 10 Urinals 1/15 - 20 Max.

Location : Central, good public transport connection.

Heatiny & Ventilation : Water temp recreational pool 27C pools 28 - 30 ; air temp 1 – 2 above water temp.

Water Purification Plant : For heating, fittering, disinfection. Water circulation. Main Pool > 3 hr. (If very shallow with heavy bathing load every hour) learner pool < 1 ½ hr diving pool hr.

Pool : Width, length : Water depth : non swimmers 900 – 125C swimmers 1250 – 3500, learner pool 500 – 900 in depth for swimming 900.

Internal Finishes : Floors easy - grip & slip resistant finish, glazed ceramic tiles, small size mosaic, pool surrounds slip resistant flooring pool bottom & walls : tiles, wall surround upto 2000 tiles or waterproof paint\. Sound absorption materials to be used. Corrusion resistant materials eg : Stainless steel, bronze, certain aluminium alloys to be used.

Water Pob :

Playing area : for national / international events 1800 deep. District / country events 1500 min : club / amateur swimming Association events in UK 1200 min.

Open Air Pools : Location : Sunny, not down wind of industrial plants, nuisance from smoke or noise.

Season : Depends on climate

Non - Swimmers pool : Depth 800 – 1250 ; easy - grip steps for sitting at shallow end : floor surface of pool not too slippery.

Paddling Pool : Access by getting falling ramp : Free shape depth 100 – 400 floor surface of Pool not too slippery.

Pool Construction : Concrete or KC = inside finish frost resistant tiles. Paint (Epony rein or other)

Diving Line : On Pool floor. 250 – 300 wide

Walk through pool : 3000 x 4000 x 4000 x 6000, depth 300, 400 with overflow.

Walkway round pool : > 2000 > 5600 near diving stages & pool access.

Water circulation : 6 hrs turnover when bathing load infrequent 3 hrs turnover when load heavy.

Slipper Baths :

In separate units. Number approx 0.1 x pool size (m2) sizes accordingly to demand and number of visitors.

Centre Passage width 3000

Side Passage width 1600

Clothes hooks inside on free wall or inside door

Windows will above bath > 1300 above floor level.

Washable walls > 1800 above floor level.

Steam Baths :

Individual cubicles, box baths or shared baths (steam baths) separate for Men & Women or used at different times. Separate rent room 22C, massage 30 with warm bath 22 & cold bath 10

Pool Charging Rooms :

Individual cubicles > 1 / visitors : Size 1000 x 1000 - 1200 : gross area of charging rm / cubicle 3 – 4 m2

Water Cleaning : Same as indoor pools.

Sport Tennis :

Playing space needed for court of net at centre 9/5, at posts 1060, netting enclosure H 4000 – 2.5 wire 40 mesh. Artificial lighting 10 mh at 10m sides. Scale of courts to population : regular player av 2% of total ; ratio courts / players 1 : 30 to 1 : 35 very goods 1 : 45 or over poor ; new courts 1 : 30 additional space amounting to 25% of playing space needed for car park & children's play area.

Surface :

Exceptionally smooth hard & previous to rain ; must attract very little dust & be dazzle free materials grams, Cinders, Plastics.

3.4. Theatre :

Sight Lines

Typical seated spectator - 1

Eye Height : 1120 + 100

Tread of seating tier (row spacing) T : 800 1150

C1 = 65 : Clearance / row, assuring spectators will be see between heads row in front (every other row vision)

C2 = 130 allows av spectator see over head av spectator in front (every – row vision)

Rise R > (2) : difference in height between adjacent seating platforms.

Floor Slope :Arrival Point of (APS) – intersection of highest sightline at focal plane positioned 50 above stage platform.

Distance : Horizontal distance from eye of seated spectator to APS.

D1 = Distance from eye of first sow to APS

Dm = Distance from eye of given sow to APS

Elevation : Vertical height of eye of seated spectator above focal plane.

E1 = Vertical height of eye of first sow above focal plane.

E2n = Vertical height of eye of given sow n focal plane.

Auditorium : Max. D : H balcony overhay proportion recommended : 1 : 1 for concerts 2 : 1 for opera, drama. Flying balcony may allow greater D : H ratio by allowing reveberent energy reach rear seats from behind. Last rows should have clear sight line to central speaker cluter. Balcony overhays positioned clear of projection beam. Man sight line angle from balcony to stage 30.Convex & irregular surfaces aid sound diffusion. Dones vaults & other large concave surfaces may cause acoustic problems. Higher ceiling for longer reveberation time as required for concerts ; typical hall volume 20.5 m3 – 35m3 laudience seat. Lower ceiling for shorter reveberation time as required for drama speech, typical hall volume 7.5m3 - 14m3 / audience seat. In halls used for concert treat stage & audience seating as one volume. In multiple use halls this conditions achieved with hard orchestra shell which must be demountable for full me of stage or scenary. Acoustic req may dictate that reflective surfaces at ceiling of orchestra enclosure extend out above audience seating.

Stage Tower :

Dimension governed by stage machinery, increasingly complex to speeds cenery handly & charges.

Revolving Stage :

Disc with 2 - 3 sets

2 Disc with contact at stage centre

Reciprocating segments

Ring stage with centre capstage.

Stage Tower : Width of stage ≥ twice stage opening.

Depth of stage from fire curtain ≥ ¾ stage width, height to sigging loft underside > medium height of auditorium + height of stage opening. Fireman's rm > 800m ; 2200 high scenary at each side of stage with view & exit to stage ; escape route also required.

Width of corridor at stage level > 2200, otherwise > 1500. If stage (without side & backstage) larger than 350m2 width of corridors increases by 150 / 50m2.

Exits : From stage areas should be planned provide ready egren from all pasts. Include at least 2 exists of which must lead to open air through cenventilated lobby. Min width should comply with reg.

Rigging Loft : Space over stage used for hanging scenary & lighting equipment. Between loft & roof construction allow > 2100 headroom. Adequate ventilator equal to 10% stage area to be provided by haystick lastern above loft.

Seating : Depends on types of chair & chair spacing. Chair style outset has to be decided. Traditional chair - min spacing at 840 & 500 wide. USA dimension - 530 Modern chairs vary considerably can need 1400 spacing & width of 750. Standing space not usual in modern theatres. Seating usually in straight or curved rows ; in some theaters angled seating. 3) Seating radius centre point but established by trying alternative positions. Short radius enables whole audience face centre of stage but this must be drawn to ensure adequate circulation space at front stalls sides.

Balconies : Theatres with 1 balcony can give better right lines than multiple reduce staff requirements. Sometimes movable ceiling. Containment of sound in auditorium major problem.

Flexible Seating : Division of auditorium into smaller room by sliding folding partition common in conference centres. More difficult in theaters with stepped floors. Consider closing off areas of seating to provide smaller capacity to provide full flexibility. Folding seating areas can be slide away to expose floor level. 1000 folding chairs - 20 - 36m2 sto space.

Multi Form Theatre :

Ring stage with centre is house - aims at intimate connection of audience & and actor, bring play amongst audience in contract to peep – show.

Combined areana & peep show stage : As the arena theatre side walls of auditorium have rolling or sliding out panels which line up with cyclorama & thus enclose space.

3.4.1 Cinemas :

Doors & Corridors :

Width must match exit reg. Doors to open outwards exit flow in corridor & to be free of fasterings except panic bolts. Projection for handrails - 75.

Staircases : Must match exist reg.

Rises - 150 max

Treads – 280 max

not len then 3 risers permitted.

not more than 16 rises in straight flights.

Max of 2 successive flights without term allowed provided number of rises reduced to 12.

Seating : Similar to theatre

Max angle 30 – 35 recommended. Angle between sight line box first row to top of scene of letter to the screen at that point.

Access to auditorium :

Stepped seating can be from beneath through vomitory or from rear each to cross over aisle.

Multiple auditorium :

Ratios of 1 :2 or 2 : 3 for dual cinema, ratios of 1 : e : 3 for triple cinemas. May vary from 100 – 600 chairs.

Ventilators & acoustic seperation must be provided single projection room.

Clock rooms :

If Provided should be planned not to obstruct exists or normal circulation.

Projection Rooms :

Divide into seperate compartments for rewinding & projecting 3 – 10m2 forming suite.

1 Exit for inflammable film used 1 exit must lend to open air & lay stack.

Front wall length 5500 x rm depth of 3500 is av size. Plan staircase and door widths to allow for access of equipments should not exceed 190 treads at least 250. Using 70 film makes possible bigger area screen. Normally accept max screen width for 70 film 20m for 35 film 13m.

Curved directional screen originally developed to over come dispersion of reflected light from screen.

Lighting System :

Decorative lighting, spot lights to auditorium dimmed to show film.

Safety lighting to all public, key staff areas & evit boxes.

Other systems include fire & burglar alarm, speaker, wiring, internal telephones, induction systems for both deaf aids & management call, closed circuit / public addresses & main switch gear for control of heating ventilator projection & staff equp.

3.4.2 Ventilation & Air Conditioning :

Parts of building can be treated by low premises hot water system.

Film display : Space req. vary from 900 – 2000. Pic upto 6000 possible with suitable light source. anamophic (Cinemascope) ratio varies from 35 to 1 : 2 : 6. Commercial cinemas in US & UK have used 16 equipment but in UK print in not good.

Screen systems : Cinema screen is past fitted into adapted theatres. Traditional cinema had small pictures wherever 3 projects original cinema system. involved spectators with 30.5m screens.

1 Max - 70 Film used. Horizontally to enclose frame size & provide 36.5 m picture, seating being placed closely preventing the whole picture being seen without vertical & horizontal movement of head.Circurma System using 11 projectors given full in involvement but no seating.

Sound Systems : Dolby encoding optical system.Stereos across screen & to front & near provided on 70 film with 5 rear screen speaker tracks & 6th track for auditorium speakers. Wide screens side sound source can produce problems for cinemas reflected sound path should not exceed direct paths for more than 15m.

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Education is the stepping stone to success.

4. Focus on Space-Views of famous sociologists

Space is crucial in thinking about culture and ideology because it is where ideology and culture take on physical existence and representation. Social scientists in a variety of fields increasingly recognize that spatial concepts can help further our understanding of human interaction. Spaces do not merely provide a setting unto which social life unfolds.

Spaces are constructed and acquire meaning through social interaction but also enable and constrain social action. A number of geographic and spatial dimensions are measured to explore how spatial planning theories influence student activity on college campuses.

For example, time-space distance and the built environment can enable and constrain protest activity on college campuses. (Useful in Indian context) It is seen that time-space distance, through the distance between the college, a major urban centre, the state capital and presence of top newspaper firms influence student political activity on campuses.

It has been observed that the presence of a large space or quad for students to gather and travel through regularly helps encourage student protest. There are always two kinds of creation of space; the one is the vernacular and the other the conceived or designed space.

It appears both in spatial and social theories of relating entities which 'are in different scales' that there are many differences in the relation of space, which is a local notion, to society, which is a global idea or the relation of society to the everyday life, which is also local and spatial.

Three theories discussed in this relation are:

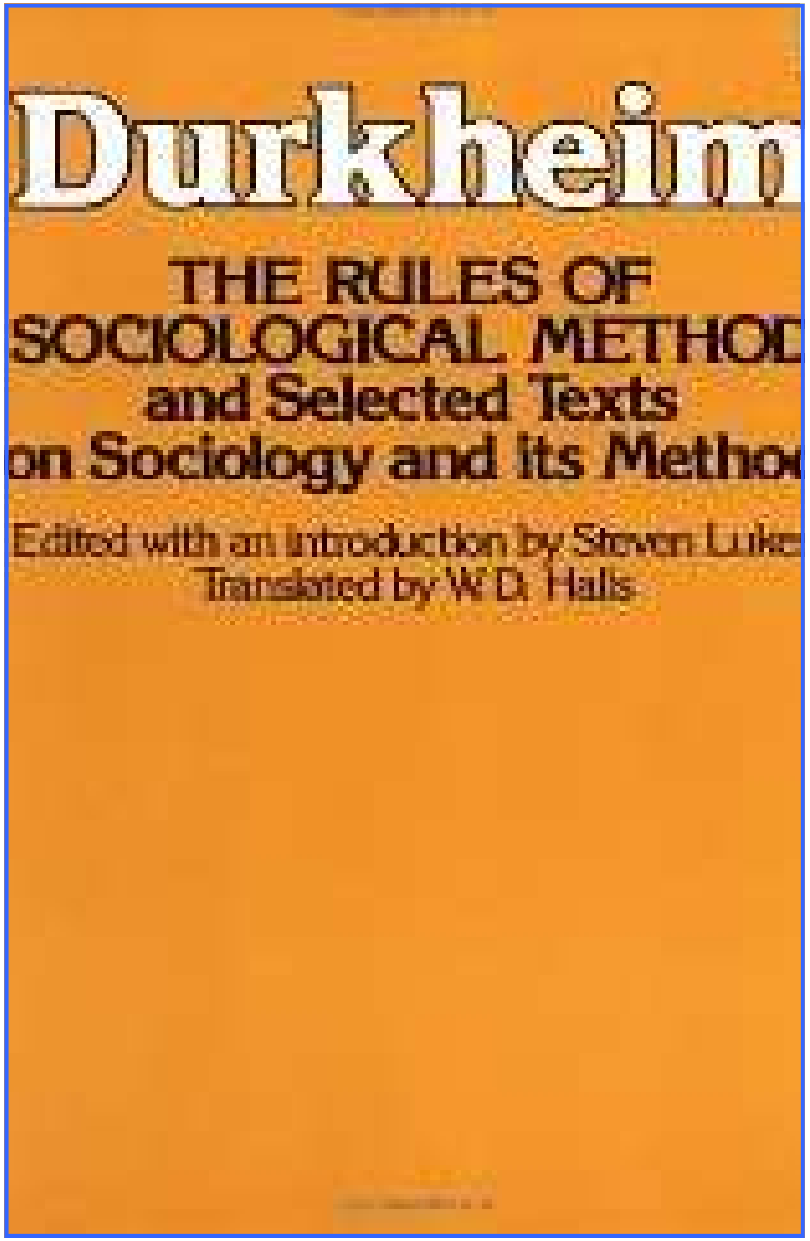
1. The Space Syntax Theory of Hillier and Hanson

2. The Structuration Theory of Giddens

3. The Theory of the Production of Space of Lefebvre.

The first has an architectural and urban point of view of the matter, the second a sociological and the third a politico-economic. The discussion of the three theories shows that all three grasp an interrelation between society and space although each theory sees this interrelation in a different way. For the Structuration theory space has an important role in the structuration of society, for Space Syntax a constructive role of the generic forms of society and for Lefebvre an instrumental character. In the first case the creation seems to be a practice of individuals or groups of individuals (societies) within a context which has never been discursive or even comprehensible, while in the second case it seems that this context is, or it should be, within the mind of the urban planner. In the case of the vernacular the individuals were both creating and using space. In the case of the contemporary architecture the architect's creates space (and uses it of course) and the individuals use it and criticize it.

Hillier and Hanson's Space Syntax Theory has an architectural and urban point of view and is mostly described in the book "The Social Logic of Space" written in 1984, Giddens' Structuration Theory basically described in his book "The Constitution of Society", written in 1984 as well, has a

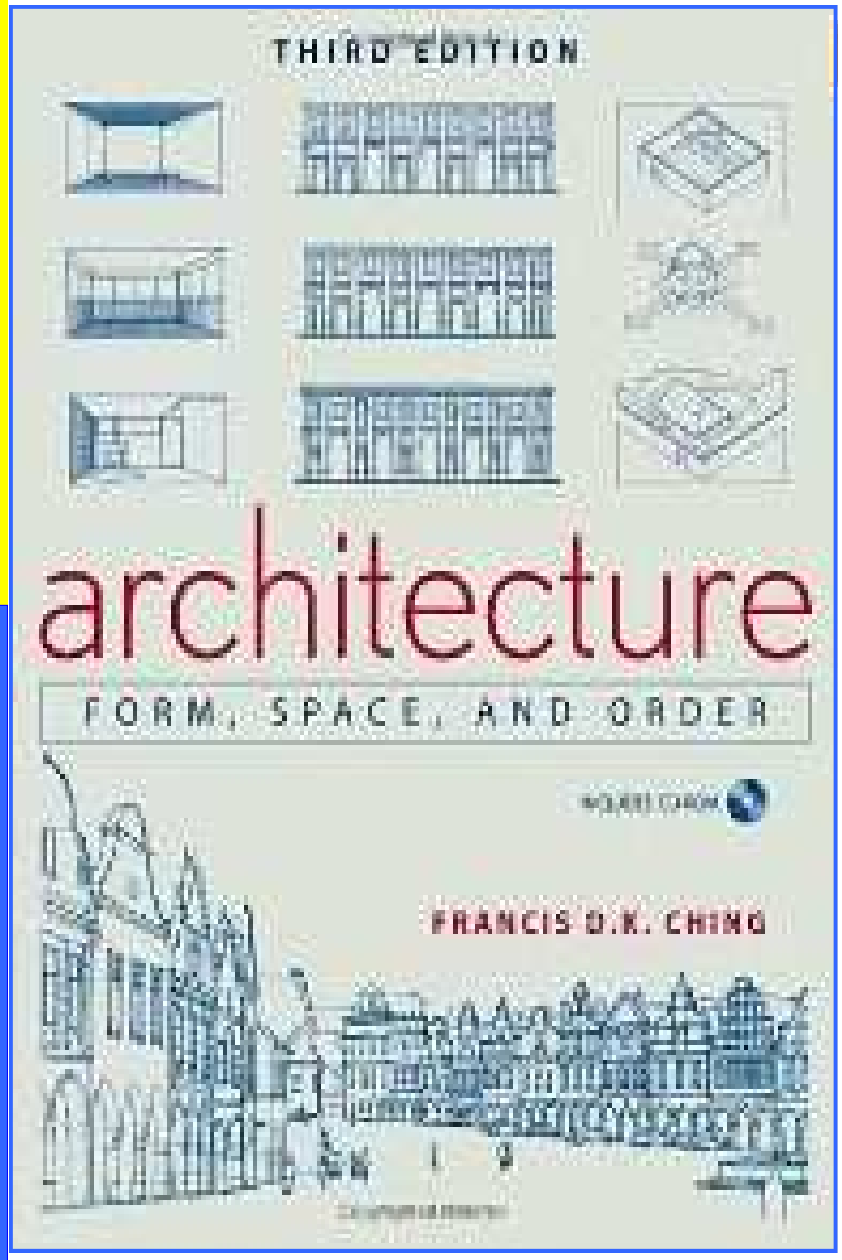


sociological point of view and Lefebvre's theory of space, described in his book "The Production of Space", written in 1974 and translated in English in 1991, a politico-economic point of view.

All three theories are dealing explicitly with space and see an involvement of space both in the level of the everyday life and of society. The examples discussed above mainly see interdependence of space to all the levels of social life. The difference between them lies in the way they see this involvement and interdependence. The first to be presented is a sociologist, Max Weber (1978) who was the exponent of 'social action'. In this term all human behaviour is included when and in so far as the individual attaches a subjective meaning to it and it takes account of the behaviour of others.

He advocated that what makes social science possible was the fact that human beings act rationally for at least a large part of time. Weber did not see the interrelation between individuals and society, focusing only on individuals. Although his theory is very important for the understanding of human action and actually Giddens' 'action' is based on Weber, it hasn't managed to grasp both the levels of the social life and of society. Talcott Parsons is also a sociologist who (1959; 1964; 1968) tried to establish a theory of society which he grasped as a system. He was also referring to social action but he integrated it in the context of norms and values which are imposed by the social system.

Talcott Parsons saw the action of individuals to be institutionalized into a system of status roles. This system was consisted of and being the outcome of three sub-systems: the personality system, the cultural system and the physical environment to which a society must adjust. The concept of



the roles, especially described as the framework created by the social system in which the development of the personality takes place, had also many partisans in the field of anthropology, as well, like Ralph Linton (1968) and Ralf Dahrendorf (1973).

The next two social theorists had tried to introduce space in their theories. First, Goffman's theory is presented where the presence of space was explicit (1990; 1961).Goffman recognizes the importance of space in the everyday life but mostly as the background of the social action which, however, plays an important role in the communication of the meaning.

Particularly, space, for him, is the 'setting' where the 'people are performing 'roles' in their everyday life. He sees space as a characteristic of the everyday life only and there is no reference to its relation to society. His work has been the base for the understanding of the face to face interaction and has also been an important reference in the Giddens' Structuration theory.

Another social theorist who refers, although implicitly, to the relation of society to space is Durkheim. Durkheim (1978; 1964; 1951) tried to set a field of 'social morphology' which would study social life in relation to the constitution of the 'substratum' which directly or indirectly affects all social phenomena. This 'substratum' is the material forms of societies and in particular the manner in which the individuals are disposed upon the earth and the nature and configuration of objects of all sorts which affect collective relations. In the Division of Labour, Durkheim differentiates the two kinds of solidarity, mechanical and organic, and relates them to different forms of arrangement of people in space. Mechanical solidarity, based on common characteristics, has no spatial

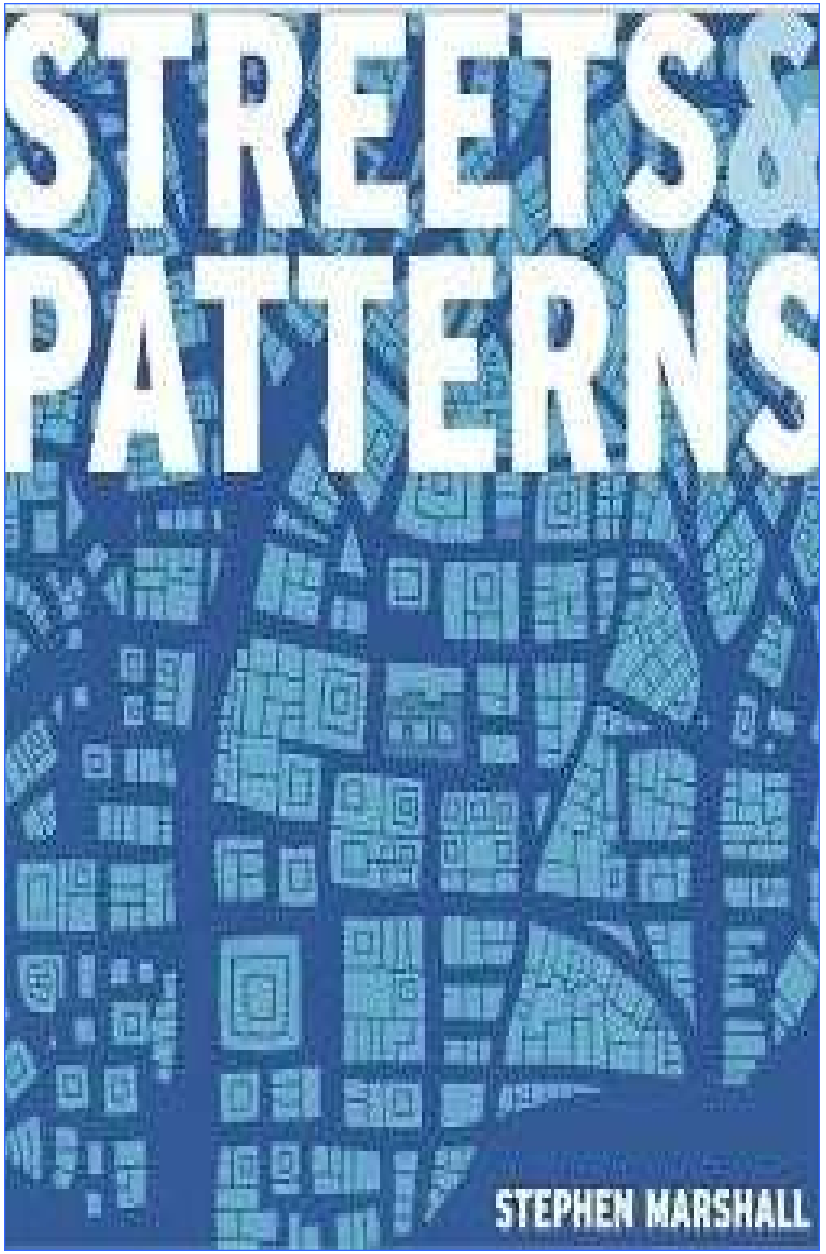
reference or need and for this reason it did not provoke the creation of big aggregations. On the other hand, organic solidarity, arisen from the division of labour, presupposes proximity and spatial relations and lead to the creation of dense aggregations. In this theory, there exists a primary idea of the relation between society and space.

In any way, all these theories, contrary to Weber, they were seeing society as the important entity and were giving less attention to individuals. The concept, latent in Durkheim's theory, that different ways of spatial organization are the means which support different kinds of solidarity or the outcome of these solidarities, has been a basic idea of the Space Syntax theory. Durkheim has mainly dealt with society as a whole, the solidarities are considered as entities above the individuals and the individual has not important place in his discussion. Giddens had two main objectives to achieve with the structuration theory. The first was, to acknowledge the importance of individual action, which means, to give an account of the competent and knowledgeable human agent. Secondly, formulate such an account without failing to grasp the structural components of the social institutions. In both these ideas, of the importance of individual action and of the structural components of social institutions, space and time are considered as very important elements.

4.1 Individual action:

An important element of the structuration theory is the actions 'brought off' by individual actors, which according to Giddens constitute the set of reproduced practices of social life.

These practices format the routinised character of social life and constitute forms of interaction, involving the



communication of meaning, and structures, which pertain to social communities. So for Giddens, structure derives from these recursive social practices, it is an element inherent in the free action of individuals. So, structures are more 'internal' to individuals, as they exist as memory traces and as instantiated in social practices. In this sense, structures are virtual because they exist in time-space only as moments recursively involved in the production and reproduction of social systems. The basic idea of the structuration theory is the duality of structure, that is structure both as means and outcome of the actions of human agents. Giddens rejects the terms micro and macro, which are usually used in sociology, and substitute them with social and system integration. So actually, Giddens differentiates interactions in two categories, those which take place with the actors being co-present and can be called 'social' (according to social integration) and those which are taking place with the actors not being co-present but by the mediation of the system which is stretched across time-space and these can be called 'system interactions' (according to system integration). Space is an important element for social integration and organization, since the integration in this case is based on the 'face to face' relations, this means actors co-present in space. Space and time are important elements for the situation of practices and are responsible for the 'daily paths' and 'life paths' of the actors. In class divided societies, centralization of resources – especially administrative resources, is established by the development of cities.

An important element of the connection of social and system integration are the institutionalized practices, that have managed to outlast in time and have a spatial 'breadth', meaning they are widespread across a range of interactions.

The structures that organize these practices are considered as deeply layered, influenced by, and also reproduce, basic institutional parameters of the social systems in which they are implicated.

4.1.1 The importance of resources is related to the centrality of power in social systems.

All social interaction involves the use of power, as a necessary implication of the logical connection between human action and transformative capacity. Another way in which the space is involved in human action is in the sense that human action provokes the stretching of social relations across space in order to overcome the limitations of individual presence. Lefebvre, on the contrary, starts directly from space and particularly by what he calls social space, which is the space of people who deal with material things, and attempts to build all his argument on the attributes of this space and on his main hypothesis that social space is a social product and every society produces its own space Lefebvre's concept is deeply influenced by the Marxist thought. Representation of space is the conceptualized space, which is conceived by scientists, architects, planners, urbanists, technocratic sub-dividers and social engineers. This is the dominant space in any society. Lefebvre has differentiated space in four categories identifying each one with historical periods (based on the modes of production). His starting point is 'absolute' space which was the politico-religious space, made up of sacred or cursed locations: temples, palaces, commemorative or funerary monuments, places privileged or distinguished. With the medieval town a new space emerged, the 'abstract' space, the space of accumulation, the space of exchange, of communications and networks. This space tended to govern the rhythms that now escaped from the control of nature, it was institutional and political as product of violence and war.

‘Dominated space’ is usually closed, sterilized, emptied out. The full meaning of dominated space can be grasped only when it is contrasted with the opposite and inseparable concept of ‘appropriation’.

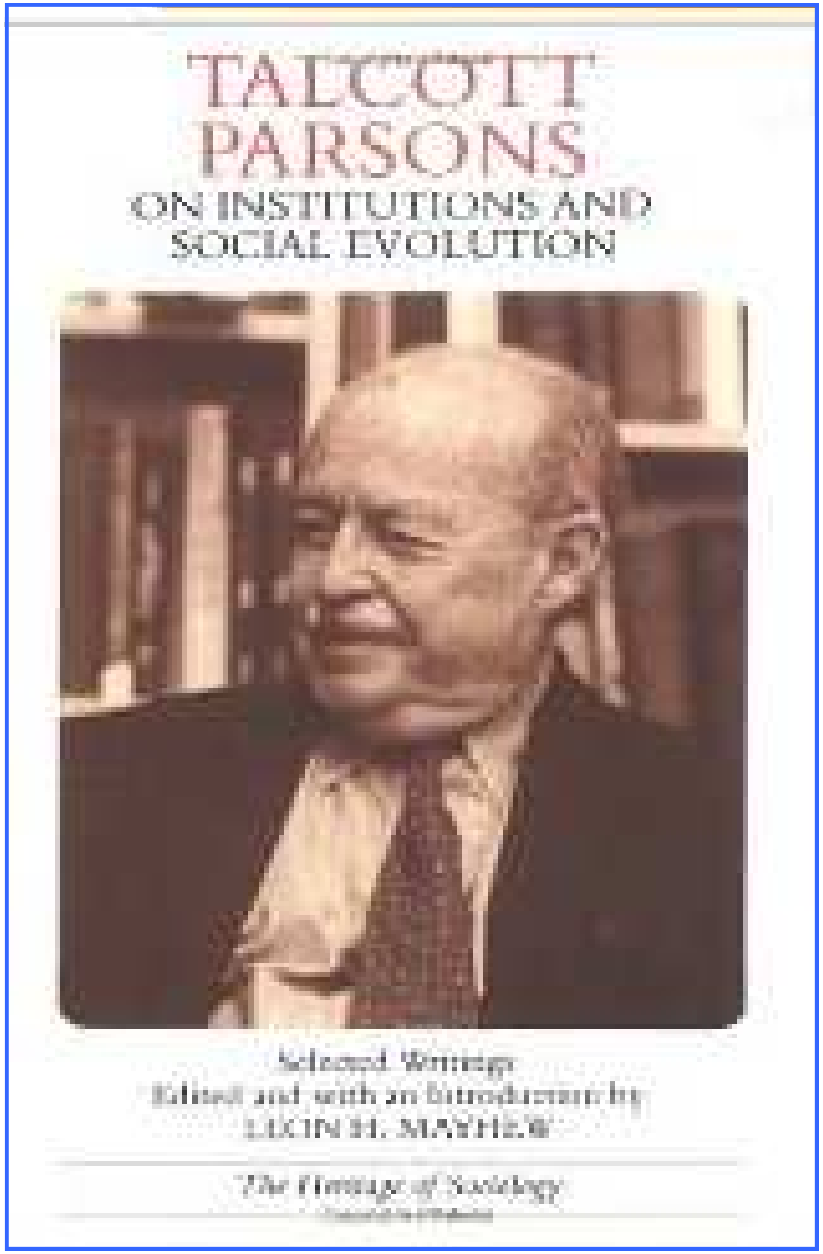
The space belongs to everyday life and it must return there escaping the domination of the system, which use it as an instrument.

The shift from domination to appropriation should be done by the primacy of use over exchange. So the implication of space is recognised in both level of the everyday life, micro level, and in the macro level as well. Ironically he sees society as a totality and as fragmented at the same time but doesn’t explain how these two opposites can co-exist as attributes of the same entity. He also sees the everyday made up of partial systems, juxtaposed without any rational links, and each with its own implications and consequences: temporality, rhythms, periodicity, recurrences and repetitions, specific works and symbolizations, these systems are distinct and disconnected.

Finally he differentiates space into the perceived and the lived which he considers to be the space of everyday life and the conceived which is the space of the system.

Space Syntax theory begins first by detecting the social logic of space then continues with an attempt to explain the relation of society to space which also gives a possible definition of society through space.

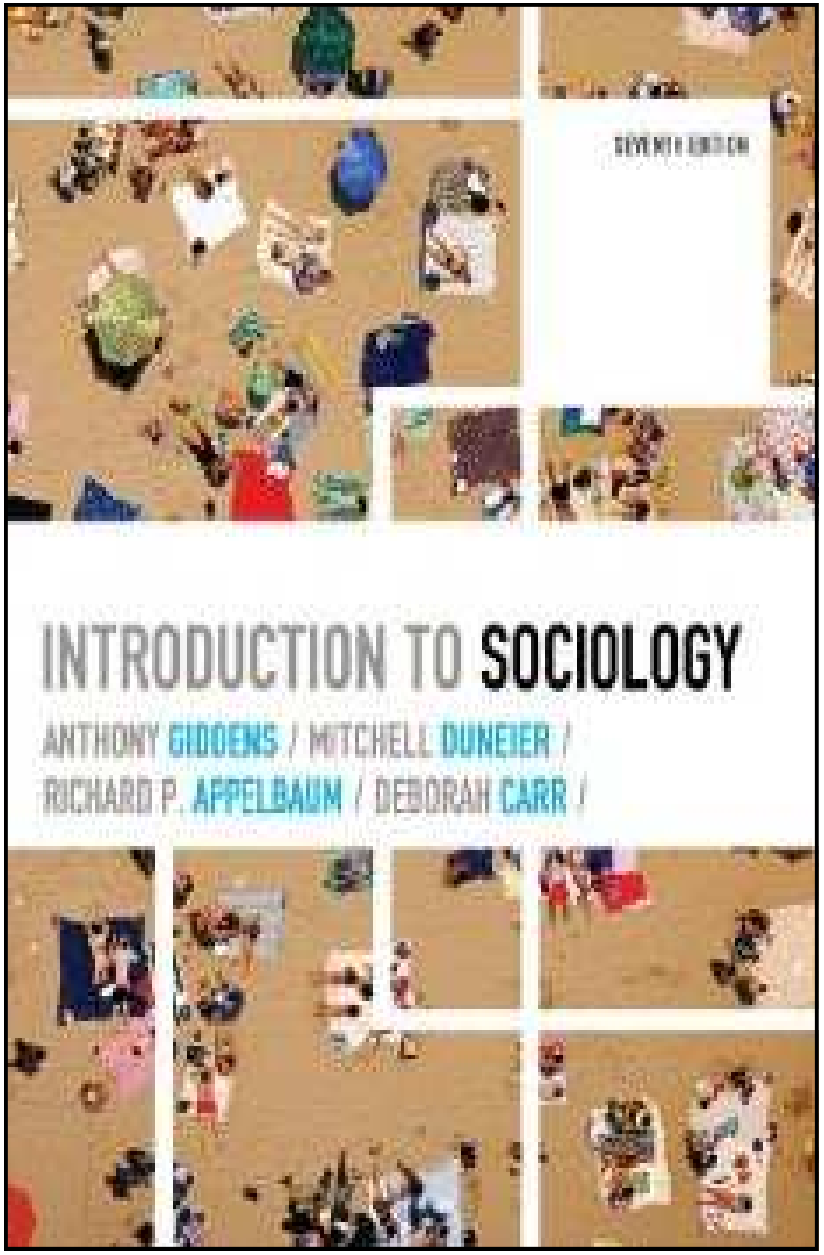
This phenomenon of the part-whole relation is observed in settlements or buildings complexes which are, according to Space Syntax, emergent patterns deriving from generative rules. Space Syntax sees space influencing individuals as well,

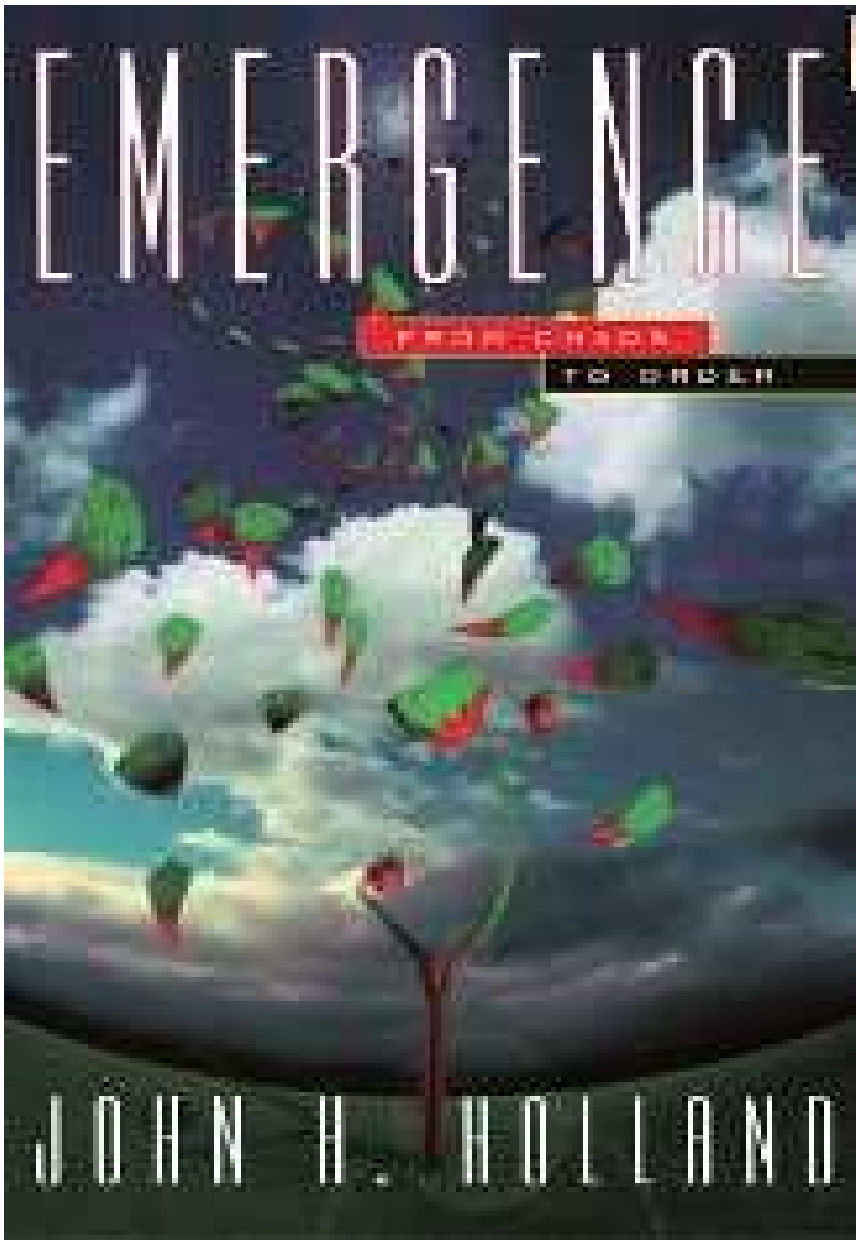


by creating circumstances of co-presence. Co-presence and encounter are basic concepts of space syntax theory. The natural movement theory shows that the movement in urban space is due to the configuration of the space rather than attractors. The inverted genotype is the social information that is embedded in space. The inverted genotype is the structured information on which the system runs and it exists as a trans-spatial or informational structure within an environment of human spatial-temporal reality and activity. It can also be changed by deliberate and conscious action.

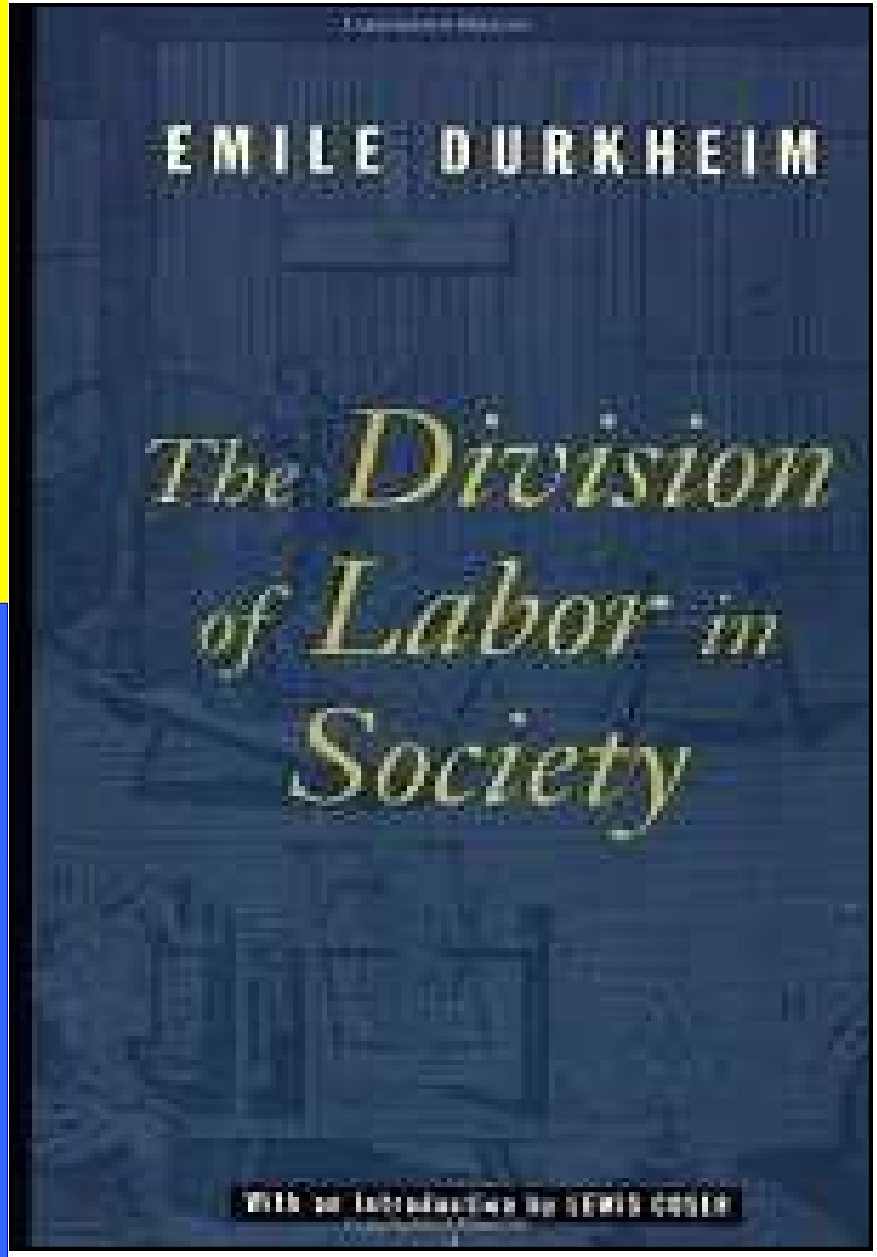
Individuals retrieve the social information from space because of a mechanism of the brain that is called 'description retrieval'. This is the ability of our minds to input abstract information into the world we create and also retrieve abstract information from it. All our ideas about the 'social' –social life, social experiences, and social behaviour, social practices- are spatial-temporal while our ideas about society without any spatial content.

In order to understand better the relation of society to space the definition of a discrete system should be presented as this appears in the 'Social Logic of Space' (Hillier & Hanson, 1984). In global space the greater the distance that has to be overcome by movement, the longer the model that is used. It could be concluded that Space Syntax's approach has two different objectives which though cannot be seen separately. The first is to explain the social character of space and the second the spatial character of society. In both case co-presence and encounter are main notions. Generally it could be said that all three theories are referring to physical space. However, it is only Space Syntax that shows this explicitly with its occupation with the architectural and urban space.





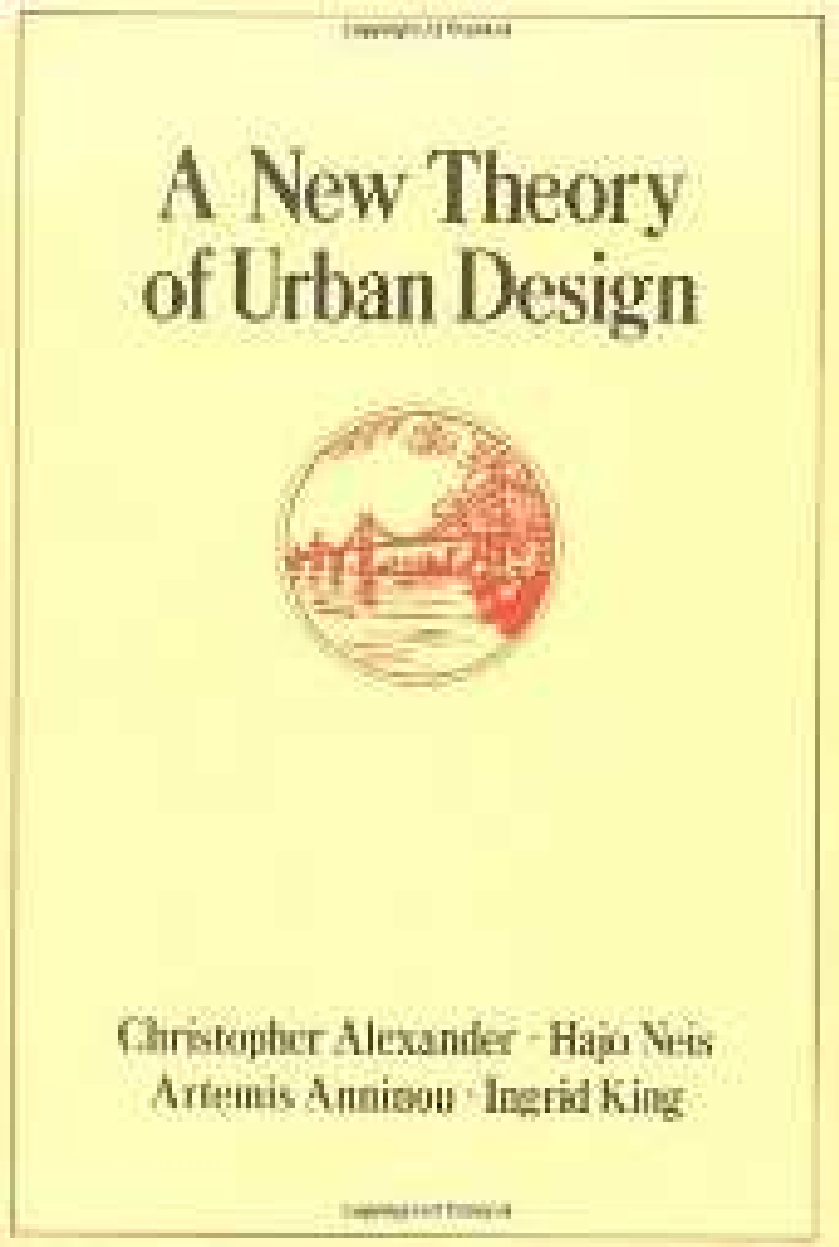
4.1.2 Giddens reference: Tthe features of locale show that he is referring to a material space while Lefebvre is referring to the space of people who deal with material things, which doesn't state anything particular about space, but his occupation with the perceived space and the conceived space of architects, urbanists and designers lead to the conclusion that he is dealing with physical space and in a degree even architectural but in a general way. Space Syntax not only refers to architectural and urban space but shows also particular attributes of this space, as configuration, related to society. The only thing that is real are the situated in space-time practices of individuals and the individuals themselves. In this way Space Syntax explains its belief that society is a real, a space-time entity. For Lefebvre, the 'everyday life' he is referring to is definitely a real entity. Space Syntax with the idea of the imposition of meaning, the inverted genotype, in the configuration and the description retrieval mechanism answers explicitly the questions on spatial planning. It is also the similarity of the notion of 'region' - in Structuration theory, with the differentiation of categories of individuals in buildings - in Space Syntax theory, although Structuration theory is not very explicit how the 'regionalisation' is happening, how the 'regions' are defined. The observation by Lefebvre of the abstraction of meaning from space sees to be interesting and could be further investigated. The relation of society to space has been grasped in a different way by each theory. Instead of space being a possession for common use it has become an object of exchange, the relation of space to society may have been grasped in a different way from each theory, with many insights in all theories that can be very useful for the understanding and obtaining knowledge of space , therefore, for designing space.



Historical evolution of higher education settlements throughout the western world:

4.1.3 Access and institutional diversity :

The most distinctive feature of American higher education today is the huge number of students it accommodates —on the order of 15 million— in a radically decentralized, disorderly conglomeration of nearly four thousand accredited two- and four-year colleges and universities. Viewed in historical perspective, the drive to expand access to higher education has been relentless. Although some resistance to increased access has surfaced from time to time, those critics have invariably been overrun by the forces of democratization and expanded access. The result has been a system —perhaps more properly characterized as a non-system— both massive in size and very uneven in quality. The so-called "gold standard" that the British (and some other Commonwealth countries) for so many years applied to their philosophy and practice of higher education was never adopted in the U.S. (although it had its adherents); rather, the American approach has opted consistently for a basic trade-off: to emphasize minimal barriers to access while permitting quality to vary markedly among different types of institutions and even within a given institution. In some sectors of American higher education, the standard was, and remains, gold; in some other sectors, something less precious than gold suffices. And that variety —designed to accommodate students of very different academic ability levels— constitutes not only the most salient characteristics, but also the greatest strength of this unruly system. A brief historical overview may be helpful to outline how this came about. The history of American higher education spans more than three and a half centuries, dating to the founding of Harvard in 1636 in the settlement of Newtown



(renamed Cambridge in 1638 for understandable reasons) across the Charles River from Boston. Students whom I have taught over the years in the doctoral seminar on the history of American higher education tend to be impressed that an actual *college* could have been organized there so long ago, especially because that college had been founded so soon after the Pilgrims had landed on the rocky coast of what was to become the Massachusetts Bay Colony.2 Lawrence Cremin underscored this point: "…a college was founded by a legislative body that had been in existence less than eight years for a colony that had been settled less than ten." (Cremin,1970). I am glad that the students appreciate that remarkable fact. And each year I am even more pleased to point out that, in the interest of perspective, that, while the infant Harvard still consisted of only a few crude structures, comparable activity had been underway in the New World for a century. The students typically are surprised to learn that Spain had been engaged in transplanting universities across the Atlantic long before the founding Harvard: in Santo Domingo in 1538, in Mexico City and Lima in 1551, and in Bogota in 1580. They learn, too, that the French also started early on, but were not nearly so motivated as the Spanish to export universities; the founding by Jesuits of Laval in Quebec in 1635 —on the eve of Harvard's inception— proved to be an exception, for the French then waited more than two centuries before establishing another colonial university, this one in Algiers in 1879 —and Algeria was not technically a colony but rather was regarded as an integral part of France (Perkin, 1991). That observation about Mexico's rich history of higher learning, and other New World initiatives, helps to put American higher education's humble beginnings in clearer perspective. So, too, does the observation that the next college to be established in the English colonies of North America did

not occur for another 57 years when the College of William and Mary was chartered in the colony of Virginia. This second college was the product of Anglicans, as distinguished from the Puritan Congregationalists who had established Harvard, and William and Mary's founding thereby initiated a pattern of diverse origins and sponsorship that saw various religious denominations sprinkle colleges across the landscape with the devout hope of advancing their particularistic interests: for instance, at Yale, Congregationalists (at odds with their co-religionists at Harvard); Anglicans at King's College (which became Columbia after the War of Independence); Presbyterians at the College of New Jersey (which became Princeton); Baptists at the College of Rhode Island (which became Brown); and Dutch Reformed at Queens (which became Rutgers) (Rudolph, 1962,). "Variety" summed up Frederick Rudolph, "carried the day, as the relations between college and state and between college and church certainly made clear." However, none of these colleges proved to be *narrowly* sectarian in their admissions policies or practices—whether their more inclusive approach was based on a more inclusive institutional philosophy or was derived from plain necessity. Rudolph again sums it up well in one of my favourite passages: The nineteenth-century American college could not support itself on a regimen of petty sectarianism; there simply were not enough petty sectarians or, if there were, there was no way of getting them to the petty sectarian colleges in sufficient numbers. The high mortality rate of colleges in the first half of the nineteenth-century was proof that petty sectarianism did not pay off. Variety and access characterized higher education in the English colonies from the beginning and throughout the Seventeenth and Eighteenth Centuries, although, as noted, the feature of access was perhaps more a matter of necessity than of principle. In reality, those early colleges remained tiny, struggling for decades to survive, despite their openness to students from diverse religious backgrounds. Higher education evolved slowly and incrementally over the span of many years. There were nine colleges by 1770, prior to the American Revolution, and another ten by the beginning of the Nineteenth Century. The number of colleges grew to 75 by 1840. As the U.S. expanded its territory in its inexorable westward drive, colleges increasingly were scattered across sparsely-settled topography. One datum that underscores the American penchant for breeding colleges is that by 1880, while all of England, with a population of 23 million, was served by four universities, a total of 37 colleges were spread across the mid-western state of Ohio, population 3 million. Playing with these numbers, it can be seen that the good people of Ohio had provided a college for each 80,000 of its citizens, while England lagged woefully with one university per 6,000,000! But that contrast tells only one part of the story. For one sobering datum reflects the downside of that overzealous commitment to creating new colleges: Rudolph estimates that "over seven hundred colleges died in the United States before 1860." (Rudolph, 1962). At the turn of the next century, by 1900, the number of colleges had increased to over 500 serving some 238,000 students. Through the first half of the Twentieth Century, the expansion of higher education was steady but nonetheless modest in scale. Growth had been slowed by the harsh Depression years and, subsequently, by the attention to more urgent national priorities necessitated by the Second World War. Although the war had helped to bring an end to the Depression in America, it had the effect of further retarding the growth of higher education. Not until the conclusion of World War II did higher education experience sharp increases in enrolments. This was stimulated in large part by a remarkable law enacted by Congress. This legislation —the Servicemen's Readjustment Act of 1944— provided for education subsidies to millions of

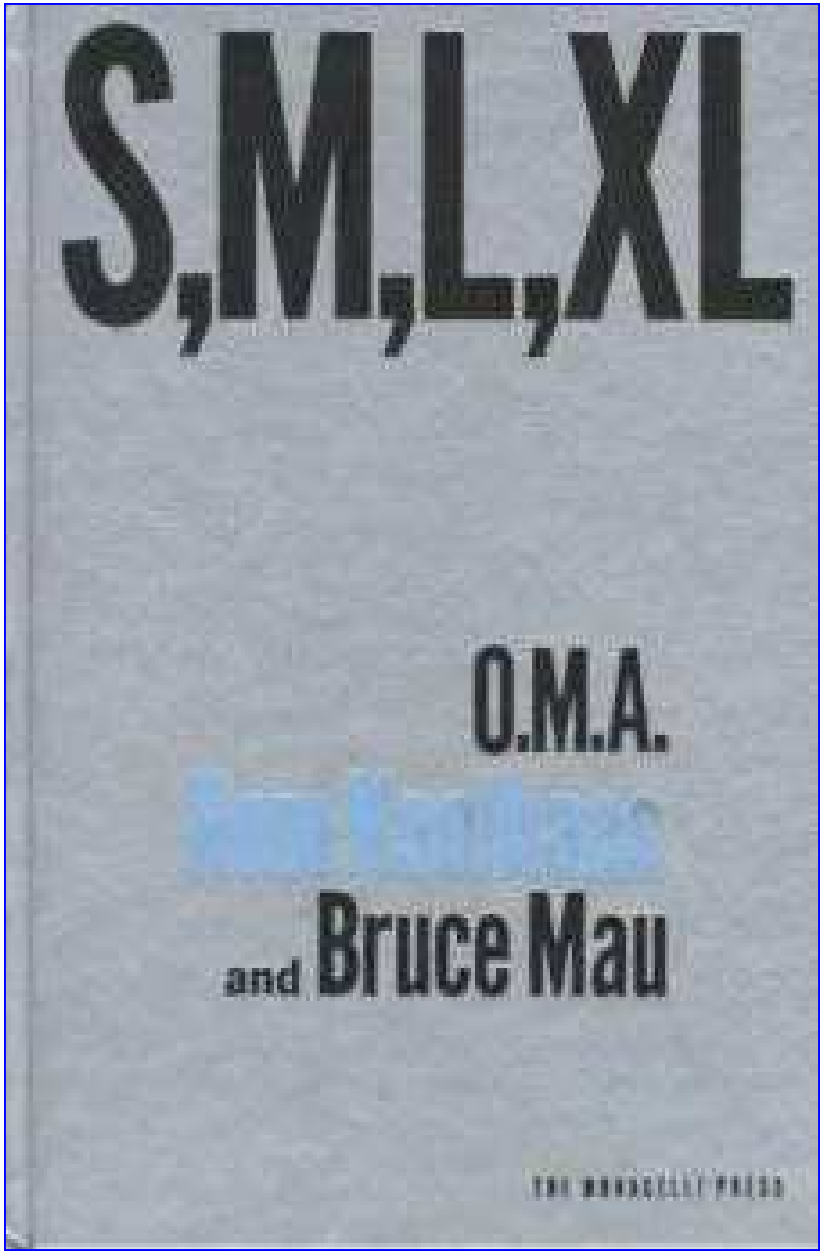
members of the military forces. Its scope was broad, for the GI Bill of Rights (as it was more commonly known) helped returning veterans in a variety of ways, among them by guaranteeing loans to buy houses and to start businesses. But the GI Bill is best remembered —appropriately— for providing payments that enabled some 2,232,000 men and women to attend college (Ravitch, 1983). For most of its existence, American higher education had afforded limited access to persons with only limited financial means; only a very small fraction of the normal college-age population had attended college despite the efforts of most colleges —almost all of them very weak financially— to seek out students. Now, however, the matriculation of large numbers of veterans in enrolment-hungry colleges and universities began to change past patterns, thereby contributing significantly to the democratization of higher education. In the fall of 1946 over one million veterans enrolled, thereby approximately doubling college enrolments. It was not a development, however, that was universally applauded. Indeed, the wisdom of the GI Bill was challenged by many higher education leaders and stridently opposed by some, most notably, Robert Maynard Hutchins, Chancellor of the University of Chicago. Despite the vigorous resistance by Hutchins and like-minded traditionalists to what they feared would be a terrible cheapening of higher education —by making colleges and universities available to persons who had not clearly demonstrated a capacity for rigorous academic work— higher education in the U.S. had been inalterably transformed. “For the first time,” Diane Ravitch writes, “the link between income and educational opportunity was broken.” Even outspoken critics of the GI Bill were obliged to admit, eventually, that the serious-minded veterans were surprisingly successful in their studies. There was room —or should be— in colleges and universities for those who were not typical middle-class students. Soon after the flood of veterans had begun to change how educators and the general public thought about higher education, one of the most underrated events in the annals of American higher education took place. Harry S. Truman, himself the last American president (1945-1953) without a college education, appointed a President’s Commission on Higher Education in 1946. Surveying the challenges that confronted post-war America, the Commission issued an extraordinary series of reports in 1947-48 that urged the further expansion of higher education, with particular attention to the newly emerging two-year community colleges. More pointedly, the Commission boldly called for an end to the racial segregation —both *de facto* and *de jure*— that characterized much of American higher education, especially in the Southern states. However, it took years before the far-sighted recommendations of the Truman Commission were implemented. The next crucial step in the chronicles of expanding access to higher education came about two decades later when Congress, always wary of according the Federal government an influential role in education at any level, but pressed hard by President Lyndon B. Johnson, to invest more aggressively in education, including higher education, enacted the pivotal Higher Education Act of 1965.7 The confluence of many factors had been necessary to enable that breakthrough, perhaps chief among them the electoral landslide in the 1964 national elections that had resulted in extraordinarily large Democratic majorities in both houses of Congress. The Truman Commission’s report had provided a beacon that lit the way for reformers who sought to further democratize access to higher learning in America. Since 1965, the federal government has substantially broadened its role in promoting access to higher education, especially through amendments in

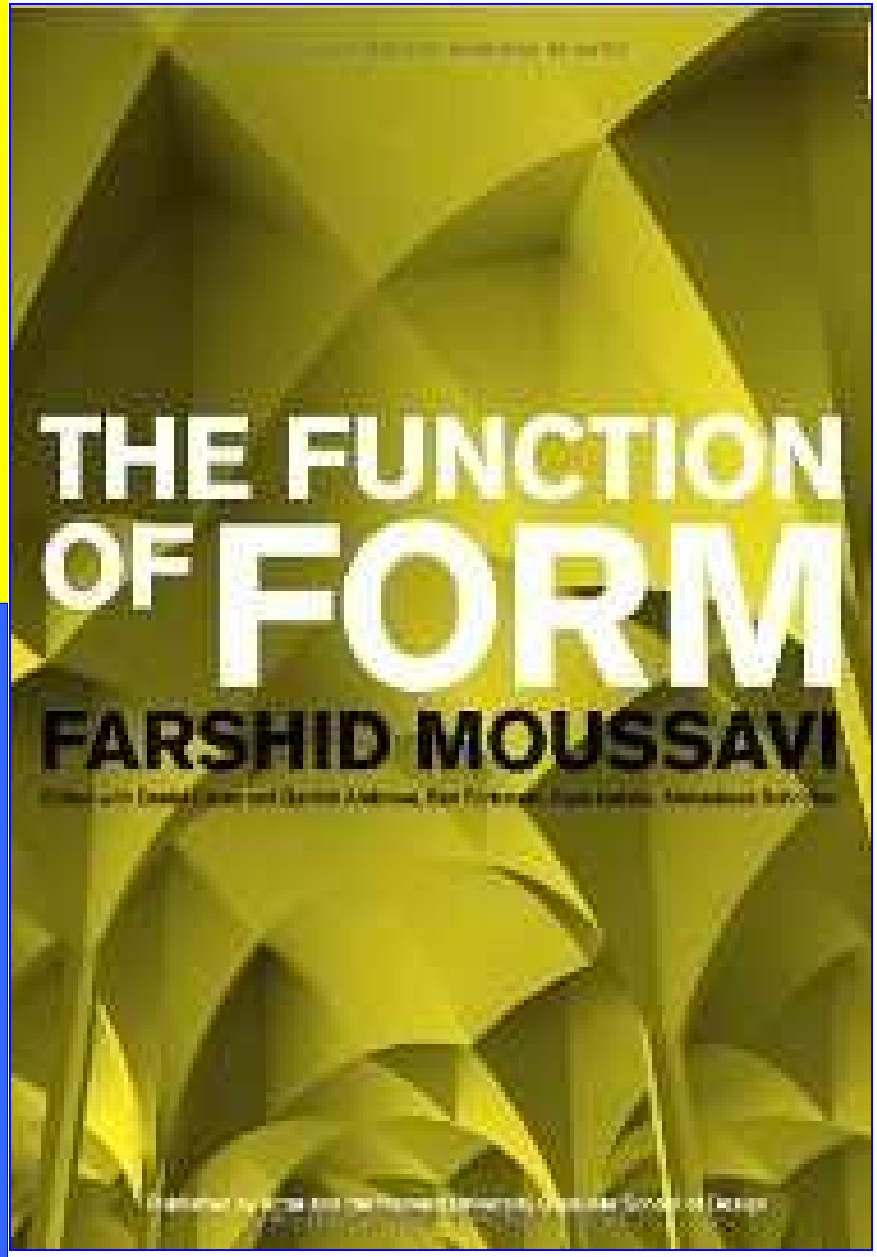
1978 and 1980 to the Higher Education Act that significantly expanded financial aid to students from middle class families. The 1970s and 1980s were notable for the sharp increase in the number of "non-traditional" students who matriculated in colleges and universities; particularly this was the case for older adults (especially women) and racial minorities. The long transition from elite to mass higher education had thus proceeded in linear fashion, albeit with occasional but minor detours, over the span of nearly four centuries. Despite the manifest unevenness in quality, American higher education's crowning achievement has been to provide access — opportunity to succeed— for an extraordinary proportion of its citizenry. That very brief overview of how access to higher education evolved in America is intended as a backdrop, albeit a superficial one, for several current developments that are reshaping how higher education is currently organized and delivered. To do this I shall identify three salient trends: internationalization, faculty redeployment, and a blurring of auspices or control. I see them, respectively, in their historical context, as being "progressive," "regressive and convergent" (for lack of a better term). Other trends could have been selected, but that is a task for another time. The following illustrate my interpretation of these three quite different historical trajectories.

4.1.4.Internationalization: A phenomenon of progression

Movement across national boundaries is as old as universities themselves: Paris to Oxford, Oxford to Cambridge. And on it goes; the physical movement of scholars from one venue to another has never stopped although the flow is sometimes hindered by political realities, including restrictive immigration policies. Surely no nation has benefited more than the United States from the emigration of scholars from other lands. The flow to America began with the beginning of English settlements in North America: "What is especially interesting with respect to the American situation was the extraordinary concentration of educated men in the Great Migration of Puritans to New England. At least 130 university men [were] among those who immigrated before 1646…." (Cremin,1970). Over the ensuing years, America— the quintessential land of immigrants—became the destination of innumerable scholars who streamed to the U.S. in sporadic bursts, as they were attracted to opportunity or propelled by oppression out from their homelands. Perhaps most dramatically, of course, were the scholars who were able to escape Nazi Germany in the 1930s, seeking refuge in the U.S. and elsewhere. Therein lies an ironic touch. Germany had once attracted many hundreds of American scholars and students who, particularly during the second half of the Nineteenth Century, were drawn to German universities, absorbed their values, and returned to seed the American landscape —dominated too long by the old English College model— with visions and practices appropriate to research universities. The patterns of immigration to the U.S. are in constant flux. In recent decades, the tilt has been toward Asia, or, more precisely, toward the U.S. *from* Asia. There are various ways to measure the change in the immigration patterns of scholars who obtain faculty positions in the U.S. A recent study provides one lens through which to view this shift (Finkelstein, Seal & Schuster, 1998). This study contrasted the characteristics of a relatively new cohort of faculty members (whom we defined as having had seven or fewer years of full-time employment as faculty members) with the characteristics of their more senior colleagues (those with eight or more years of full-time academic employment).

Two findings are relevant for present purposes. First, increasing numbers of non-U.S. natives are becoming faculty members. That is, the proportion of full-time faculty members who are native-born U.S. citizens appears to be shrinking significantly: 83.1 percent among the newer cohort in contrast to 88.5 percent among the more senior cohort. Put another way, only about one in nine experienced faculty members had moved to the U.S. from elsewhere compared to about one in six among the newer entrants to full-time academic work. Second, a clear difference is evident in comparing these non-natives' countries of origin. In both the senior and newer cohorts of faculty, India is the country of birth that heads the list, and in both cohorts natives of India are followed by natives of the United Kingdom. The gap now appears to be widening. In the newer cohort of faculty, natives of India outnumber those from the U.K. by 15 percent (3,633 vs. 3,158), whereas the difference within the more senior cohort had been negligible (4,674 vs. 4,457) (Finkelstein, Seal & Schuster, 1998).10 More strikingly, in the new cohort natives of China (2,736) approach in number those who were U.K.-born (3,158). In all, the influx of scholars from Asia, particularly East Asia, has risen steeply in recent years both in absolute and relative terms. The steady stream of academic talent continues, lured by academic jobs and, often, attracted in particular by the prospect of research support that may be very difficult or nearly impossible to obtain in one's native land. This process continues, stimulated by favourable immigration policy —especially by the far-reaching U.S. Immigration Act of 1990— despite the prevailing very tight academic labour market in the U.S. in most academic fields. (It must be added that these immigration policies —perhaps like all national policies— serve the perceived national interest of the importing nation with minimal regard for the

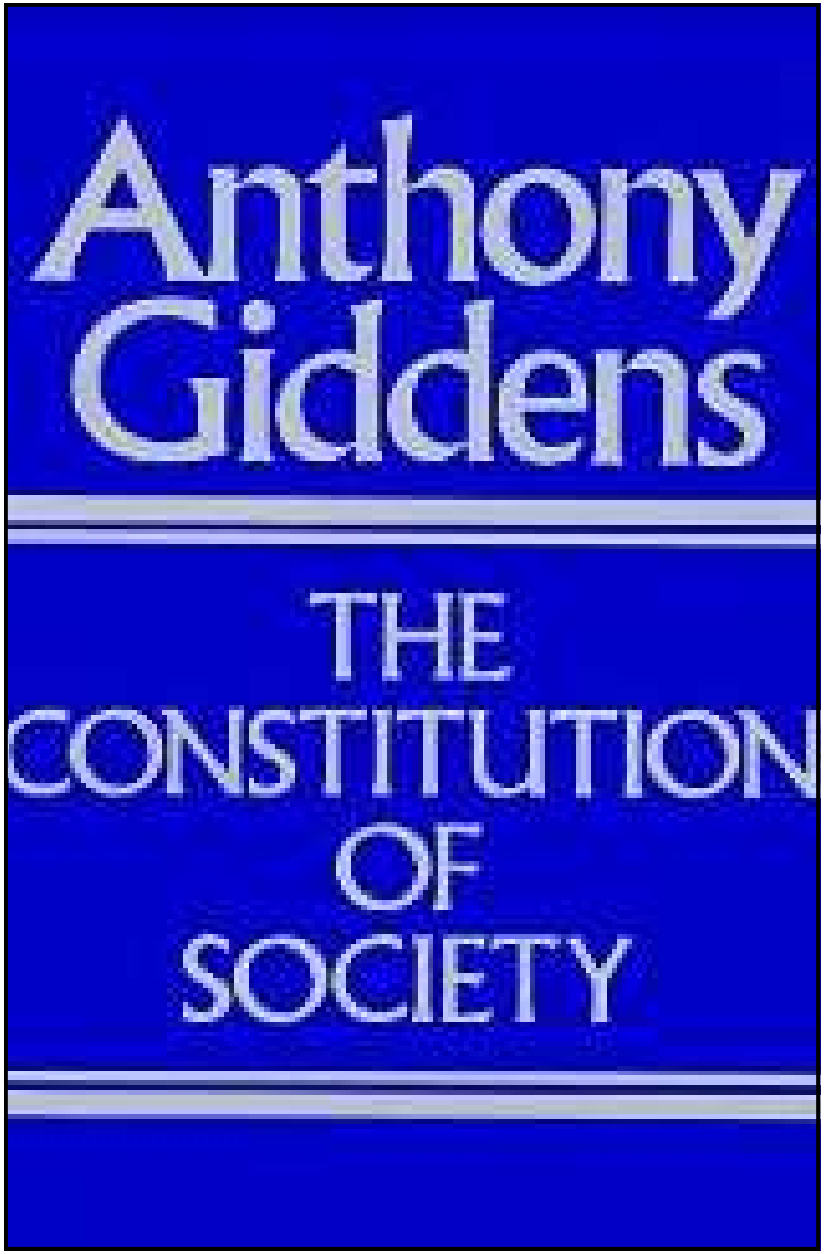


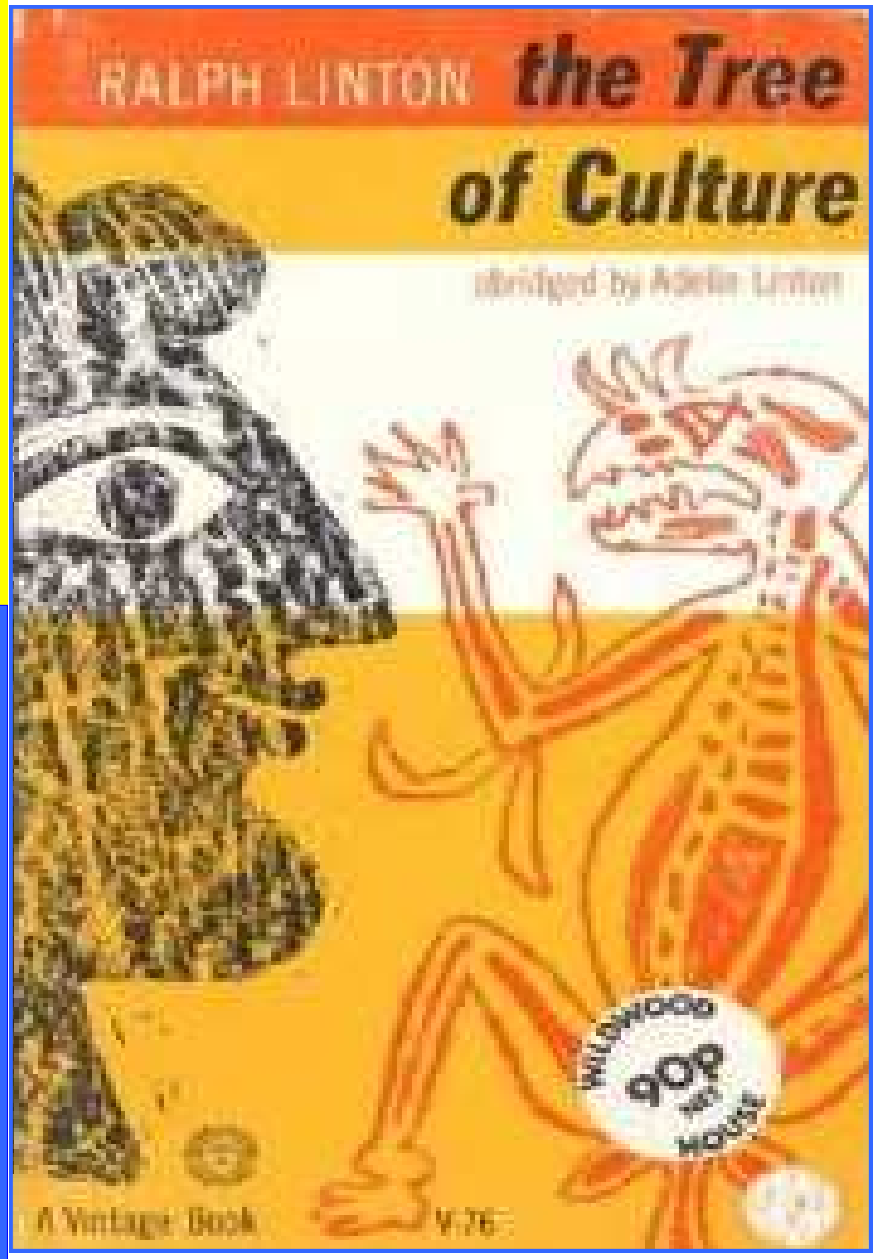


resulting drain of talent away from the exporters of academic talent.) (Schuster, 1994). In sum, internationalization has become an increasingly prominent dimension of the American academic landscape, further extending the long history of immigration that is inseparable from the story of American higher education. This feature continues to enrich American higher education, even though revolutionary technologies of communication render national boundaries less and less relevant to the work of academicians. The history of internationalization is a story of sustained progression.

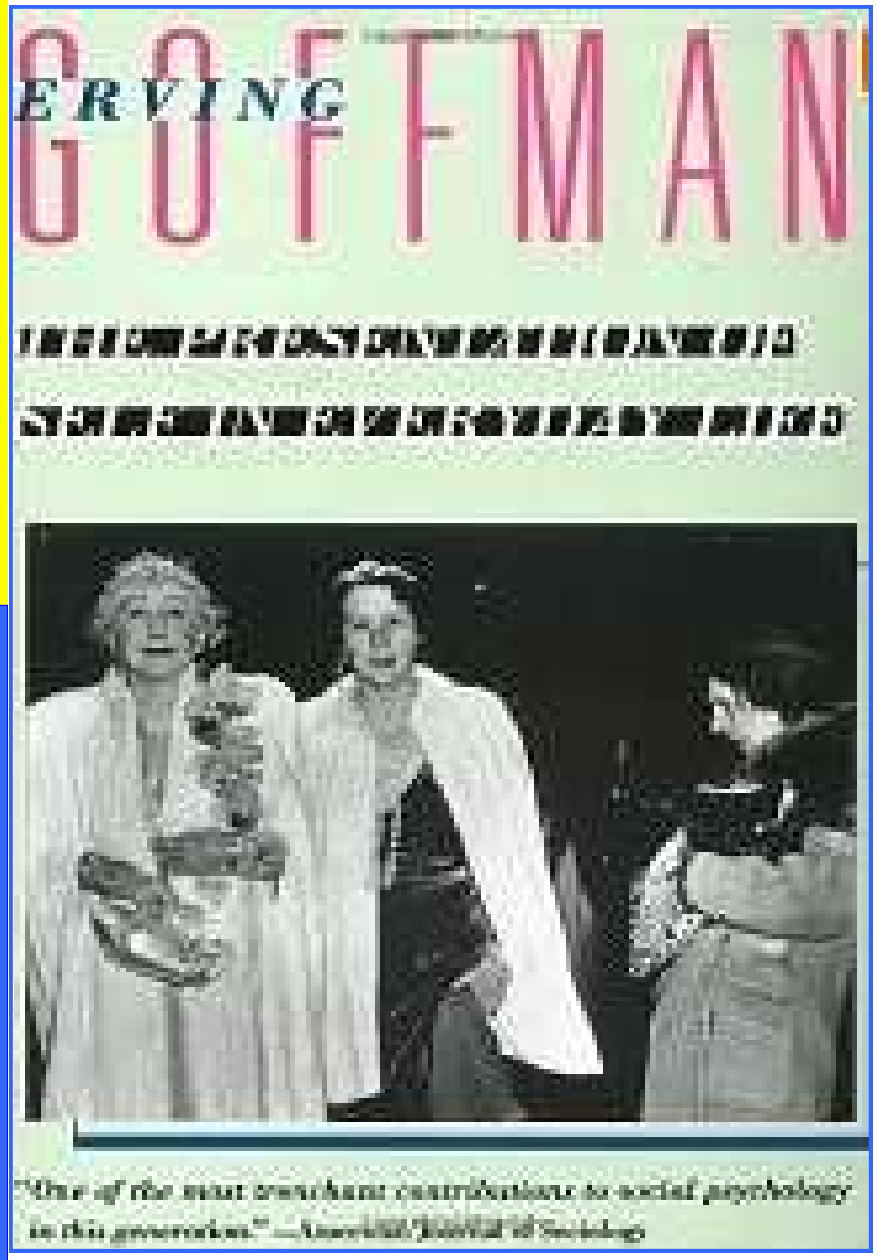
4.2 Reconfiguring the faculty: A phenomenon of regression The development in contemporary American higher education that most intrigues and alarms, is a pronounced trend in the types of academic appointments currently being made, being a story that begins long ago with just a few faculty members who held “regular” academic appointments, that is, full-time, long-term appointments. This pattern was prevalent throughout the Seventeenth and Eighteenth Centuries and that practice only slowly gave way to a professionalized regular faculty in the Nineteenth Century (Finkelstein, 1983). The academic profession through much of the Twentieth Century struggled to expand and secure its professional status. The strategy entailed gaining acceptance for principles of academic freedom and, concomitantly, for the practice of awarding tenure, that is, conferring lifetime security of employment for faculty members who successfully completed a probationary period. Tenure was deemed by the leadership of the profession to be an indispensable means to assure academic freedom. In that quest, the American Association of University Professors, founded in 1915 primarily for that purpose, emerged as the profession’s principal strategist for articulating and

attempting to enforce the standards of academic freedom and of tenure. Much was accomplished during the next half-century. When Christopher Jencks and David Riesman wrote *The Academic Revolution* in 1968, it could be interpreted as a celebration of how the academic profession had succeeded in its long struggle to achieve professionalism (Jenks & Riesman, 1968). This accomplishment was evidenced, they argued, by *academics* having finally achieved the dominant influence over core *academic* activities, particularly, academic personnel decisions, curricular decisions, and other issues of academic quality. But at about the time that this figurative celebration of victory was taking place, important changes —the regression to which I refer— were already beginning to take place, not so visibly at first but gaining momentum in the 1980s and especially accelerating in the 1990s. Most notable are two parallel developments that taken together erode —even reverse— the prior progress. First, the proportion of faculty members who teach only part-time has been rising at a dramatic rate for three decades. In the early 1970s, about 22 percent of faculty members (by headcount) were teaching part-time. By the early 1980s, the proportion had risen steadily to about 32 percent, then to 42 percent in 1992. The percentage appears to have climbed throughout the past decade, and as the new decade begins, the proportion of part-time faculty appears to be approaching 50 percent (Schuster, 1998). This relentless increase in the proportion of part-time faculty constitutes a huge change in the way higher education is being conducted in the U.S. And although the use of part-time faculty is more extensive among the two-year community colleges, the practice has accelerated in all types of institutions (Gappa & Leslie, 1993). The experience in many other nations, including Mexico, is very different from that in the U.S. In Mexico, among other settings, very heavy





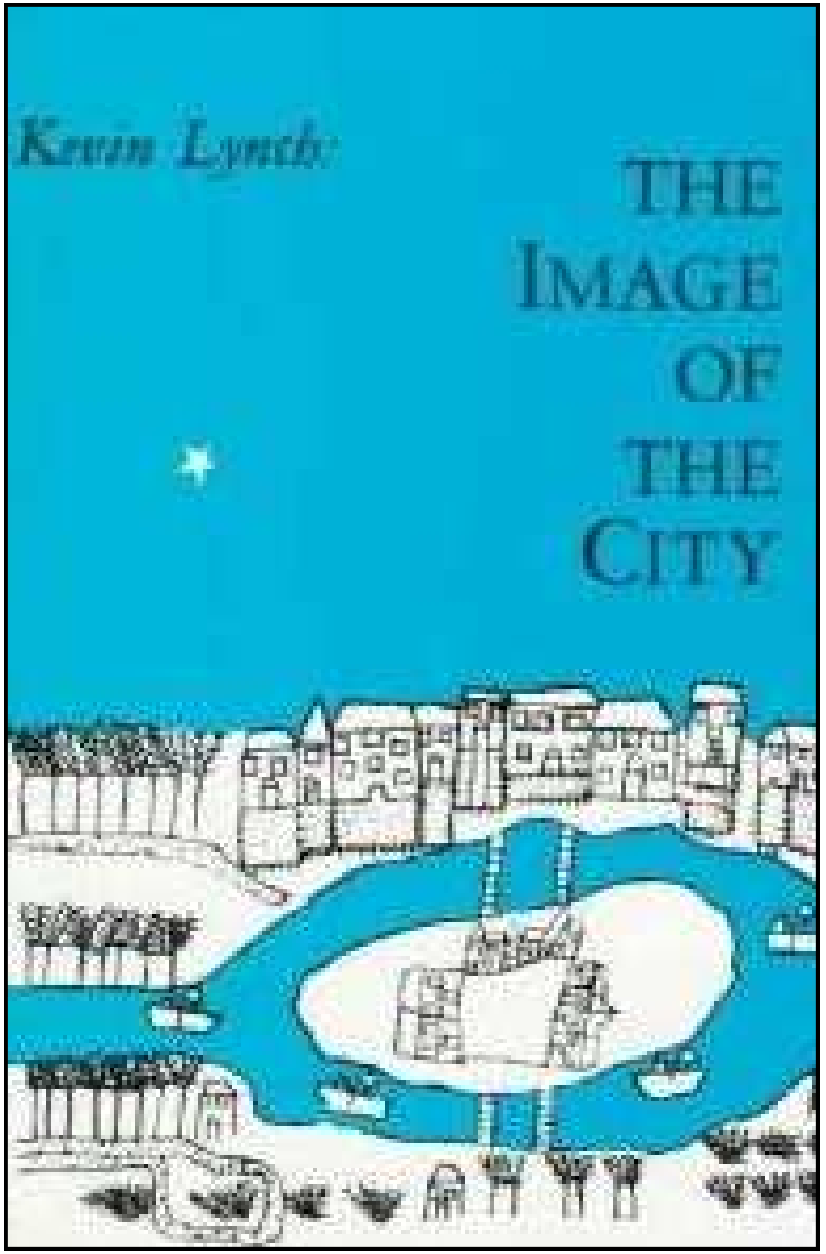
reliance on less than full-time faculty members has long been the norm. But in the U.S. this massive shift toward a contingent academic workforce constitutes a highly troubling setback in the eyes of many critics. A second trend that has almost escaped detection is profoundly important and is also disturbing to many observers. This is the extent to which the appointments of *full-time* faculty members are being made that depart from traditional practice. The traditional type of appointment for full-time faculty members is initially for a probationary period (customarily six or seven years) followed by a decision —"up or out"— that would result either in conferring tenure or prescribing a terminal year that ordinarily would be used by the unsuccessful candidate for tenure to seek and obtain another academic position. But something very different has been happening, namely, appointing full-time faculty members for limited term appointments, that is, appointments off the tenure track. This is a quite recent development. There have always been some full-time faculty members who have not held tenure-eligible appointments, but those numbers, until very recently, have been small. In fact, national surveys of faculty members in the 1960s and 1970s indicate that the numbers of such appointments were negligible. Full-time status essentially was tantamount either to having tenure or a probationary appointment leading to a tenure decision. That has all changed. In fact, my colleagues and I have found that during the 1990s, slightly over one half of all new full-time academic appointments have been tenure-ineligible term appointments. That is revolutionary or, more properly described, a reversion to an era that predates the profession's achievement of tenure as a normative practice. Some observers, view this trend as regressive, a reversal of an historical evolution that was pivotal in securing crucial professional autonomy and appropriate faculty influence over

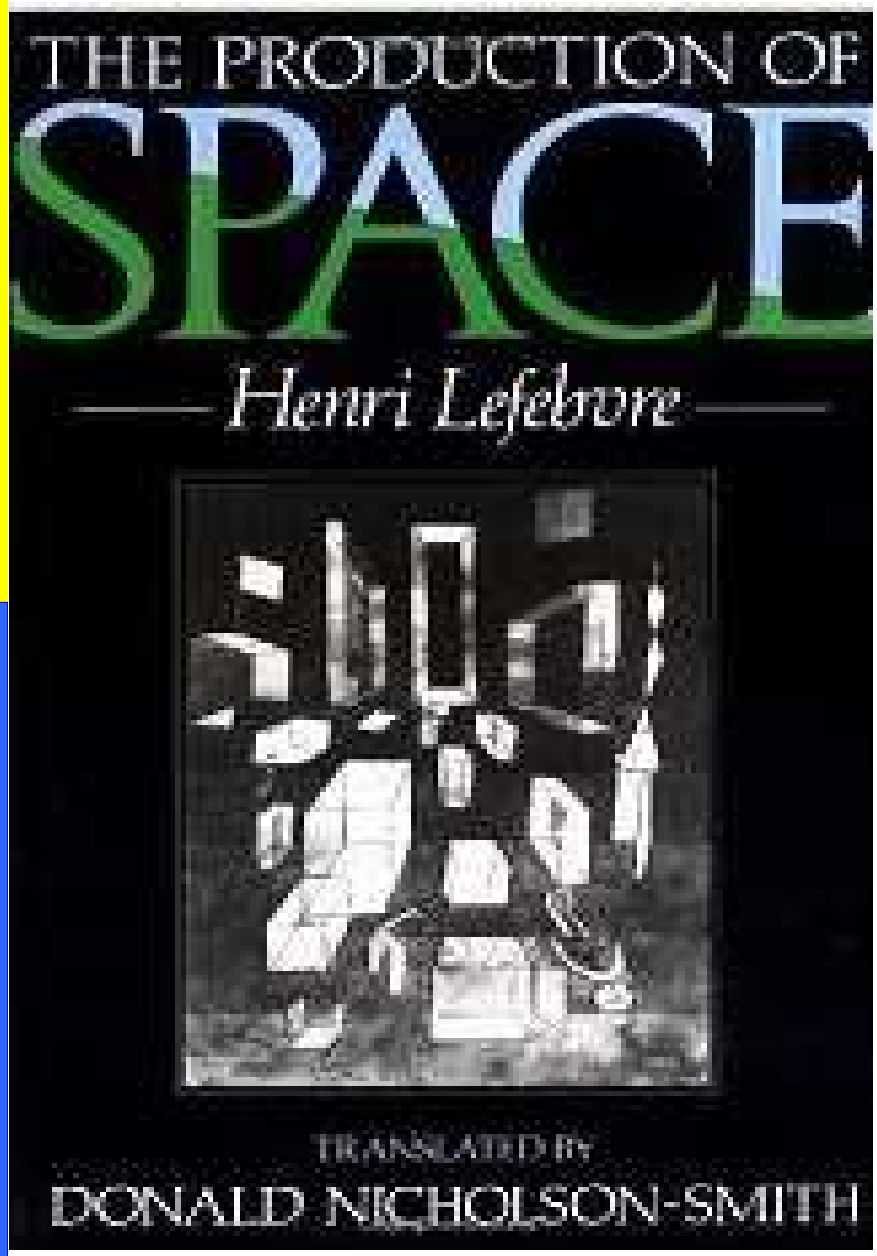


academic affairs. Thus, given the sharp escalation in the number and proportion of part-time faculty appointments combined with the rapid increase in the number and proportion of full-time faculty appointees who are tenure ineligible, the American faculty is being reconfigured at an amazing rate. Among faculty appointments made in recent years, perhaps only one in four is a traditional tenure-bearing or tenure-eligible appointment (Schuster, 1998). The principal reasons for these developments are not difficult to ascertain: cost containment and organizational flexibility. The part-time appointments save a lot of money; for those appointees earn much less than their full-time counterparts measured on a per-course basis. And such appointments, almost always for one academic term or one year, provide the institution with maximum flexibility —an increasingly attractive feature in a volatile, uncertain environment. The full-time term appointments also add attractive flexibility for deploying instructional and research staff. That much is undeniable. There is another dimension to this phenomenon. The full-time faculty in the U.S. is older than ever. The most recent national survey places their average age at 51 years, (National Opinion Research Centre, 2000). Accordingly, a great many retirements are beginning to take place and, correspondingly, a great many replacements are being —and will be— made in the near future. The point here is that the transformation of the faculty, in terms of the kinds of appointments they hold, will likely accelerate with so many faculty members holding traditional-type appointments being replaced by new entrants who are much more likely to hold non-tenure track appointments. My reading of that history is that the academy would be unable adequately to perform its vital function as an independent critic of society, including its ability to criticize the academy itself, without the stability and protection that

full-time, secure academic appointments provide. Moreover, an increasingly contingent faculty has enormous—and troubling implications—for academic culture and practice, including diminished faculty accessibility to students. In all, the powerful trends now underway in redeploying the faculty constitute a reversion to a more problematic era for the academic profession and for core academic values.

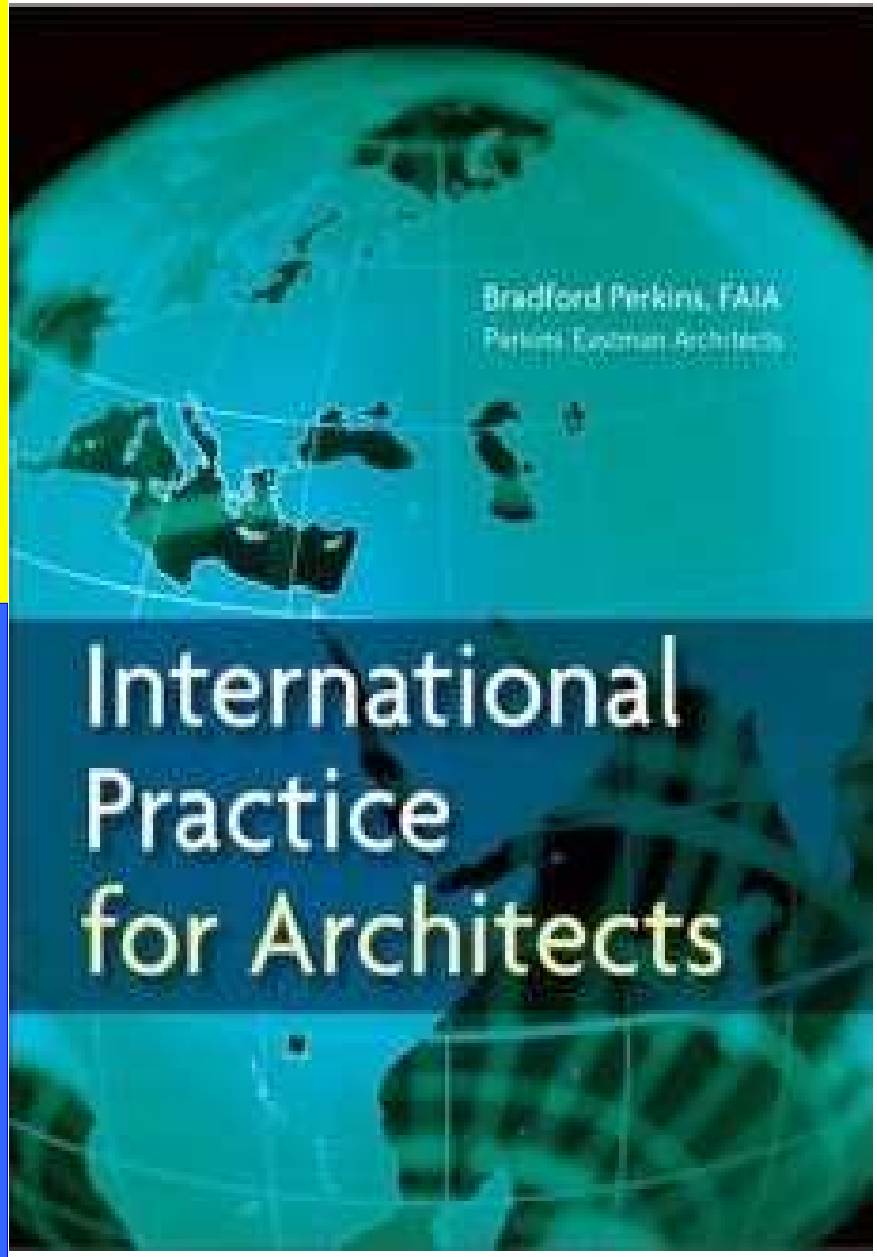
4.2.1 The blurring of public-private auspices: A phenomenon of convergence A third development suggests a different sort of trajectory —a trend toward convergence in the auspices or control of colleges and universities. The effects of this perceived convergence are undoubtedly significant —probably very important— although very difficult to measure. I refer to the blurring of the distinction between the public and private (or "independent") sectors of higher education in certain practical (though not legal) respects, especially during the past 25 to 35 years. The colonial colleges in America were neither distinctly "public" nor "private" institutions in contemporary terms. In this regard, their identity was blurred. Thus Harvard and Yale and Dartmouth and their institutional "siblings" were chartered by local governments—typically by the governor who was the British Crown's agent in the various colonies. And all of these fledgling colleges received some amount of public financial subsidy (Cremin, 1970; Rudolph, 1962). **(**Harvard, for example, received an annual allocation from the General Court **(**essentially the colony's legislature**)**. But these early colleges were far from being "pure" public entities. Thus, they were typically beholden to whichever Protestant denomination that had helped to found and support them and, moreover, the colleges controlled their own admissions, hired their small staffs, and so on. "The distinctions," observed





Cremin, "were in process of becoming and therefore [were] unclear and inconsistent" (Cremin, 1970). Marsden described these early colleges as "quasi-public" (Marsden, 1994). This condition of fuzziness between public and private identities or auspices changed in the early Nineteenth Century in large part as a result of the so-called Dartmouth College Case which was decided by the U.S. Supreme Court in 1819. The state legislature of New Hampshire (for by then the colonies had become states in the still-young Union) was unhappy with Dartmouth College's unresponsiveness to the needs of the state's citizens which the legislators believed to be much more pragmatic than the College's classical curriculum with religious content was providing. To remedy the situation, the legislature attempted to reorder the College's priorities (Rudolph, 1962). But wait! Dartmouth College, which had been established in 1769, had its own governing board, dating from its original charter, and was keen to resist the attempted takeover by State authorities. To condense a long, complex story, the College sued the State and prevailed. Writing the Court's opinion, John Marshall —the first (and long serving) Chief Justice of the U.S. Supreme Court— concluded that Dartmouth College was not a public institution subject to public control and that the State could not abrogate the College's contractual rights, which derived from its charter (Rudolph, 1962). In other words, if the New Hampshire legislature wanted to control how higher education was to be conducted, it would have to pursue other means such as creating its own college.

This decision by the U.S. Supreme Court served as a stimulus in two basic ways. It signalled to the colleges that were scattered among the states and regarded themselves as private that they were protected against attempts by state authorities



to convert such private colleges (or private entities of whatever kind) to their own purposes. There was room left for some measure of public oversight of the colleges, but converting a private college into a public one by displacing its governing board, Marshall concluded, would violate the U.S. Constitution. At the same time that the Court assured Dartmouth College of its independence, a correlative effect of that decision was to establish that any state that desired to mould higher education to that state's own priorities would need to establish its own *public* college. And this the legislators of New Hampshire eventually did, albeit almost five decades later. Indeed, the Supreme Court's decision, by endorsing the autonomy of private colleges, appears initially to have retarded the development of unambiguously public colleges. Prior to the *Dartmouth* decision, several states had created their own public colleges. (Both North Carolina and Georgia vie for the title of being first around 1785). But after the Dartmouth decision, the distinction between public and private colleges (and, later, "universities") became increasingly clear, and ultimately the states seriously undertook the task of creating and nurturing public colleges and universities. This public-private distinction has lead to a remarkable system of American higher education, so remarkably diverse and radically decentralized, as noted earlier, that it might well be described as a non-system. Whether it is a "system" or "non-system," when considered on this more macro scale, it is amazing to me how these parallel public and private (or "independent") sectors have evolved, over so many years, with neither dominating the other. This dimension of American higher education is distinctive —indeed, unique in some respects—when considered from a global perspective. True, in recent decades some other nations have encouraged the private sector's rise

to greater prominence —Japan and, more recently, Mexico are among the scattered examples— but the U.S. set in motion long ago its centrifugal approach, featuring a very limited role for central government. Indeed, the federal government did not establish its own cabinet-level (or ministry-level) agency for education until 1980 when the U.S. Department of Education was created by the slimmest of Congressional margins (in 1979) (Radin & Hawley, 1988). Indeed, the newborn Department came perilously close to extermination in its infancy when Ronald Reagan, who, as candidate for president had campaigned against this new federal department, after his election sought, but could not obtain, sufficient Congressional support to destroy it (Schuster, 1982).The higher education landscape thus has featured these robust side-by-side public and private sectors. It is remarkable that the most prominent universities continue to be divided, roughly equally, between those two sectors. Indeed, the rankings of universities —however useful or irrelevant such rankings may be deemed to be— have not changed substantially throughout the past century, from the Carnegie Foundation's rankings in 1909 (Slosson, 1910) to the latter-day reputation rankings generated by the American Council on Education and the National Research Council. Most interestingly, this outcome is not by design but by happenstance, a kind of historical fluke. And, although public higher education has expanded enormously during the past half century to now account for roughly four fifths of all enrolments in higher education, the independent sector, at least among the more selective (elite) universities and colleges, has maintained, if not increased, its prominence. If "parallel non-systems" is a fair way to characterize what we have fashioned in the U.S., it is relevant to note that the boundaries of the two sectors are now becoming more blurred than ever, at least since the Dartmouth College Case in effect delineated private from public higher education almost two centuries ago, as discussed earlier. In recent decades, for many reasons, the overlap between the public and private sectors has become more evident. Consider these developments. Public institutions at all levels now engage very actively in fundraising from private sources that formerly "belonged" to the independent sector. Twenty-five or thirty years ago, substantial fundraising by the leading public universities was very uncommon. However, as public funding for higher education became more elusive, that historical condition changed rapidly. It is no doubt shocking to some observers that some eminent public universities today receive less than one quarter, or even less than one fifth, of their overall revenues from the very state that created and claim them.

Thus these ostensibly public institutions, while not having changed their legal status, are necessarily responsive to many masters. To be sure, much of the support they receive for research comes from public sources at the national level, that is, federal agencies, prominent among them the National Institutes of Health land the National Science Foundation; the typically sponsor much of the research, especially big science projects, conducted at the research universities. The state may stand in *primus inter pares*, among the other supporters, but the big public research universities —the University of Michigan or the University of California, Berkeley, among dozens of others— are less and less dependent on, and thereby less driven by a state-generated agenda. This is not to argue that the great state universities have been substantially privatized, although corporate sponsors and individual donors have their priorities. It is to say that the great state universities

today negotiate a much more complex environment in which influence comes form many quarters.

Meanwhile, the "independent" colleges and universities, with relatively few exceptions, are so reliant on federal financial assistance to student's aid that withdrawal of that public lifeline would result in institutional death in short order for hundreds and hundreds of private institutions whose dependence on the intravenous flow of federal funds for their students' tuition is an indispensable source of revenue. Indeed, it is not uncommon for a small, private liberal arts college to derive upwards of 70 or 80 percent, or even more, of its total revenue from federal monies that are funnelled to them through the grants and loans that their students receive.

And so this story has evolved in stages, from an era when no clear distinction existed between public and private, to a quite clear delineation, and now, in more recent years, to a point where the distinction is again fuzzier. This blurriness is not a matter of whether fundamentally important legal and political differences still remain between the two types of auspices or control.

These differences persist. But the sources of funding —and, therefore, any given college or university's priorities and capacities— are considerably more varied now. Thus, as a practical matter, at least in some important respects, the differentiation between public and private has lost some of its meaning as the historical parallel lines of development, having diverged in the Nineteenth Century, have moved toward converged in the late Twentieth Century.

4.2.2 Summing up: Higher education in the United States is at present in the most rapid state of change than ever before. Moreover, this observation likely is applicable to higher education in much of the world and almost certainly includes Mexico. This claim about the rapidity and scope of change in U.S. higher education may sound to some like a bold, even extravagant, assertion, but, for the sake of perspective, it is well to consider that higher education has not often changed swiftly during the course of its near-millennium history. To be sure, change is the only constant. As Heraclites observed, "All is flux, nothing stays still." Higher education in the U.S. has never been static, but most often the rate of change has been moderate, incremental. Now, however, that is, within the past decade or so, the rate of change appears to be accelerating beyond our capacity to measure it or to comprehend its significance. More significant aspects of higher education are now "in play" than ever before. As this history unfolds, some vectors of change that will powerfully shape the future can be seen as progressing in near-linear fashion, some as reverting toward a previous status, and some tracing a unique trajectory. But ever-expanding access is likely to remain a core value into the foreseeable future.

4.3 Settlement patterns:

Settlement patterns are a term that signifies the distribution of population clusters of varying sizes in a given area. The individual settlements which comprise these may be urban or rural, dispersed or nucleated, and either deliberately planned or of gradual, accretive growth. Various factors may have determined the original location, morphology, and plan of individual settlements, their subsequent development, and their collective distribution. Physical attributes, such as a water supply, a defensible site, the availability of cultivable land, the presence of raw materials, or an advantageous position relative to existing settlements or communications, as well as social factors such as the pattern of land ownership,

may all have helped determine the location of individual settlements in the past.

Their overall numbers and subsequent development are likely to have been influenced by other factors, including population change, technological innovation, secular economic trends, and changes in prevailing social, religious, and political ideologies. Thus settlement patterns may be seen as a social artefact, mirroring changes in society and sometimes influencing these.

Consequently, in countries of great cultural antiquity such as Ireland, present-day settlement patterns retain considerable evidence relating to the structure and functioning of past societies.

4.3.1 Urban settlement and its origins (Ireland-Western Europe):

By 1900 Ireland's settlement pattern had more or less achieved a recognizably modern form. Dominating everything were Dublin and Belfast, with populations of 305,000 and 387,000 respectively. Beyond these lay a landscape of dispersed farm settlement and small market towns, in which urban industrialization was centred on north-east Ulster and the Belfast hinterland. This regional industrialization was a 19th century phenomenon, and had altered what had been a classic example of a pre-industrial primate urban hierarchy. In 1800, Dublin, with a population of 200,000, had long outgrown every other centre, but by 1900, the growth of regional textile centres such as Derry, Lurgan, and Portadown, as well as Belfast, had distorted the earlier urban rank order.

Beyond Ulster, the provincial urban network faced stagnation as the domestic market for all forms of goods and services contracted with the continuing post-famine decline in population. Major regional centres such as Cork and Galway retained their traditional service roles, but the fate of many smaller towns depended on whether they were well connected by Ireland's rapidly expanding railway network. Those that were, such as Athlone, Mallow, or Port Arlington, were more likely to prosper as market centres than places like Castle comer or Tallow which were bypassed.

One consequence of this relative urban stagnation was the widespread survival in the late 19th century of earlier morphologies and plans, dating not merely from the wave of urban and village improvement during the 18th century enlightenment, but also from the medieval and plantation periods. Between c.1700 and 1845 approximately 750 towns and villages were founded, re-founded, or rebuilt at the instigation, or with the collaboration, of their landlords.

The opportunity to do so came with the mid 18th century expansion of the domestic market and the strengthening of Ireland's agrarian economy. Improvements were usually undertaken with the intention of enhancing local marketing, but also sometimes for social, political, or aesthetic reasons. Generally speaking, an inverse relationship existed between the size of these improved settlements and the extent of the property

monopoly any one landlord enjoyed within them. The larger regional centres, such as Kilkenny or Cahir, Co.

Tipperary, were invariably among the one-third which were of medieval or plantation origin, and in which no one landlord monopolized property ownership. Consequently, in these larger towns, the opportunities for any individual landlord to impose his own idiosyncratic vision on the community were relatively limited, and improvement was invariably piecemeal.

Frequently it involved nothing more than the construction of new housing or the provision of public utilities such as churches, market houses, or shambles. This urban and village improvement was widespread throughout Ireland, but concentrated particularly in south Ulster, the midlands, east Munster, and south Leinster. In many ways it reinforced the earlier regional patterns of medieval and plantation urban and village foundation. The major plantation contribution lay in central and west Ulster, Leix and Offaly, and Cork, where towns such as Coleraine, Tullamore, and Bandon represented a significant extension to the urban network founded by the Anglo-Normans in Leinster and north-east Munster. Arguably both these settlement phases were colonial in character.

They were designed to articulate the economic exploitation of Ireland's resources for the eventual benefit of the English crown, whose political and strategic control over the country they were also intended to facilitate.

The exact numbers of the towns and villages established during the medieval and plantation periods are hard to establish, since not all survived and some were subject to periodic re-foundation. Nevertheless, of the 149 Irish towns and cities recording a population of over 1,500 in the 1971 census, 40, or just over one-quarter, were founded by the Anglo-Normans after 1169, and a further 55, or 37 per cent, during the 16th and 17th century plantations. In both cases, the figures under-represent the number of such urban settlements, as only the largest and historically most successful are included. Thus nearly 180 medieval settlements are known to have been granted legal status as boroughs, normally the sine qua non of urban status in the middle Ages, while a further 50 received grants of weekly markets.

Relatively small by contemporary European standards, medieval Irish towns such as Kilkenny and Carrick-on-Suir, Co. Tipperary, nevertheless displayed all the physical appurtenances of urban status: formal market places, regularly laid-out burgage plots, and, among the larger towns, town walls (particularly from the 14th century), some of which remain to the present day.

These colonial towns were not the earliest urban foundations to survive into the 19th century. Of still earlier origin were the seven or eight Norse (see viking) emporia, or ports of trade, founded in the 10th century as successors to the earlier, temporary Longport.

Dublin, famously, figured as both, but other foundations dating from the 10th century included Arklow,

Wicklow, and Limerick. Their significance lay in their indisputable urban status. They supported a socially complex and numerous non-agrarian population through craft and commerce, and linked Ireland to a broader, European, trading system.

4.3.2 Rural settlement

In contrast to the gradual evolution of Irish urban settlement, contemporary farm and village settlement patterns are largely the creation of the 18th and 19th centuries. They reflect in particular the consequences of recent population growth and decline, and the uneven social distribution of agrarian wealth. Relatively few of the extensive rural settlement forms changes in landownership which had occurred during the 16th and 17th centuries. Some agricultural villages of medieval origin survived in the Leinster heartlands of the erstwhile colony, but most of the medieval defensive tower houses and moated sites founded by both Gaelic and Old English lords had been abandoned. Only a few, such as Moycarkey, Co. Tipperary, survived as nodes for later farm settlement. Thus, by the 19th century, Irish rural settlement was characterized by its relative recency and its stark social contrasts.

The loss of population during and after the Famine had largely eradicated the once widespread clachan settlements save in the most marginal western districts. In their place, the reduced farming population was accommodated with holdings in severalty, and housed in scattered, individual farmsteads. The majority of these were built in one or other of the various regional vernacular styles of architecture, using locally available, and therefore relatively cheap, building materials. In more prosperous regions, and with the rise in farmers' living standards generally in the 1850s and 1860s, more substantial farmhouses were erected using imported materials such as slate, and simplified ‘polite’ Georgian styles.

At the other end of the social spectrum, the majority of the landlord class survived the financial crises brought on by the Famine and the Land War, and continued to inhabit the country houses and demesnes which had been a characteristic feature of rural life since the early 18th century. Some 10,000 of these existed by the 1830s and in their design and sophistication signalled their owners' wealth and authority as a social elite.

Most were built in the 18th century in the Palladian or neoclassical styles, but a significant number were either built or reconstructed in the early 19th century in one of the then fashionable ‘revival’ styles, Gothic, Scots-Baronial, or ‘Tudorbethan’. The decay of many of these houses following the transfer of landownership to the tenants under the Land Acts of 1870–1909 aptly illustrates the importance of social contexts to the history of settlement in Ireland.

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5.Pre-assessment of the hypothetical University to be designed: Universities are of many different typologies, as discussed throughout the book, in the previous analyses. It is important to assess the type of educational institution one is proposing to design, as the spatial planning of each individual institution varies not only due to the presence of area in large or minimal quantities and the number of students it is required to cater to, but also the type of education it is required to impart there, as the requirements of different spaces differs with the type of study imparted.

5.1 Types of educational institutions:

1. **Engineering colleges**
2. **Art colleges**
3. **Medical colleges**
4. **Military colleges**
5. **Visual media, animation + photography colleges**
6. **Culinary and vocational training colleges**
7. **Sports colleges**
8. **Research institutions**

The focus of this thesis is to create a university citadel , academically known as an educational space that is the fulcrum of student activity in vicinity of a major urban dwelling. The type of university that is being hypothetically designed has been arrived at with several considerations, to be a **" University of visual arts"**, in vicinity of the famous cyber technological city of **"Hyderabad"**, a famous city in the southern part of India. Hyderabad is famous for tourism, history, culture, film, entertainment, sustainable architecture, and last but not the least excellent advancement in the field of science, technology and computers.

The importance of "Visual arts"

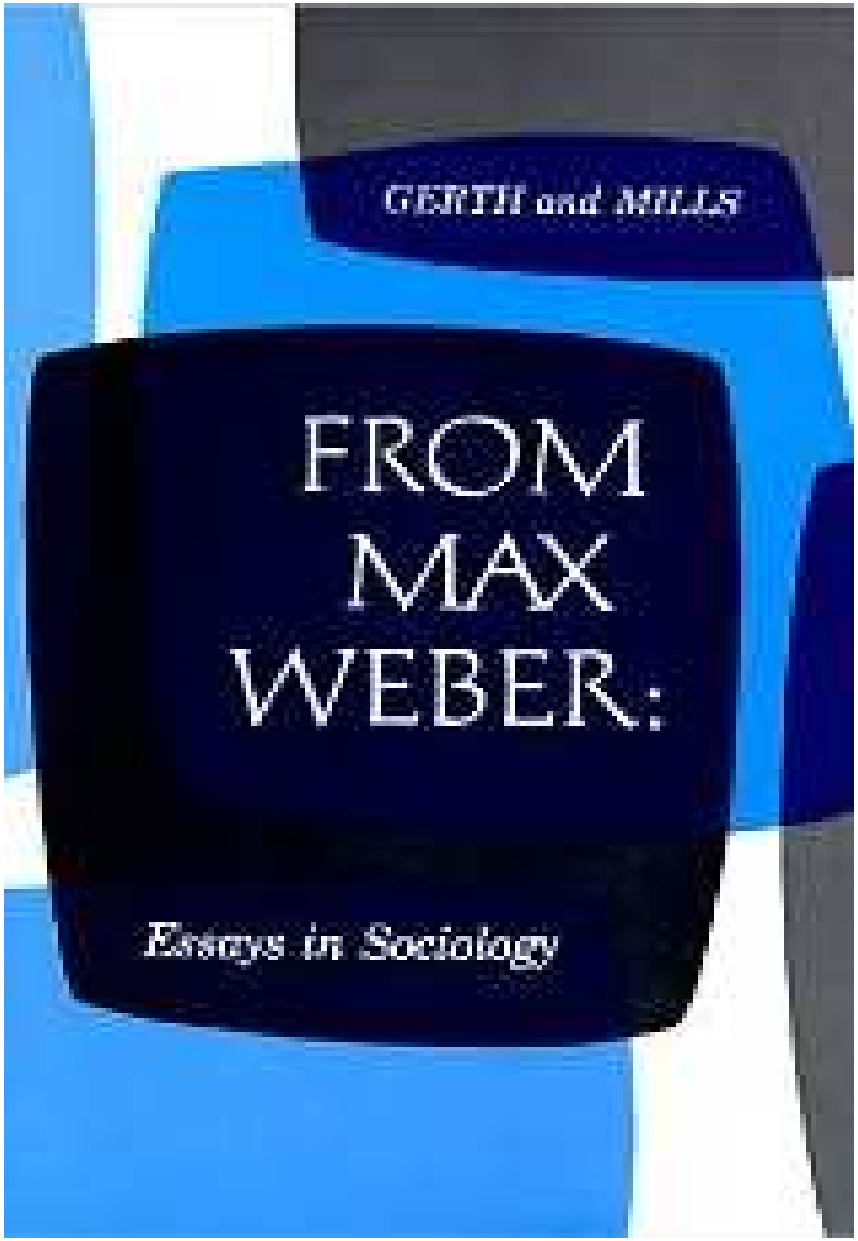
- Visual media is the creation of intellectual and artistic interpretation of the past, present and future.
- It is a media of communication that is the lifeline of millions around the world.
- Visual medias are the mode of social upliftment, as it reaches men and women from all classes of society.
- The level of illiteracy being high in India, films help reach out and educate in order to eradicate illiteracy itself.

Education is fundamental to empower people and a basic tool with which to create meaningful change for people in primary poverty areas.

The most urgent message is one of education for the impoverished global community and empowerment for individual groups of disadvantaged village communities. All to frequently the intended recipients of well meant aid, find themselves at the end of a long line that stretches to infinity. Frequently aid becomes caught up in chaos in times of disaster and does not reach those that need it.

In India education through documentary film is a cardinal tool with which to reach communities whose members may not have reading and writing skills.

For an example, we draw upon two globally successful documentary films made in Indonesia by members of the existing team. Both films have been seen by global audiences. These films asked questions about the effect of development and changes to the existing social and environmental status quo.



The answers create what has become a unique template for the development of truly empowering educational tools and techniques.

The outcomes of these films, with a 25 year differential time line suggests easily understandable solutions with which to resolve the common issues facing communities world wide who share dilemmas born of disaster or uncontrolled development. The organisation is planning the third film in this trilogy. This new film will directly respond to the challenges faced by third world communities struck by disaster or facing development and environmental issues. The first films interview the same characters with a 25 year time differential, these films provide compelling evidence of what can happen and has happened to a simple environment. The solutions born of the initial 2 films will be brought together to create a third film with graphic illustrations of simple but effective suggestions for sustainable futures.

5.1.1 History of Visual arts as an educational tool:

Discussing two one hour long documentary films, the first for the BBC World about US series in 1977 and the second made in 2001 for the ABC (Australia) and financed by the Film Finance Corporation, have become the ABC's "Accord" film of the year.

These films can be easily understood by any one with their graphic before and after pictures. The wealth of instruments and techniques which have developed to address problems become an educational tool. The media and instructional compact discs produced in the past years from GUS and IDEP and other local foundations provide a tool kit for the use of needy communities Indonesia wide. The creation of this third

film as we introduce these existing and proven solutions will provide a globally unique tool for those who really need it.

Our objective is to establish true dialogue with those in dire need, to promote better understanding of the nature of the problems they may or do face. Peer group experience illustrates through the medium of film tangible and achievable outcomes developed as a result of need. Many of the issues involve future consequences of planning and infrastructure development. Our films provide information based upon experience. We will provide the tools to instigate a true bottom-up empowerment for communities in the greatest need.

Media Education:Cinema the creation of intellectual and artistic interpretation of the past, present and future.

Drama is a media of communication that is the lifeline of millions around the world.Films are the mode of social upliftment, as a film reaches men and women from all classes of society.

The level of illiteracy being high in India, films help reach out and educate in order to eradicate illiteracy itself.

Any situation, however complex it may be, when solved on a visual media, creates an impact surpassing the written word.Film makers are the fulcrum of society, who embolden paths of spiritual, religious and cultural progress.

They help cutural progress into realms of understanding which leads a country like India march ahead with renewed energy to rise above the cloud of distorted visions, ideas and superstitions.

A career in film making involves a field where work is performed on the basis of contracts between people involved in various areas of film making.

Creativity and artistic depth are the two basic traits that propel an individual to achieve succes in this field.

Film making is therefore an art that must evolve and progress in itself through effective teaching that prepares the future generations to use this medium in a creative manner to reach out and express different views that ultimately reflect in renewed ideas and visions for the betterment of society.

Hence the presence of film institutions in every corner of the world is a must, which retains and successfully progresses the art of film making into the unknown but definitely brighter and better future.

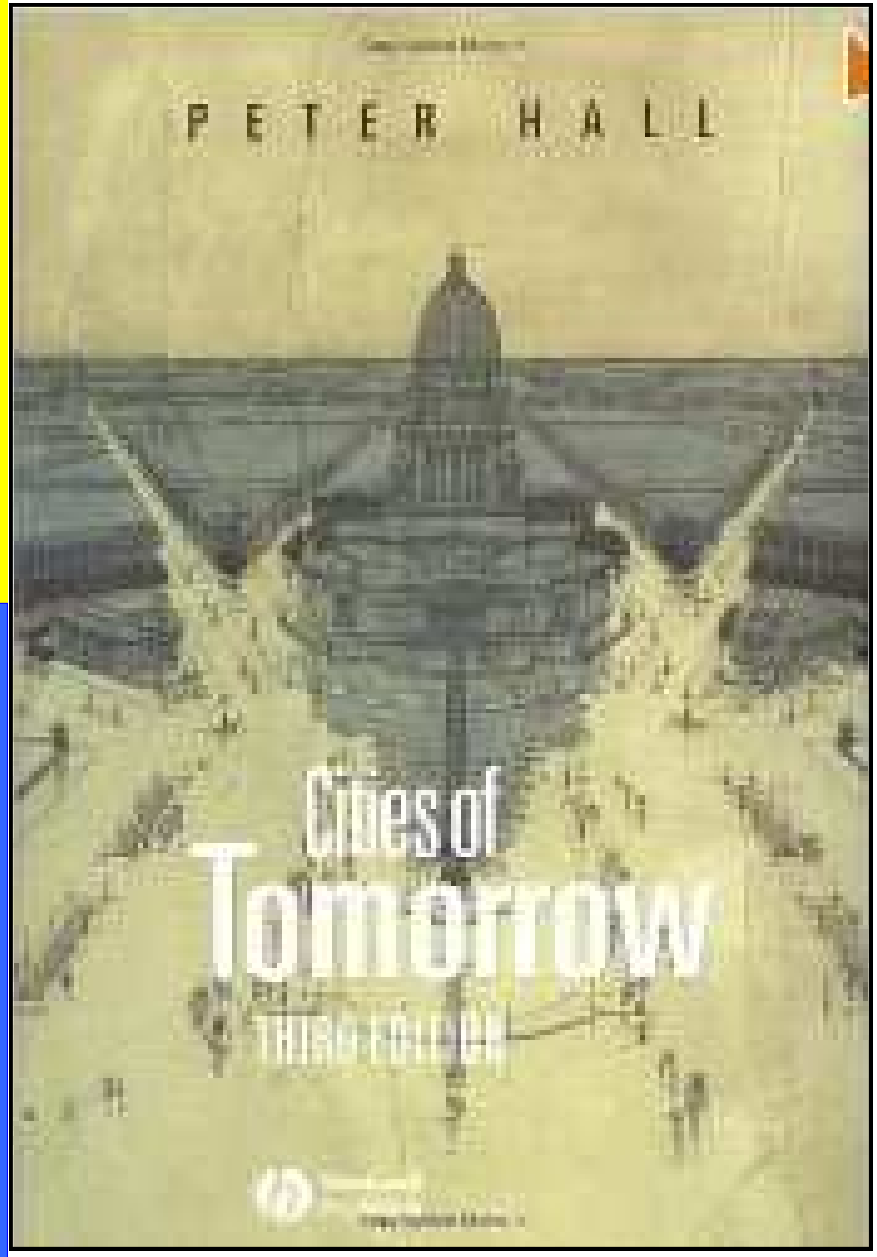
5.1.2 Urban planning, education and Research:

An educational institution is a shrine to students, uplifting and something to aspire towards.

It has a direct and beneficial influence on many generations of students and also inspires others.

An educational zone comprises not only the buildings meant for teaching, with lecture halls and classrooms, but also administration buildings, offices, student hostels, restaurants, shops, auditoriums, theatres, laboratories, libraries, research centres, playgrounds, stadiums, green spaces, parking spaces, community centres and student clubs and associations.

Monumental buildings such as existing concert halls form a part of this scenario.The ultimate test of Urban planning is its long term acceptability to its users.



There must be a certain pleasure in the form and shape of the zone in itself, with the population of students teachers and others lingering on in the space during and after their period of use.Originality and beauty is as important as the totality of design.It also includes the appropriate and efficient use of technology,scientific management and efficient use of labour to identify the requirement, research, analyse and organise.

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6. Modern education in India

India has made a huge progress in terms of increasing primary education attendance rate and expanding literacy to approximately two thirds of the population.

India's improved education system is often cited as one of the main contributors to the economic rise of India. Much of the progress in education has been credited to various private institutions. "The private education market in India is estimated to be worth $40 billion in 2008 and will increase to $68 billion by 2012."

However, India continues to face challenges. Despite growing investment in education, 40% of the population is illiterate and only 15% of the students reach high school. As of 2008, India's post-secondary high schools offer only enough seats for 7% of India's college-age population, 25% of teaching positions nationwide are vacant, and 57% of college professors lack either a master's or PhD degree. Despite growing investment in education, 40% of the population is illiterate and only 15% of the students reach high school. As of 2008, India's post-secondary high schools offer only enough seats for 7% of India's college-age population, 25% of teaching positions nationwide are vacant, and 57% of college professors lack either a master's or PhD degree.

As of 2007, there was 1522 degree-granting engineering colleges in India with an annual student intake of 582,000, plus 1,244 polytechnics with an annual intake of 265,000. However, these institutions face shortage of faculty and concerns have been raised over the quality of education.

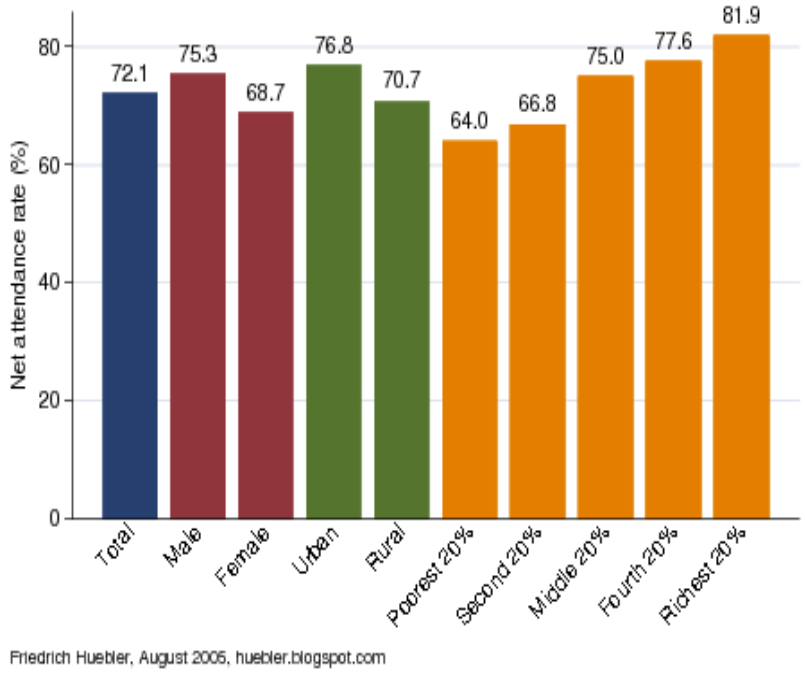

Fig.43. Top : Statistical data of the total number of students, the family status, the relation between income and education, the number of students attending school and the number of institutions required to fill the void of increasing demand for education. This helps in better urban planning in view of demand and solution provided.

Fig.44. Top Left : Education can be imparted in various forms. Shown above is the audio-visual technique that is useful for students who have not had any basic education in their childhood. Mainly catering to uneducated adults and poor children who work as laborers along with their parents. Such institutes are few and far in-between and generally do not have much of a campus life, there is not much spatial planning involved, however, they are designed to just incorporate one or two important buildings with recording studios and audio visual equipment.

Fig.45. Top Right : The written word is mightier than the sword. Modern day educational institutions incorporate this technique. As a result there are more buildings dedicated to classroom teaching rather than practical workshops. Martial arts and defence techniques that were normally taught to all children in the ancient times have taken a backseat. Such gymnasiums and karate schools are very few and do not garner much importance in the current educational scenario, even in the urban planning perspective.

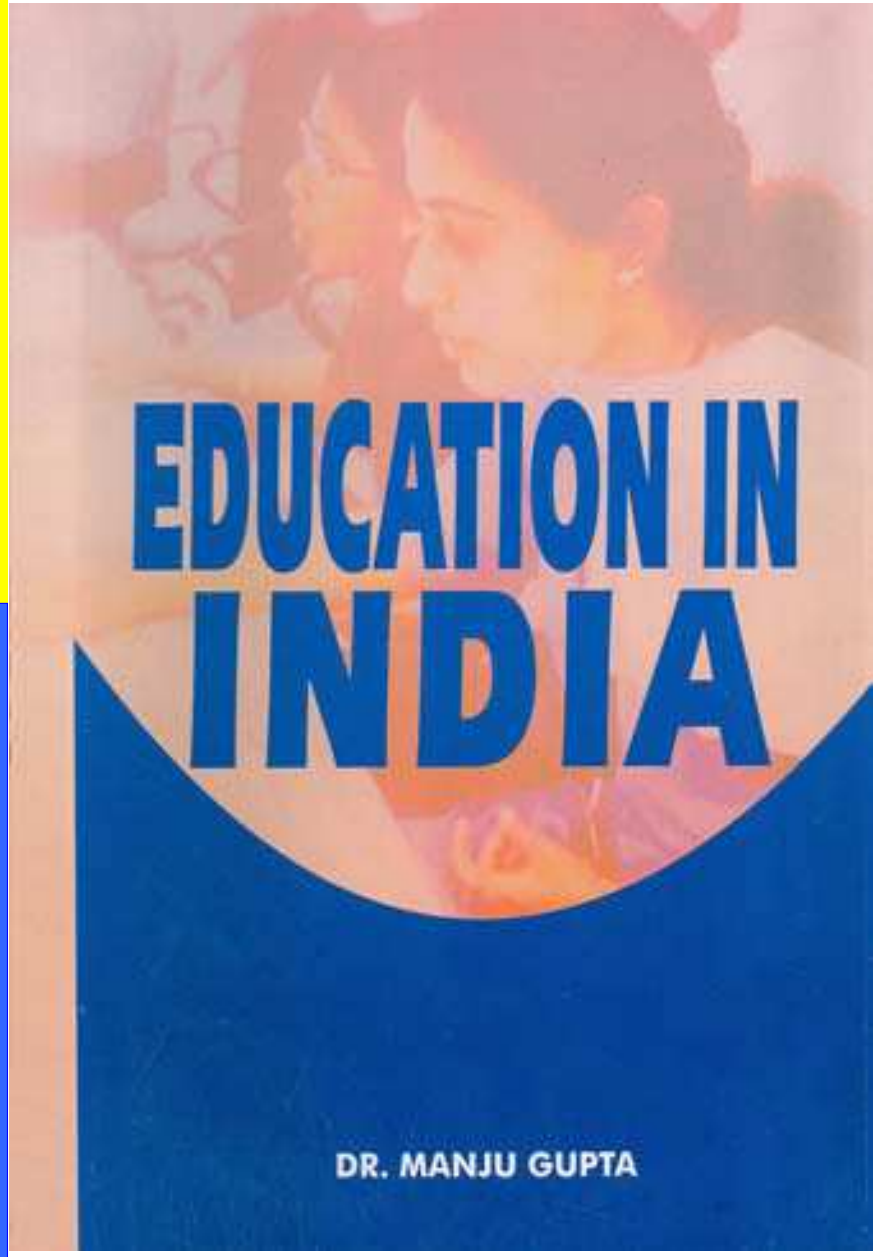

Fig.46. Top Right : Orient flight school, Hindustan group of Institutions, Pondicherry, Chennai, India. Aerospace engineering and flying schools are very advanced and internationally acclaimed . The many flying schools in India are designed in vast open space areas away from the city with separate campuses, flight training runways and grounds with hangars to park mini planes like the two - seated Cessna as shown above.

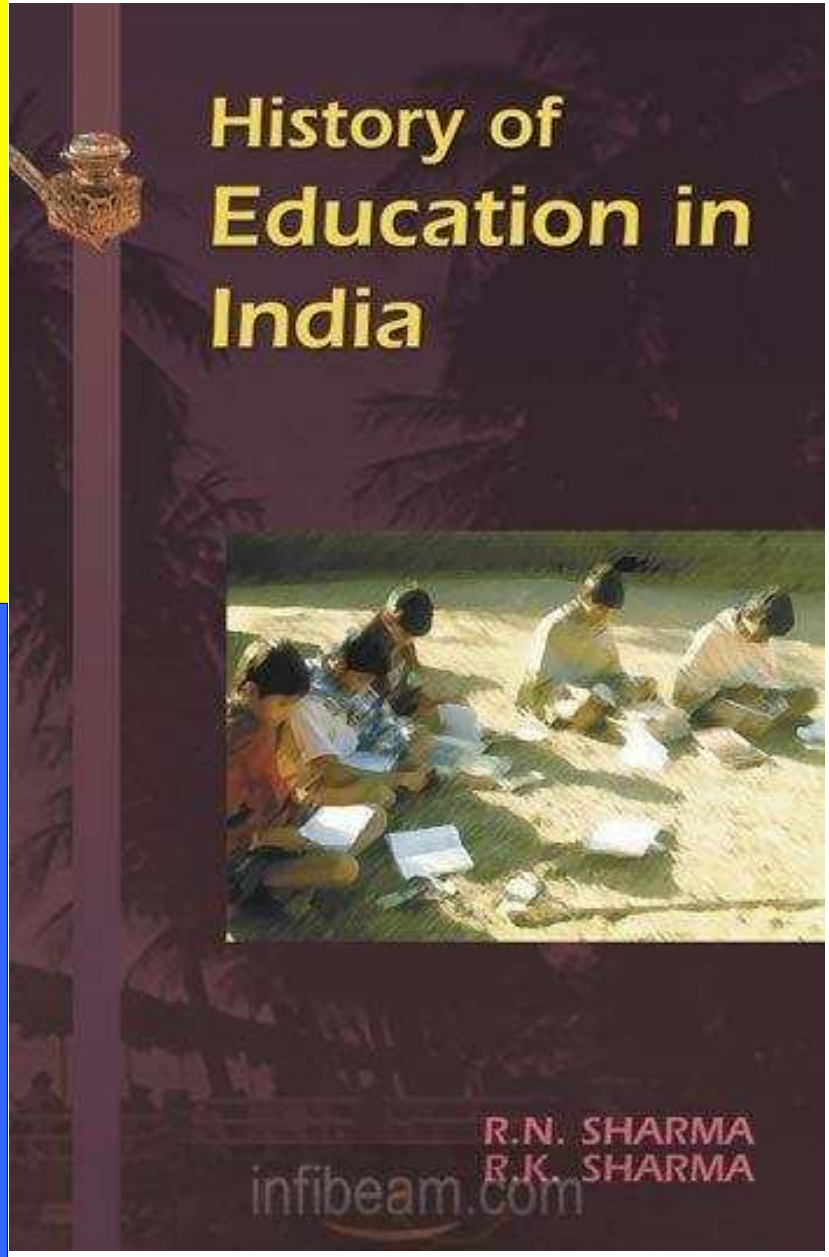

Fig.47. Top Right: The National Institute of technology, Trichy, India. Spatial planning is the most important factor in the best designed institutes of the country. The beginning of the campus is marked with a well defined arched entry with grand entrance gates, security kiosks, large entrance roads with stimulating landscaping on either sides, leading to the administration block, continuing inside to the various department buildings, laboratories, auditoriums interspersed with sports facilities and recreational centers. Natural lakes and forests complete the design.

Fig.48. Top Left : The auditorium of the Birla Institute of Technology and Sciences, Pilani, India. It is one of the best institutions for advanced technological studies, on par with the IITs and IIMs and with considerable international standing. The auditorium building is an excellent representation of the quality and standard of the built structure that a university of this standard must maintain.

Fig.49. Top Right: The science laboratories inside Indian Institute of technology, Chennai, India. The IITs are the best institutions for technical studies in India, and on equal standard with MIT from America. From an urban planning perspective, each of these institutes are designed on a staggering area with huge campuses, hundreds of buildings and their own transport facilities.

6.1 Statistical Data :

Three Indian universities were listed in the Times Higher Education list of the world's top 200 universities — Indian Institutes of Technology, Indian Institutes of Management, and Jawaharlal Nehru University in 2005 and 2006. Six Indian Institutes of Technology and the Birla Institute of Technology & Science (BITS) — Pilani were listed among the top 20 sciences and technology schools in Asia by Asia week. The Indian School of Business situated in Hyderabad was ranked number 15 in global MBA rankings by the Financial Times of London in 2009 while the All India Institute of Medical Sciences has been recognized as a global leader in medical research and treatment. By the time of the visit of the Islamic scholar Alberuni (973-1048 CE), India already had a sophisticated system of mathematics and science in place, and had made a number of inventions and discoveries.

With the arrival of the British Raj in India a class of Westernized elite was versed in the western system of education which the British had introduced. This system soon became solidified in India as a number of primary, secondary, and tertiary centres for education cropped up during the colonial era. Between 1867 and 1941 the British increased the percentage of the population in Primary and Secondary Education from around 0.6% of the population in 1867 to over 3.5% of the population in 1941. However this was much lower than the equivalent figures for Europe where in 1911 between 8 and 18% of the population were in Primary and Secondary education. Additionally literacy was also improved.

In 1901 the literacy rate in India was only about 5% though by Independence it was nearly 20%.

Fig.50. Top Left : The tower of the ISRO in Sriharikota.

India is home to the best space research scientists in the world, who are all educated in India. Indian scientists have recently succeeded in being the first in the world to establish the presence of water on moon, which even America had not been able to establish in the past 40 years of their space research. (ISRO-Indian Space Research organization).

Fig.51. Opposite left: Information technology block, Hindustan college of engineering, Chennai, India.

The modern educational institutions are themed according to the career in mind and the courses imparted in these colleges. Thus the engineering, information technology and technical course colleges incorporate a lot of glass and air-conditioned structures with very elaborate landscape design and spatial arrangement. Especially in India they span large spaces with many different building blocks appearing within the same campus, and modern facilities such as swimming pools and gymnasiums arranged within the compound walls of this multi faceted student city. Entering such a zone feels like entering a mini city in itself, and many such modern colleges are exact representations of many advanced cities from across the globe.

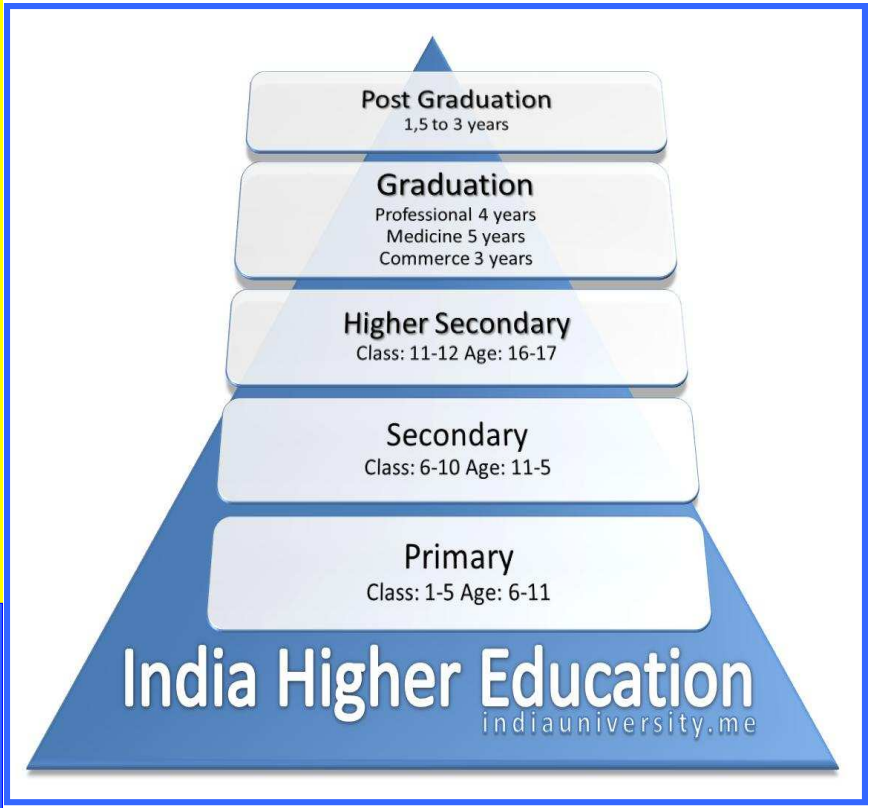

Fig.52. Top Left : The higher education pyramid as followed in India in the present day. It is clear that the pyramid advances according to the age of the student and there is a stipulated time frame for each stage of education with university education arriving at the age of 16 years– 17 years with 4 years of further education up to 22 years considered for professional engineering courses. Post graduation takes longer time with doctoral courses ranging from an additional 2 years to 4 years maximum.

Fig.53. Top Right: The academic block of a premier hotel management institute in Manipal. Hotel management and tourism are considered lucrative courses by many students, such campuses are designed exclusively keeping the future career in mind and recreate posh zones with very modern amenities, very good spatial planning and themes.

Fig.54. Top Left : Hyderabad Institute of Hotel management, Hyderabad, India. The well known cyber city hosts many major institutions for science and technology, arts, history, culture, information technology, engineering and management. One such university represented above has commendable student strength and a curriculum on par with many international universities.

Following independence in 1947, Dr.Maulana Azad, India's first education minister envisaged strong central government control over education throughout the country, with a uniform educational system. India's higher education system is the third largest in the world, after China and the United States.

The main governing body at the tertiary level is the : University Grants Commission (India) which enforces its standards advises the government, and helps coordinate between the centre and the state. Accreditation for higher learning is overseen by 12 autonomous institutions established by the University Grants Comission. As of 2009, India has 20 central universities, 215 state universities, 100 deemed universities, 5 institutions established and functioning under the State Act, and 13 institutes which are of national importance. Other institutions include 16000 colleges, including 1800 exclusive women's colleges, functioning under these universities and institutions. The emphasis in the tertiary level of education lies on science and technology. Indian educational institutions by 2004 consisted of a large number of technology institutes. Distance learning is also a feature of the Indian higher education system.

Some institutions of India, such as the Indian Institutes of Technology (IITs), have been globally acclaimed for their standard of education. The IITs enrol about 8000 students annually and the alumni have contributed to both the growth of the private sector and the public sectors of India. Private sector universities in India are currently booming and provide for a large variety of educational streams ranging from the arts to engineering and medicine, these universities are all affiliated to the government of India and maintain the quality standards required in such institutions and are recognised worldwide.

Fig.55. Top Left : The statue of Pandit. Jawaharlal Nehru, the first prime minister of India and the main founder of Jawaharlal Nehru university (JNU) , One of the premier institutions for medical excellence in the country. Medicine has been an Indian forte for thousands of years and still holds as the best educated medical personnel even today.

Fig.56. Top Right : The main entrance block of JNU, one of the premier medical colleges in India. The spatial planning incorporates huge roadways, parks, landscaping , gardens and scattered arrangement of buildings in the American “Campus” format with in-house transport facilities for students in order to take them from one building to another.

Fig.57. Top Left : It is important to remember that landscaping forms an essential part of any university settlement anywhere across the globe as it is very necessary to maintain a good ecological balance and environmentally conducive ambience to enhance interest in academics and create an atmosphere of general well-being and good health.

Fig.58 Top Right: The colour and texture of the built form is as important as the spatial planning and location of the various blocks. As we can see from above, dark red burnt bricks have been used for the outer walls to give them a solid and strong appearance. The colour induces energy and vibrancy that is extremely important for student stimulation.

7.1 Urban History around the world

The object of this survey is to provide a broad overview of urban history around the world. The survey employs a wide interpretation of `urban history' which includes both the history of, and history in, urban areas, providing brief summaries of a selection of abstracts covering a broad range of topics; with the time-span ranging from the early medieval world to the post-Second World War era. As has been the trend in recent years, the focus is on the late eighteenth to the mid-twentieth century, with particular concentrations around the turn of the nineteenth and twentieth centuries, though there is an enduring interest in the early modern period in England. Geographically, they are more restricted than in recent years, with more focus on the United States, the United Kingdom (including Ireland) and Continental Europe, and studies of ancient and colonial India.

In terms of individual localities, there are particular concentrations on London and York (England) and New York, whilst other places covered include Paris, Rome, Vienna, Bombay, Rostov and a variety of smaller towns. The subjects are more narrowly focused on new trends than previous years, with the result that a large number of studies covering themes featured heavily in recent years, such as Roman statues, British popular religion, the Reformation in Augsburg, aspects of British small town life in the nineteenth and twentieth century, civil rights in Philadelphia and the US immigrant experience, have been excluded.

A predominant theme in the studies which were chosen is the various ways in which urban form has been shaped and appropriated as part of a political project, whether the social engineering of the new towns, the spectacle of the historicized capital or the shaping of a modernist imperial vision. The English city of York features heavily, whilst the cultural history of London continues to dominate, this selection including literary, visual and theatrical approaches to the capital. Finally, one particularly interesting feature is looking at the Great War and national identity which, despite focusing on very different communities across North America and Europe, draws complementary conclusions about the integrative effects of war.

This review begins with two studies addressing big themes in American urban history and urban systems and the lure of suburbia. The belief of urban analysts in national city-size distributions and power laws such as Zipf 's ranksize rule, has produced generally static studies which ascribe no role to regional primacy in explanations of rank-size stability (or instability) at the national scale. Viewing region as a central driving force in the evolution of urban systems at the national scale, it is found that America's urban systems can usefully be described in terms of their increasing variation around a stable modal city-size class, which has not changed in over 100 years. Employing unique time-series data (an historical database of urbanized areas and places in the United States,1850-1990) for insights into urban structure and evolution at sub-national scales, it traces the trajectory of individual cities through this urban macro-structure revealing the punctuated growth of cities of differing sizes, in differing temporal periods.

In employing a two-phase analysis, it explores suburbia in twentieth-century America at large in order to elucidate traits and propensities; and at particular moments in time, in order to interrogate specificities. In particular, it looks at three periods in three cities: greater Detroit 1893-1929, considering how the suburb was conceived in reaction to the changing condition of the centre; greater Los Angeles, 1929-1978, exploring how and why the dominant culture came to imagine, perceive and experience the periphery as the Promised Land; and greater Houston since 1978, contemplating how the Common Interest Development has facilitated the city's continuing transformation towards Privatopia. Post-Second World War reconstruction, and especially the new town, provides a useful test for this thesis, drawing very different conclusions, exploring the 1960s new towns of Columbia (Maryland), Reston (Virginia), and Irvine (California), where reformers created alternatives to America's exclusive, poorly designed and culturally barren suburbs.

In a movement which attracted idealistic developers, innovative planners and progressive residents, new forms of suburban design were pioneered, including well-designed neighbourhoods, urbanite centres and environmental corridors. A new suburban civic culture, addressing both local needs and regional issues, was created, whilst developers, with the help of residents, established cultural institutions, preserved the natural environment and tried to bring an end to suburban social exclusivity by developing affordable housing and making their communities open to minorities. Through these efforts the new town reformers succeeded in creating an attractive alternative to conventional suburbia which, it is argued, remains poorly designed for its new urban role.

A more sanguine study provides a comparative analysis of two `mark one' Hertfordshire new towns. In outlining the dichotomy between the politicians' and planners' idealistic intentions and the practical difficulties of putting their plans into practice, it identifies three constraints - Finance, administrative difficulties and the views of the new town migrants, suggesting that despite constant struggle between these conflicting forces the programme was successful in providing a first new home for many. Drawing on the original new town master plans, government, Development Corporation and local authority papers, contemporary planning and sociological literature, as well as personal memoirs and local residents' federations' newspapers and newsletters, it suggests that the new towns became thriving communities with ample opportunities for social interaction though often despite, rather than because of, politicians, planners and administrators. Similar problems of contrasting expectations are found which looks at how provincial Russians put their city and their lives back together after the devastating experience of the Second World War. Methodologically multidisciplinary, it focuses on the working class at the local level, making particular use of “Svodki”, informant reports on overheard comments, together with questions posed to party representatives at open meetings, to examine the role of ideology and assert the importance of class conflict in the late Stalin period. Covering family relations and material conditions, the `myth of reconstruction', traitors and collaborators, `speculation', a series of election campaigns in 1946-47, and the functioning of the local party apparatus, it compares public and private party sources with those of workers.

7.1.1 Rebuilding imperial Rome: in late eighteenth- and early nineteenth-century Paris' considers the influence of imperial Rome on the monumental architecture of Napoleonic Paris. Often condemned as decadent or mere propaganda for the new regime by the Hellenocentric tradition of Art History, a unique architectural relationship developed between Paris and Rome in the second half of the eighteenth century based on the students at the Academia de France at Rome, revolution produced opportunities for `Roman' monuments and festival structures as Revolutionaries embraced the iconography of the Roman Republic, but it was only with Napoleon's coronation as Emperor that Paris was established as the `New Rome'. Inspired by the emperors of ancient Rome, initially the peaceable Republican Augustus and, after 1810, the great military leader, Trajan, Napoleon created a Parisian `forum' featuring the display of spoils in the `new Capitol', the Arc de Triomphe du Carrousel, and the Colonne a la Grande Armee. An analogous historicist approach to urban form is revealed in an examination of the ideological importance of Fascist use of Italy's medieval and Renaissance past. Through the centralized control of media and culture the regime bombarded the public with a carefully constructed vision of the past as a way to reinforce the rhetoric of `native' Italic traditions, and unite different regions under the identity of a shared communal heritage. It concentrates on Giuseppe Castellucci's period reconstruction of the Piazza Grande of Arezzo which provided the perfect scenographic backdrop for the reintroduction of medieval/Renaissance-style urban spectacle. In a postscript to Fascism, it discusses the Venetian town of Marostica and its invented medieval festival (the Partita a Scacchi, or, living chess game) which continues to celebrate the medieval/Renaissance past as a part of contemporary civic identity, demonstrating how the political rhetoric of the Fascist vision of the past was transformed into a lucrative commercial enterprise. One example of the Fascist use of urban space explores the urban modernization of turn of the century Rome and the transformation of the mass spectacle. Illustrating how, between 1919 and 1929 Fascist styled political spectacle shifted from the familiar and traditional urban landscapes to the austere modern residential neighbourhoods of the periphery, it suggests the oceanic rallies of the 1930s were neither monolithic displays nor pure expressions of fervent religious secularism but the hesitant and unpremeditated work of astute party propagandists.

It considers the role of Italy's politically heterogeneous war veterans in blocking Fascist attempts to incorporate the Tomb to the `Unknown Soldier' in a way that would have compromised the national monument's unifying symbolism. This defeat, it suggests, forced the Fascist party to find alternative sites to stage their political rituals, leading to a new style of spectacle fragmented into theme episodes and spread into the de-centred landscapes on the margins of the capital. The impact of colonialism on the urban is the subject of three rather spatially and temporally diverse works, outlined by how the specific nature of colonial modernism, its impact on the city's spatial forms and social relations represented a highly selective, power-driven, and essentially technological manipulation of modernity, which ensured distorted and differential outcomes within urban society. These conditions were aggravated by the First World War, which worsened conditions of urban life and intensified colonial repression as well as bringing the revolution in communications which carried a modern discourse of civic rights. Sections of the city's bilingual urban intelligentsia vernaculars this discourse and diffused it into new social contexts, actions perceived by the local colonial state as threatening.

On the other hand, the urban visions inherent in Japanese colonial modernity in Manchuria represented important aspects of the self-consciously modernizing Japanese state. In erecting new and sweeping conceptions of the built environment, the Japanese used the north-eastern Chinese city as a practical laboratory to create two distinct and idealized urban milieu: key railway town of informal empire (1905-32); and grandiose new Asian capital (1932-45). Yet while the facades and political regimes contrasted markedly, the shifting styles of planning and architecture consistently attempted to represent Japanese rule as progressive, beneficent and modern. More than an attempt to legitimize empire through paternalistic care or appeal to subject populations, Changchun's two built environments were designed to appeal to Japanese sensibilities in order to effect change in Japan itself. Concerned, to some extent, with colonial modernity a millennium earlier, previously unpublished material from the 1990-95 excavations at Birka in Sweden examines the nature of early medieval trading and manufacturing settlements in Scandinavia, and in the Scandinavian-influenced area of England. It provides an analysis of the development of this Viking Age settlement contextualized through an assessment of the nature of various contemporary non-rural settlements in Scandinavia, whilst comparison is drawn with the central places of the north-eastern Anglo-Saxon kingdoms, especially York. The physical and socio-economic transformation of these English settlements in the late ninth and tenth centuries is compared with similar developments in the contemporary and earlier Scandinavian settlements. By examining the similarities and differences between the early medieval settlements of Scandinavia and the Danelaw, it considers the nature of the Scandinavian impact upon urban settlements in England, and what this reveals about urban development within the Scandinavian world.

There is something of a Towering of studies centred on medieval York. With a chronological span concerned to challenge the existing divisions of `medieval' and `post-medieval' archaeology aims to develop a research agenda for the wider study of guildhalls and other forms of medieval public buildings. Though primarily an archaeological study, it does draw on theories from sociology, history and social geography, and on documentary sources, as well as material culture, to propose that York's guildhalls were actively used to frame particular forms of individual and communal identity within the normative discourses of medieval and early modern urban society. Guildhall architecture is therefore interpreted as a mechanism through which the social, religious and political ideologies and hierarchies, as well the values of civic society, were structured and reproduced over time.

Focusing on a different manifestation of civic power, the civic register functioned as a distinct genre in the medieval city, and that treatment of it in its own right as an element of urban culture provides significant evidence of both literate practice and a sense of citizenship in this period. Focusing on the circumstances surrounding the production of civic registers, it analyses four London manuscripts categorized as custumal, comparing them with other administrative and privately held manuscripts from the capital, and reconstructs the likely medieval state of both one of York's medieval registers, and the collection of registers in its archive as a whole. In examining the evidence for the symbolic function of these registers, including a description of their decoration, it considers the influence of individual compilers on their registers, incorporating a discussion of the role of the common clerk and their perceptions of the purpose of the registers.

The emphasis is mainly on reciprocity based on the exchange of money and charters. It suggests that as towns were composed of urban political elites engaged in various forms of service to the crown the reciprocal ties between Bristol, York and the monarch were based on shared interests in governance. Utilizing a pro-sopographical analysis of these governing elites, it examines the fiscal, military and economic contributions of the towns to royal government, including the lending of money and ships. In exploring the nature of urban expectations from the crown it addresses the issue of urban liberties, providing a new interpretation of the significance, and timing, of the charters of 1373, 1393 and 1396 which granted the towns' magistracy and county status.

7.1.2 The economic exploitation of royal obligations: The first of three urban economic histories. In `Maritime communities in pre-plague England: the nature of community in medieval Britain's only formal urban confederacy, the Cinque Ports. Focusing on Winchelsea, a leading member of the confederacy, it discusses the privileges and obligations of its members, known as the `barons' of the Cinque Ports, emphasizing the inclusiveness of the baronial community, and the development of its common institutions. It suggests that many port town residents were well positioned to benefit from the obligation to naval service, a common interest in shipping and the fisheries and even piracy rather than their duty to provide naval service, being at the root of the barons' co-operative efforts and communal agenda.

Also concerned with trading communities, but in very different social and political circumstances, shows how Antwerp's role as the premier sixteenth-century market in Europe made the city home to large numbers of foreign merchants, with the Germans who dominated the intra-continental trade forming the largest group. It analyses the business practices of these German merchants, the flow of their goods, and their participation in financial transactions as well as assessing the extent of their assimilation into Antwerp's society, and the social and cultural activities of their community.

It suggests that overland trade was of prime importance in the sixteenth-century economy and that the products of the southern Netherlands were being shipped to Germany in much greater numbers than was previously suspected, mostly by small-scale merchants, not the few great merchant firms. Business networks concentrating on two elements-the way in which the County Court system developed and was reoriented by firms to meet their needs, and the formation of a trade protection society to improve the flow of information, collect debt and enhance members' interests ,it examines how small firms developed responses and strategies to overcome their commercial anxieties. Considering the procedures, costs and scale of the County Court System and business exposure to the courts, it reveals a consciousness about how the civil law could be used to prioritize debt and credit. Similarly the trade protection society's position as a credit nexus, facilitating the flow of information between firms and its activities as an exemplar of market practice is investigated. The next group provide case studies of the effect of one particular industry-tourism, on the fate of towns, argues that between those years, city leaders increasingly embraced tourism as a strategy for combating economic decline. The outright opposition to the Sesquicentennial fair by many of Philadelphia's leaders and citizens shows, it suggests, that tourism was not viewed as a necessary ingredient in the city's economic mix.

Whilst tourism came late to Philadelphia, it was always at the heart of Las Vegas, the development of the casino resort in southern Nevada through the exploration of three factors: gender (the regendering of gambling and the importance of prostitution and sex); geography (the non-urban nature of casino resort, the Western identity of Las Vegas, the Strip's relationship to Los Angeles, and Las Vegas as a national entertainment suburb); and government (job creation, regional development and revenue enhancement). As other development options failed in the 1950s, casino gaming became critical for the state's economic health, making the state a very interested player, and aiding the regulation and normalization of the industry. As a result, by the 1970s, the casino resort was no longer a semi-legitimate institution, but was hailed as an urban saviour.

In contrast to the sleazy world of the gambling resort, the way one exclusive Kent watering place, attracting, in its early years, aristocrats, the fashionable and the artistic, was able to maintain a high `social tone' for over seventy years. Created from a virgin site with metropolitan capital, Westgate remained independent and exclusive, bolstered by the presence of a uniquely large number of private schools, which became its lifeblood. It draws comparison not just with similar sized resorts such as Grange-over-Sands, Seaton and Frinton, but also suburbs such as Edgbaston and Hampstead, for Westgate was, to all intents and purposes, a London satellite, and by examining it in this context, contributes something towards the story of the small `exclusive' development so important in the lifestyle of the Victorians and Edwardians.

Education and holidays also feature largely in this selection of theses on children and cities. The way a shared belief that camping and rural spaces offered a healthy antidote to city living, led children from almost every background to experience this rite of passage. In camping-conscious New York City, perhaps one out of seven children attended camp at some point, with New York State surpassing all others in the number of camps it had.

Using institutional records, camp brochures and newspapers, films and photographs, letters home, and oral histories, it considers the varied urban networks, both commercial and communal, through which inter-war children came to camp; the demarcation of camp community through ritual and routine; how `pioneer life' served the conjoined impulses of tradition and progress; the centrality of racialized, nostalgic primitivism; and traces the effects of popular culture, particularly film, in camp life. Camps, it argues, were hybrid cultural spaces mobilizing nostalgic visions of nature and primitive life alongside modern ideologies of childhood and contemporary popular culture. The more conventional area of education is the subject uncovers how the concept of childhood evolved and the education of infants emerged. The development of the kindergarten system in Manchester and the efforts of the Manchester citizens, especially W.H. Herford, to disseminate kindergarten methods in public infant schools is placed in the context of the transformation from traditional instruction to the new child-centred ideology of the twentieth century. The association of the education of young children with welfare and social reform is explored through an examination of the nursery schools and free kindergartens, whilst the training of infant teachers in Manchester is uncovered, especially the progress of the Kindergarten College, established in 1872, and its relationship with the London Froebel Society.

Factors such as resistance to evacuation, reactions in reception areas, the problems of homeward drift and educational provision; and the implications of the change for the city of Sheffield from an evacuation zone to a reception area for victims of rocket attacks in 1944. It suggests evacuation was an event of major social importance: massive upheaval exposed conflicting cultures of urban and rural life and the gaping chasm between classes, but it also shows that the British public did not flee in unruly disorder; on the contrary, countless thousands resisted evacuation none more so than the people of Sheffield. Cultural history in its various forms, especially with a metropolitan focus, remains popular as the next three paragraphs show. Employing several methodologies, it investigates the external appearance of house and street, including a reconstruction of the west side of the Minories and describes the internal appearance of buildings. It explores the use of possessive language in house naming, arguing that direct and indirect associations help to expose the nuanced expressions of household social relations. In addressing the distribution of access to, and control over, public and private spaces within houses it suggests that the meanings attributed to domestic spaces fluctuated along a continuum of public to private and that any static representation of domestic space as an exclusively `private' context overlooks this dynamic. The purpose is to show that the progression from the Elizabethan amphitheatre to the more familiar form of auditorium and stage reflected a gradual assimilation of diverse social, literary and architectural influences. Study of the Blackfriars, Phoenix and Salisbury Court playhouses during the early seventeenth century indicates that they continued to share much with their Elizabethan forebears. However, the exposure of London gentry to Italian spectaculars at the Parisian Court during the Civil War and Commonwealth, helped shape fashions and expectations during the Restoration.

7.2 The fusion of literary and cultural history:

It is the methodological basis for the next selection. Criminal narratives shaped cultural attitudes to crime and facilitated the emergence of new kinds of criminals. Focusing on the Mohacs and the pirates, it examines texts by Thomas Shadwell, John Gay and Daniel Defoe which synthesized popular attitudes towards these gangs, suggesting that these narratives often served to temper anxieties about crime by making criminals appear to exploit the stories told about them. In a narrower concentration on individual texts, it analyses the rhetorical structures that represented real-life crimes. It argues that Defoe's biography of Jonathan Wild facilitated his cultural transformation from an historic criminal to a highly-fictionalized villain, whilst Fielding's account of Elizabeth Canning utilized melodramatic tactics to write Canning out of her popular role as a criminal, challenging London-centred literary histories which promote ideas that are specifically metropolitan, offers an account of provincial women's roles in forging eighteenth-century print culture. Contending that the English Urban Renaissance transformed women's roles in the print marketplace by affording them new access to local markets, patrons and readers, it uses a historicist feminist approach to connect geography to gender and print culture. Focusing on Bath and authors such as Sarah Scott, Jane Austen and Lady Anna Miller, it suggests the utopian civic models promulgated in the town facilitated female public speech and cultural power. It further focuses on Bath's waters as metonymic in their ability to fertilize both the female body and the female imagination, claiming texts as diverse as Millennium Hall and Humphrey Clinker in their representation of female power.

Foucault's conception of the heterotopias argue that the metropolis represented a creative challenge and opportunity for considerable profit. Analysis of Ford's The Soul of London (1905), notes the author's fidelity to impressions in conveying metropolitan life whilst Symons' London: A Book of Aspects (1909) and the photographer Alvin Langdon Coburn's photographic folio, London (1909) are discussed in the wider context of impressionism. Concentrating on the London writings of Davidson, especially his travel book, A Random Itinerary (1893) and Fleet Street and Other Poems (1909), it emphasizes his attempt to create a hybrid poetic language suited to the representation of the modern city whilst James' unfinished `London Town' (1903-09) is examined in the context of his London essays of the 1880s, linking visual, literary and material visions of London as the modern city, with mid-nineteenth-century elite concerns about economic change and lamentations about the nation's industrial arts. It explores their proposals for government-sponsored reforms, including schools of design, industrial copyright legislation, exhibitions and museums designed to strengthen the market, produce a British industrial aesthetic, educate consumers, and alter the shape of the metropolis and its art collections. It traces the pedagogical transformation from the School of Design (1837) which trained artisans to the formation of the South Kensington Museum (1857) which aspired to become the cultural centre of the nation arguing this represented a shift to educating consumers through practices of spectacle and display, as exemplified by the Great Exhibition of 1851.The nature of the producing and consuming publics that these civic projects addressed is investigated via a study of newspapers, catalogues and domestic literature which added meanings to commodities meant for purchase and display.

Filling a gap in art history, the work of artists including Gustave Dorea, William Powell Frith, William Holman Hunt, Wyndham Lewis, Thomas Rowlandson, Walter Sickert and James Whistler, to address how British artists investigated this new aspect of the city. Nineteenth-century Great Britain was both the first nation to establish a commonplace outdoor urban night life, and to be defined by the modern phenomenon of the mega-city, giving British artists the initial opportunity to live in and think about the city at night. In their hands, the city at night gained multiple layers of meaning: a source of great national pride and a symbol of unspeakable shame; a time of allusive beauty and dreamy leisure; a venue that afforded great theatre, yet fraught with danger. In fact the city at night became a complex and integral part of an expanding urban society. Moving from Britain to the United States and the generic to the specific, the strategies artists developed to convey the meaning and appearance of urban life in New York, charting the dramatic changes in the imagery of the city from Joseph Stella's panoramic vistas to Georgia O'Keeffe's geometric easel painting. Thus, whilst Stella's urban art retained a romantic vision consistent with nineteenth-century landscape traditions, Charles Sheeler and Paul Strand's film Manhattan eschewed romanticism to forge an essential and geometric image of New York City and created the formal vocabulary for a new urban realism. In similar vein, O'Keeffe's cityscapes and the work of Stefan Hirsch and George Ault prioritized objectivity, but inflected its order with expressive and metaphoric visual languages, whilst Bourke-White's photographs of Manhattan skyscrapers focused so narrowly on the forms of modern building that they jettisoned the context of the city itself. These changes are placed in an intellectual context of urban imagery especially the changing notion of New York as the Cubist City and the aesthetic thought of John Dewey as a philosophical counterpart to the period.

7.2.1 Summing Up:

Finally, in the first of three works unpacking the link between war and national identity, chiefly concerned with the relationship between war, civil society and the understanding of who properly is part of the nation. Focusing on three small towns- Park City (Utah), Rossland (Canada) and Boyle (Ireland), it emphasizes how the state's mobilization for war produced a kind of nationalist awakening which generated the seemingly opposite tendencies of greater civic participation and heightened civic intolerance depending on how closely the nation and state were fused together.

Thus, in Park City or Rossland, where a synthesis had largely been achieved between nation and state, significant segments within civil society rallied to the state's call to arms, whilst in Boyle, Ireland, where nation and state were disjoined, national movements limited and constrained the state's war policy. The war cultivated a sense of inclusion and entitlement in American public life that did not exist before 1917. Focusing on the Italian colonies of New Haven (Connecticut) and the immigrant Jewish population of New York City it shows how, by doing their bit in recruitment, relief and conservation campaigns, or as soldiers on the Western Front, the `newest immigrant races' shared a national experience with their native-born peers which ensured they would never be as culturally isolated as they were before 1917.

Although the immediate post-war years saw renewed hostility and xenophobia, by the end of the 1920s Italians and Jews had become key components in an urban liberal coalition that would push the United States in a more cosmopolitan, internationalist and social democratic direction.

On the other hand, reflecting the Irish rather than the North America example, the social disintegration of a multinational state from the perspective of everyday life in its capital city. Drawing on citizens' letters to a wide variety of state agencies including threatening letters and letters of advice sent to officials, letters of denunciation, devotional and financial petitions sent to the imperial family, and censors' records of correspondence between home front and front, it identifies the supply and distribution of food as the key political crisis of the Viennese home front; examines the `information war' by looking at propaganda, censorship, the spread of rumours and the practice of denunciation; explores the central role of the family in mobilizing civilians for total war, analysing, in particular the pivotal roles that women, children and men played in waging total war. Overall, it uncovers a process of decline characterized by hunger, violence and a deterioration of social norms that meant the city fell before the state collapsed in 1918.

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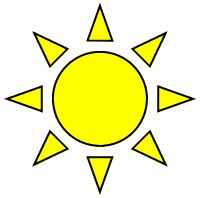
PART ONE



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by Jane Jacobs (1961) A classic since its publication in 1961, this book is the defintive statement on American cities: what makes them safe, how they function, and why all too many official attempts at saving them have failed. The New York Times writes: "Perhaps the most influential single work in the history of town planning."

The City in History: Its Origins, Its Transformations, and Its Prospects

by Lewis Mumford (1972) A history of the forms and functions of the city throughout the ages, and a prophecy for the future of cities and urban life. The City in History was awarded the National Book Award in 1962.

The Practice of Local Government Planning (Municipal Management Series)by Charles Hoch (2000) First published in 1916 by the National Municipal League, this reference text is now called simply "The Green Book", and has become the benchmark for planning in the United States.

Civilizing American Cities: Writings on City Landscapes
by Frederick Law Olmsted (1997) Civilizing American Cities collects Olmsted's plans for New York, San Francisco, Buffalo, Montreal, Chicago, and Boston; his suburban plans for Berkeley, California and Riverside, Illinois; and a generous helping of his writings on urban landscape in general. These selections, expertly edited and introduced, are not only enjoyable but essential reading for anyone interested in the history--and the future--of America's cities.

The Image of the City
by Kevin Lynch (1960) What does the city's form actually mean to the people who live there? What can the city planner do to make the city's image more vivid and memorable to the city dweller? To answer these questions, Mr. Lynch, supported by studies of Los Angeles, Boston, and Jersey City, formulates a new criterion -- imageability -- and shows its potential value as a guide for the building and rebuilding of cities.

The American City: What Works and What Doesn't
by Alexander Garvin (1995) This definitive sourcebook on urban planning points out what has and hasn't worked in the ongoing attempt to solve the continuing problems of American cities. Hundreds of examples and case studies clearly illustrate successes and failures in urban planning and regeneration, including examples of the often misunderstood and maligned "Comprehensive Plan."

Good City Form
by Kevin Lynch (1995) Lynch looks at connections between human values and the physical forms of cities, sets requirements for a normative theory of city form, reviews earlier physical images of what utopian communities might be, sees what is to be learned from hellish images, and helps us place city forms into one or another of three theoretic constructs; cosmic or ceremonial centers, the machine city, and the city as an organism.

The Next American Metropolis: Ecology, Community, and the American Dreamby Peter Calthorpe (1993) One of the strongest supporters of New Urbanism, architect and urban designer Peter Calthrope makes the case for compact, mixed-use development over the urban sprawl that has dominated much of the development in the past decades. Twenty-four regional plans are presented in the book, focusing on reducing dependance on the automobile and increasing the proximity between home, work, shopping and recreation.

Cities of Tomorrow: An Intellectual History of Urban Planning and Design in the Twentieth Century
by Peter Geoffrey Hall (1996 Updated Edition) *Cities of Tomorrow* is an overview of the ideas, events, and personalities that have shaped world urbanization since 1900. The book is organized into ten chapters that treat late 19th-century slums; mass-transit suburbs; the garden city movement; the genesis of regional planning; the 'city beautiful' crusade; the skyscraper city; the city of 'sweat equity'; automobile suburbs; the city of theory; and contemporary urban redevelopment.

A Pattern Language: Towns, Buildings, Construction
by Christopher Alexander, Sara Ishikawa, and Murray Silverstein (1976) "Here's how to design or redesign any space you're living or working in -- from metropolis to room. Consider what you want to happen in the space, and then

page through this book. Its radically conservative observations will spark, enhance, organize your best ideas, and a wondrous home, workplace, town will result" --*San Francisco Chronicle*. This handbook is designed for the layperson and aims to present a language which people can use to express themselves in their own communities or homes.

The Power Broker: Robert Moses and the Fall of New York
by Robert A. Caro (1975) The tragic story of Robert Moses, whose use and abuse of power shaped the politics, the physical structure and even the problems of urban decline in New York.

Edge City: Life on the New Frontier
by Joel Garreau (1992) First there was downtown. Then there were suburbs. Then there were malls. Then Americans launched the most sweeping change in 100 years in how they live, work, and play--*The Edge City*.

The Geography of Nowhere: The Rise and Decline of America's Man-Made Landscapeby James Howard Kunstler (1995) *The Geography of Nowhere* traces America's evolution from a nation of Main Streets and coherent communities to a land where every place is like no place in particular, where the cities are dead zones and the countryside is a wasteland of cartoon architecture and parking lots.

The Urban Villagers
by Herbert J. Gans (1975) A report of a participant-observation study of an inner-city Boston neighborhood called the West End and, in particular, of the native-born Americans of Italian parentage who lived there with other ethnic groups.

The Essential William Whyteby William Hollingsworth Whyte (2000) The result of William Whyte's research is an extremely human, often amusing look at what goes on in our cities' streets. The original title, *City: Rediscovering the Center*, is out of print. This edition is a collection of much of the original work.

Design With Nature
by Ian L. McHarg (1995) The first book to describe an ecologically sound approach to the planning and design of communities, Design with Nature has done much over the past 25 years to shape public environmental policy. This paperback edition makes this classic accessible to a wider audience than ever before. Lavishly illustrated with more than 300 color photos and line drawings.

Nature's Metropolis : Chicago and the Great West
by William Cronon (1992) In this groundbreaking work, a Yale University professor of history gives an environmental perspective on the history of 19th-century America. "No one has written about Chicago with more power, clarity, and intelligence than Cronon. Indeed, no one has ever written a better book about a city." --*Boston Globe*

Silent Spring by Rachel Carson (1962) Rarely does a single book alter the course of history, but Rachel Carson's Silent Spring did exactly that. The outcry that followed its publication in 1962 forced the government to ban DDT and spurred revolutionary changes in the laws affecting our air, land, and water. Carson's book was instrumental in launching the environmental planning movement. Introduction by Al Gore, Jr.

Planning in the USA: Policies, Issues, and Processes
by Barry Cullingworth, and J. Barry Cullingworth (1997) This comprehensive introduction to the policies, theory and practice of planning outlines land use, urban planning and environmental protection policies and explains the nature of the planning process.

Great Streets

by Allan B. Jacobs (1995) Which are the world's best streets, and what are the physical, designable characteristics that make them great? To answer these questions, Allan Jacobs has surveyed street users and design professionals and has studied a wide array of street types and urban spaces around the world. With more than 200 illustrations, all prepared by the author, along with analysis and statistics, Great Streets offers a wealth of information on street dimensions, plans, sections, and patterns of use, all systematically compared.

14 Powers Behind the Throne: Women in Early Mughal Politics

Part Three: Emerging Voices

15 for Our Native Sisters: The Wesleyan Ladies' Auxiliary in India

16 Flora Annie Steel: A Voice for Indian Women?

17: Exploring Tradition and Change Among Women in Marathi Culture

18 the Construction of Gender in History and Religion: The Sikh Case

19 Postcolonial Identity as Feminist Fantasy: A Study of Tamil Women's Short Fiction on Dowry

20: Eroticism and the Woman Writer in Bengali Culture

21 Women in Radical Movements in Bengal in the 1940s: The Story of the Mahilā Ātmarakṣā Samiti (women's Self-Defense League)

22 the Feminist Movement in West Bengal: From the 1980s to the 1990s

Classifying the Universe: The Ancient Indian Varna System and the Origins of Caste
by Brian K. Smith.

This is a comprehensive examination of the `varna' system - a classificatory scheme laid out in the classical Hindu Vedic literature and thought to underlie the concept of caste, which continues to exert a powerful and pervasive influence over Indian life.

The Lost Land of Lemuria: Fabulous Geographies, Catastrophic Histories by Sumathi Ramaswamy. "This path-breaking book makes novel and riveting connections between scientists and occultists in the West and Tamil nationalists in India. Ramaswamy's history of the fabulous and lost continent of Lemuria is a brilliant demonstration of how imagination travels."--Dipesh Chakrabarty, author of "Provincializing Europe: Postcolonial Thought and Historical Difference . "Sumathi Ramaswamy's important book is sure to ignite fresh interest in the place of lost lands in the modern imaginary. Her fascinating account of the least known of these--Lemuria--breathes new life into the centrality of 'labors of loss' in nationalist historiography. In refusing to dismiss such narratives as eccentric and inconsequential, Ramaswamy compels scholars to look anew at the fabulous and occult in order to understand the shaping of scientific and colonial modernity. Impeccably researched and elegantly written, this is altogether a marvelous read."--Gauri Viswanathan, Columbia University, author of "Outside the Fold: Conversion, Modernity, and Belief

Chapter 1: Placing Loss

Chapter 2: Science in the Service of Loss

Chapter 3: Occult Losses

Chapter 4: Living Loss at Land's End

Chapter 5: Geographies of Loss

Chapter 6: Mapping Loss

Chapter 7: Laboring Against Loss

Hunter-Gatherer Adaptations in Madurai Region, Tamil Nadu, India: From c. 10,000 B.P. to c. A.D. 500, in Asian Perspectives: the Journal of Archaeology for Asia and the Pacific
by V. Selvakumar.

Southern Bactria and Northern India before Islam: A Review of Archaeological Reports, in The Journal of the American Oriental Society by Gerard Fussman.

Indian Education: Development since Independence by Marmar Mukhopadhyay and Madhu Parhar. eds. 1999: New Delhi, NIEPA and Vikas Publishing House Pvt. Ltd.

To commemorate the fiftieth year in the life of India as a free nation, the Institute of Education, Rural Studies and Development, Udang, Howrah, West Bengal, undertook a project of bringing out the volume under review in order to make, in the words of the editors, a professional assessment of what we have achieved, what we have missed and what opportunities await us in the future in the field of education. Twenty-six experts of education including the two editors have contributed to this symposia volume.

Primary Education in India: Development in Practice Series, Washington D.C.: The World Bank, 1997

This book is published under the World Bank series `Development in Practice' and, as per the blurb, the books in the series report on the progress and on the most promising policies and practices in the World Bank's efforts to reduce poverty in the developing world. It comes at a time when primary education has received a lot of state attention since the declaration of Education for All at the 1990 World Conference at Jomtien, Thailand. It provides a contemporary perspective on a subject of nationwide importance.

Education of Indian Scheduled Tribes: A Study of Community Schools by Dr. K. Sujatha, NIEPA, New Delhi, 1999

Review of book by JACQUES, DELORS: Learning the Treasure Within, UNESCO, 1996

Education for All in India: Enrolment Projections by Arun C. Mehta, Vikas for NIEPA, New Delhi, 1998

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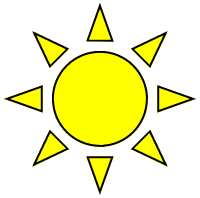
PART ONE



ACKNOWLEDGEMENTS

In my concluding paragraph, I desire to record my extreme gratitude and sincere thanks to all those who guided me to compile my work on this thesis report 2010 concerning "Education in the space-related to the Indian context" that elaborates on the urban planning phenomenon that is fast becoming the order of the millennium, the design of educational institutions.

My special thanks is extended to the rector of this prestigious institution, Dr. Giulio Baillio, the Dean of the architecture department, Dr. Piercarlo Palermo, my thesis guide Professor. Bertrando Bonfantini, and all the teachers and professors who taught me throughout the past two years in this intensive masters degree course in Urban planning and Policy design, for their excellent guidance and inspiration which created an extraordinary enthusiasm in me to present the thesis in this format for the final year examinations for this degree course.

I express profound gratitude to the University of Politecnico di Milano, Milan, Italia, for enabling me to complete my masters degree in urban planning and policy design with valor.

My respect goes out to all the brothers and sisters of Italia who have stood by me and helped me in every way to progress further in my quest for good educational endeavors. I am finally, ever grateful to one and all who have taken the immense time and patience to read through and appreciate the thesis I have compiled for enhancing the knowledge about this particular sphere of urban planning and design. Last but not the least, my acknowledgements will remain incomplete if I do not thank my parents for their constant and invaluable support and prayers and also to god for helping me achieve success in every field.

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