Principles of intelligent urbanism: The case of the new Capital Plan for Bhutan

Christopher Charles Benninger

Christopher Benninger has lived and worked in India for the past 30 years. He founded the School of Planning at Ahmedabad (1971) and the Centre for Development Studies and Activities in Pune (1976). He studied Urban Planning at M.I.T. and architecture at Harvard, where he was later a professor of architecture. While at Harvard he became actively involved with the World Society for Ekistics (WSE) through his colleagues Barbara Ward and Jaqueline Tyrwhitt. He attended the 1967 Delos Symposion, where he was deeply influenced by C.A. Doxiadis and the Ekistics movement. Benninger has prepared urban plans for Bhutan, where he is designing the new capital, India and Sri Lanka. He has been involved in advisory work for the World Bank, the UNO and the Asian Development Bank in Africa, Southeast Asia and the Subcontinent. His architectural studio has won the Designer of the Year Award (1999); American Institute of Architect's Award (2000) and other awards. He has published articles in journals in America, Europe and Asia. He is on the Board of Editors of Cities, *U.K. The text that follows is a slightly edited and revised version of a paper presented at the WSE Symposion "Defining Success of the City in the 21st Century," Berlin, 24-28 October, 2001.*

Preamble

My work in designing and building cities started in 1972 with the construction of about 500 houses, amenities and related commercial facilities in Jamnagar, the erstwhile princely state in Gujarat. This was an urban node of 20 sq.m courtyard houses that could expand upward. It was a totally pedestrian community, which linked a series of small household and neighborhood places into a central community domain. About the same time I built a large orphanage in rural Haryana near Delhi in the form of a "pedestrian village" linking small neighborhoods and family courtyards in a hierarchy of spaces. Again, the central domain was the social gathering area, which connected a labyrinth of lanes and public courts. The next year I embarked on the design of the first large Sites-and-Services program to be taken up by the World Bank, which resulted in the creation of 20,000 houses, by the inhabitants themselves, in Madras. In this program we provided a variety of serviced plots, with access lanes and common public health infrastructural systems. This approach then became the World Bank's global strategy, for about a decade, to provide layouts with very modest infrastructure standards, and to facilitate households who then built their own shelters. At this time we were also carrying out extensive upgradation of existing shanty settlements in both Madras and Calcutta. This was followed by the design of an urban neighborhood in Hyderabad, composed of two thousand "Core Houses," which grew through self-help from one room cores, with sanitary units.

In 1980 I began to restructure six urban centers in Sri Lanka, for the Urban Development Authority and the UNCHS (Habitat). With teams of young architects living in the towns, and with the participation of the local people, we prepared innovative plans for these areas. Later in the 1980s my studio prepared urban plans for the cities of Thane and Kalyan in the Bombay Metropolitan Region, and for the 28 urban centers in the Indian state of Madhya Pradesh. These, and UNO-sponsored evaluations of urban planning efforts in Bhutan, Malaysia, Zambia, Nepal, India, Indonesia, Bolivia and many other regions made me realize that there are a set of common axioms, or principles, around which all planning debate and discussion tends to revolve. I have started to call these propositions the "Principles of Intelligent Urbanism." There has been a lot of discussion amongst my team members whether I should call these precepts, axioms, propositions or principles. I finally decided on the word principles, because I realized that these were not loose ideas, or fuzzy guidelines! These are truly principles that I feel must be followed in the creation of all urban plans and designs.

The chance to mix theory with practice came to me again in early 2001, when the Royal Government of Bhutan invited me to set up a studio in their kingdom, and to prepare their new capital plan. Though they wanted a new plan, I had to overlay my design on existing villages, the Decholing Palace, monasteries, an existing small town, temples, *chortens*[1] and the massive medieval administrative structures, the Tashichho and Simtokha Dzongs.[2] Most exciting was the Wang Chhu (river), which structures the 8,000 ft-high valley floor, with a verdant carpet of forest reaching up to the mountaintops. This is surely one of the most ecologically fragile areas under urbanization, as well as one of the richest treasure troves of cultural artifacts! To me, this would be the appropriate testing ground for the **Principles of Intelligent Urbanism**!

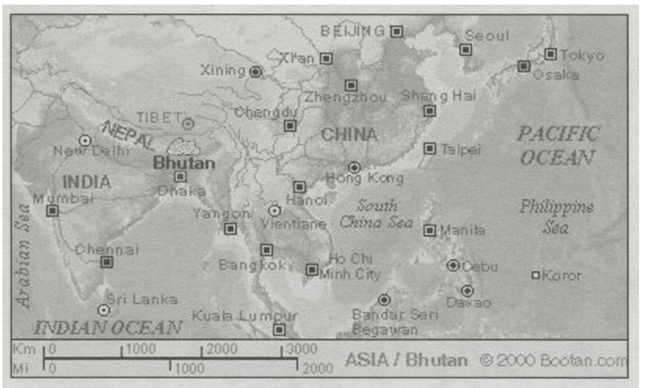

Fig. 1: Location of Bhutan within Asia.

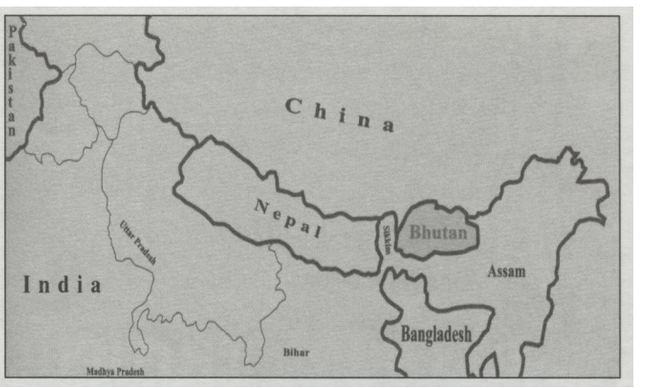

Fig. 2: Bhutan within its broader geopolitical area.

Existing scenario

Demographic studies indicate that Thimphu's population will grow from the present 47,000 to 150,000 people by the year 2027. Even though the present population is composed only of His Majesty's Royal entourage of security forces, administrators and suppliers, the valley is already facing housing shortages, traffic congestion, air polluted roads and chaotic building patterns. A modest tourist business is expanding. The town is becoming a retail and wholesale center, and a number of professionals and construction companies are setting up shop in the central area. The forests, which preside over the city, are being encroached upon. Without reference to the carrying capacity of the land, orchards in ecologically fragile areas are being irrationally sub-divided. Private and public agencies are going about "city building" in a disjointed and ad hoc manner. This has resulted in "spotty growth," wherein fragmented pockets of development spread out along the valley require services and infrastructure. These dispersed pockets are not large enough to independently support any given city service system, and are too far apart to allow efficient linkage with city level infrastructure networks.

Alarming examples of Himalayan hill towns in India stand before Thimphu. Capital cities like Simla, Darjeeling, Gangtok and Shrinaghar have transformed from serene hill resorts, into chaotic bazaar towns. Their environments have been severely damaged through construction on the slopes, encroachment on paddy lands and riverfronts. Infrastructure has been laid out in an ad hoc manner, following development, rather than guiding it!

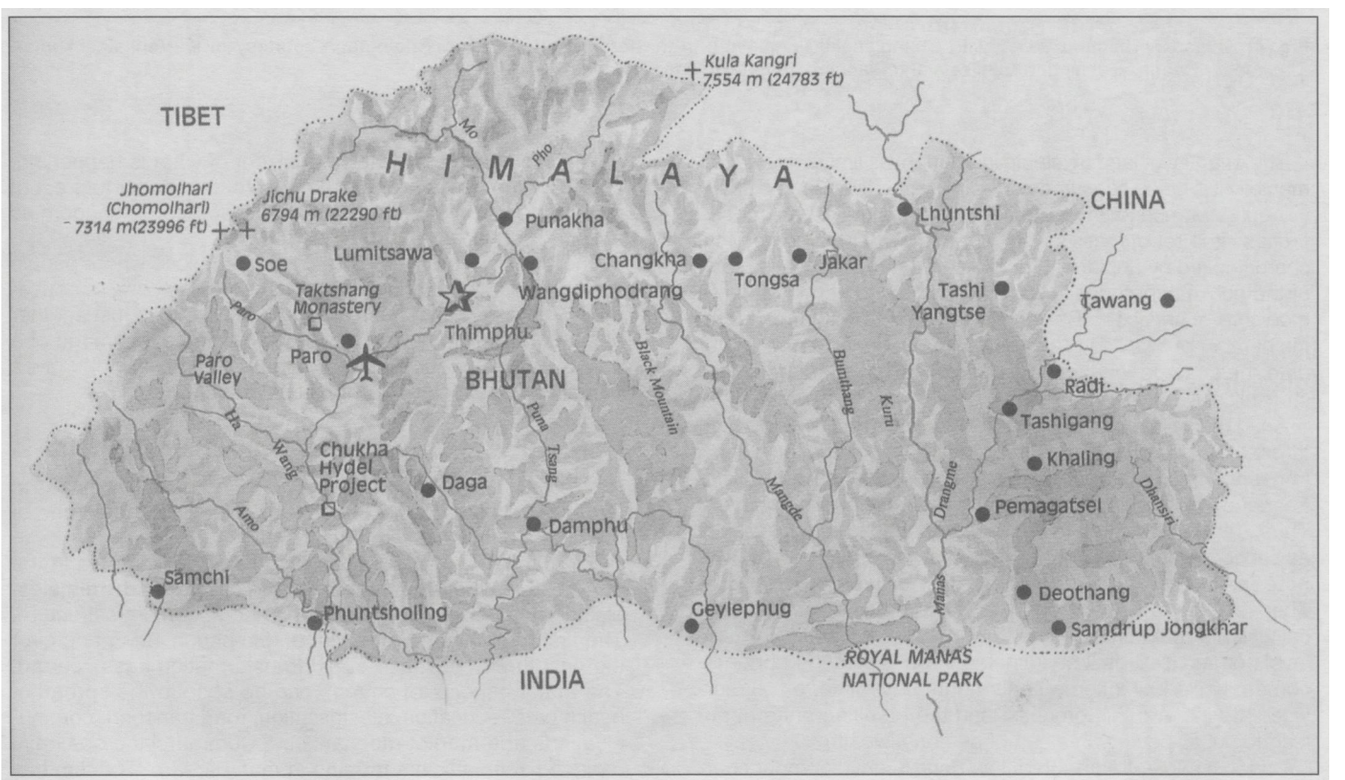

Fig. 3: Map of Bhutan.

Fig. 4: Bhutan – Thimphu Valley with Changlangkha Lhakhang in the foreground. (*Source*: Photograph courtesy of K. Venkateshkumar, Christopher Charles Benninger Architects and Planners, Planning Team Thimphu).

The quantity of land available in Thimphu is limited, yet incrementally it is being consumed on a first-come, first-served basis, without reference to any long-term plan or priority system. The process is a retrogressive one with "patchy" sprawl emerging, characterized by unplanned pockets of development. In many of the pockets the densities are far too low to support even a modicum of services. Basic utilities cannot be financed from the number of dwellings served, due to low densities. At a later date these same low-density areas will fill in with unplanned structures, for which there are no utilities and services.

Any kind of public transport service will require fairly high thresholds of population at each stop and destination. Such transport nodes are not emerging. Unless there is surety and frequency of services, people will not opt for public transport. Thus, density is the key to effective transport planning, as well as services and utilities in general. Allowing areas to grow with no density considerations is creating a dysfunctional city. There are too few users, on a per hectare basis, for economically viable maintenance. Who will subsidize these unviable levels of service? Is it sustainable to subsidize the upper incomes, while low-income settlements have little, or no, services at all? Will this process, and the resulting pattern, not lead to public poverty in a sea of personal wealth?

Unserviceable, fragmented, low-density development characterizes the city's present growth trend.

The Royal Government is cognizant of what is happening, and in its wisdom is taking action to create a better future, not just for the citizens of the capital, but also for the Kingdom as a whole.

The city of Thimphu is more than just a place where people live and work, where people are born, grow up, create households, retire and then pass away. It is more than just another habitat or dwelling place. It is the symbol and the image of a unique culture, embodied in a unique nation. Thimphu gives meaning and substance to the very idea of Bhutan.

Demographic and social transformation

With a geographic area marginally larger than Switzerland's, and a population of only 600,000 people, Bhutan has one of the lowest densities of any Asian nation.

The capital of the kingdom was shifted to Thimphu in the early 1950s when there were no motorable roads, airfields, electricity, telecommunications or other modern infrastructure. The first motorable road reached Thimphu in 1962, and over the past three decades a rapid transformation has occurred. The major aspects of change can be seen in the spread of health care, education, electrification, road transport, communications and market mechanisms. Commercial crops have replaced self-sufficient farming in many areas. Tourism has emerged as a prime sector of the economy. The country is an

Fig. 5: Bhutan – View of the town of Thimphu. (*Source*: Photograph courtesy of K. Venkateshkumar, Christopher Charles Benninger Architects and Planners, Planning Team Thimphu).

Fig. 6: Bhutan – Gathering to celebrate the King's birthday in Thimphu. (*Source*: Photograph courtesy of K. Venkateshkumar, Christopher Charles Benninger Architects and Planners, Planning Team Thimphu).

Fig. 7: Bhutan – Bhutanese lady in the market in Thimphu. (*Source*: Photograph courtesy of K. Venkateshkumar, Christopher Charles Benninger Architects and Planners, Planning Team Thimphu).

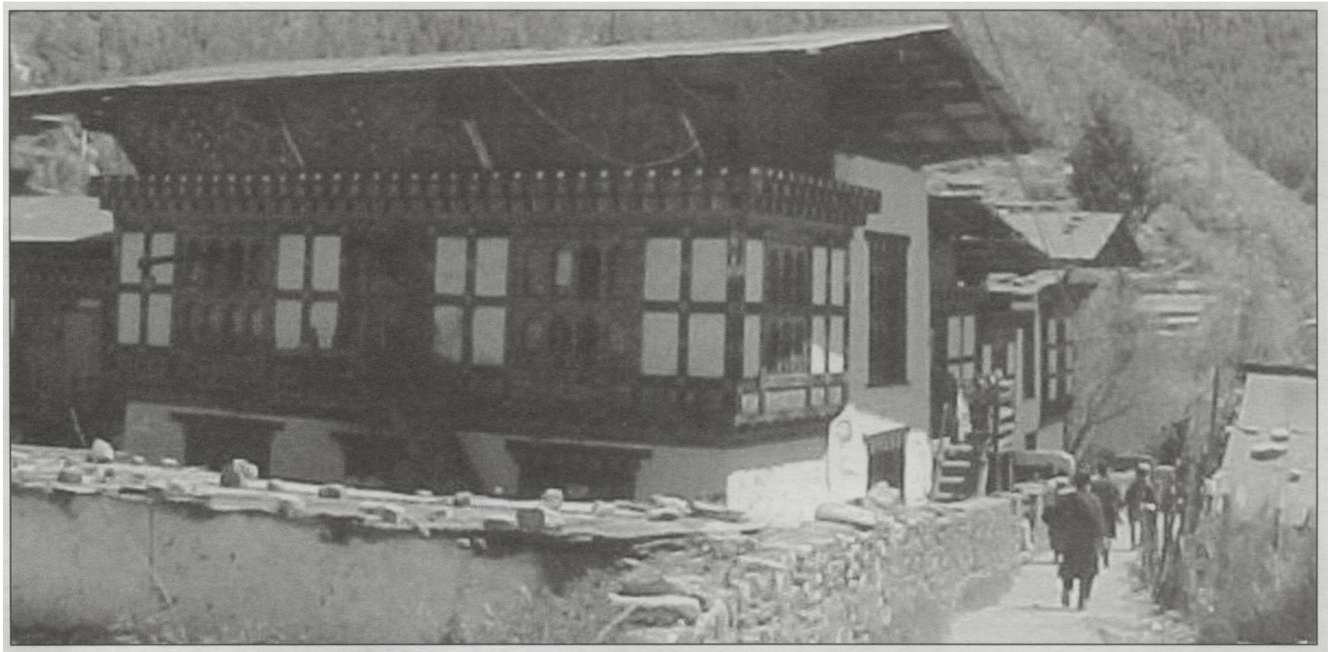

Fig. 8: Bhutan – Footpath to the market in Thimphu. (*Source*: Photograph courtesy of K. Venkateshkumar, Christopher Charles Benninger Architects and Planners, Planning Team Thimphu).

Fig. 9: Bhutan – A weekend market in Thimphu. (*Source*: Photograph courtesy of K. Venkateshkumar, Christopher Charles Benninger Architects and Planners, Planning Team Thimphu).

Fig. 10: Bhutan – The folk dance at the Thimphu Tshechu Festival (*Source*: Photograph courtesy of K. Venkateshkumar, Christopher Charles Benninger Architects and Planners, Planning Team Thimphu).

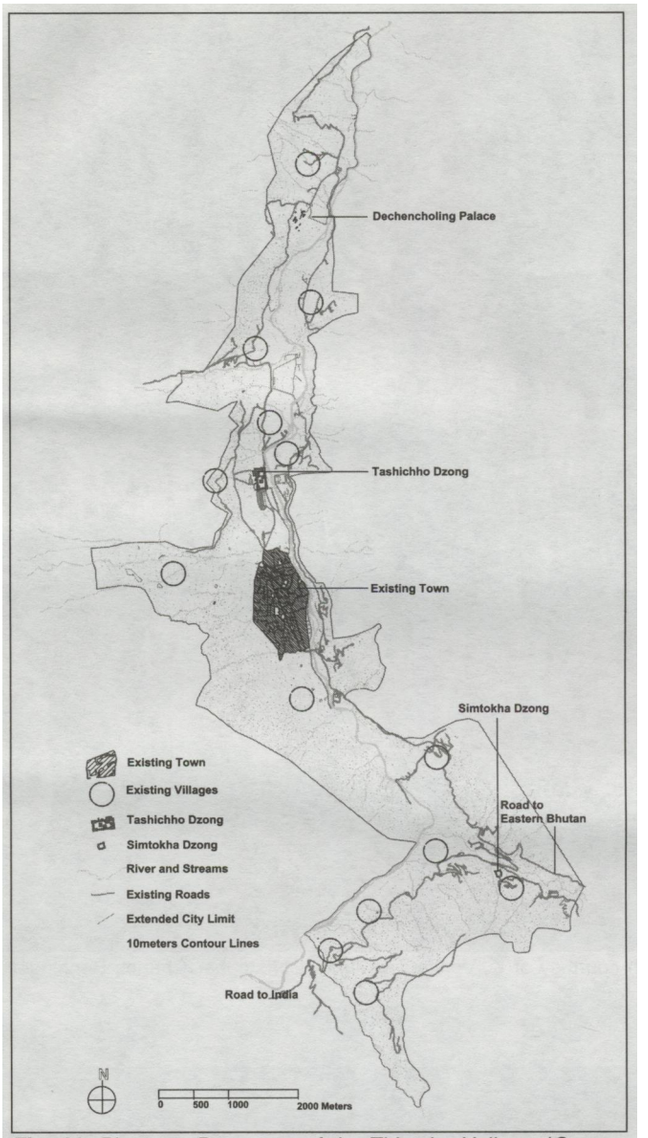

Fig. 11: Bhutan – Base map of the Thimphu Valley. (*Source: Thimphu Structure Plan,* Christopher Charles Benninger Architects and Planners).

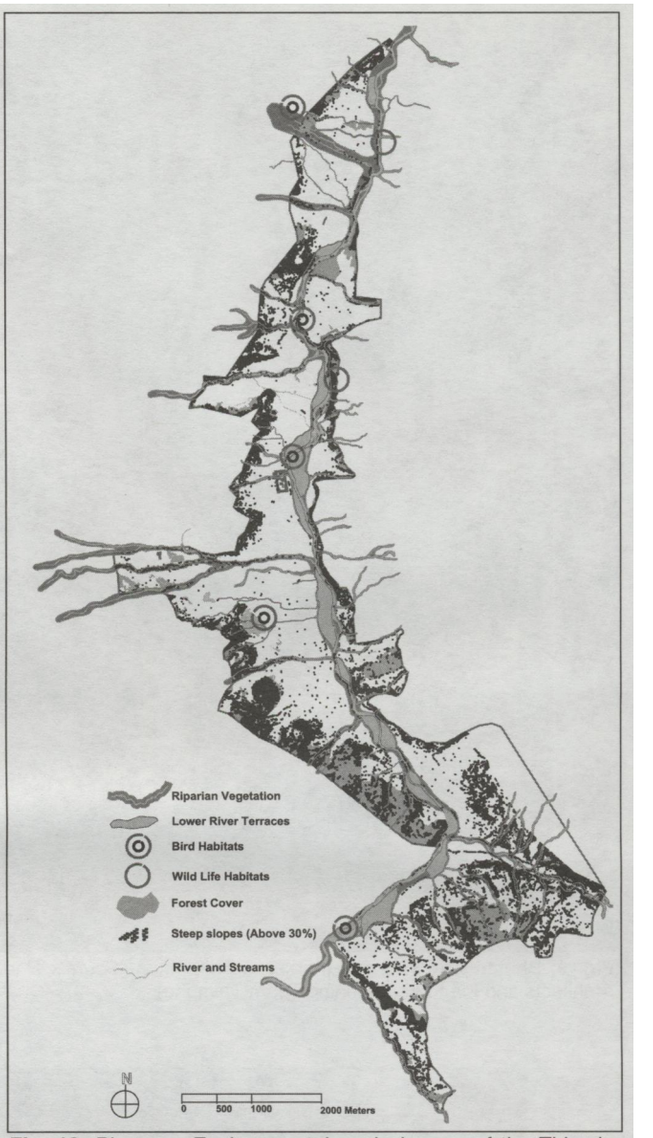

Fig. 12: Bhutan – Environmental analysis map of the Thimphu Valley. (*Source: Thimphu Structure Plan,* Christopher Charles Benninger Architects and Planners).

energy exporter, due to its hydroelectric projects. Construction and transport are rapidly growing sectors of the economy. From one of the least developed countries (LDCs) a mere two decades back, Bhutan's growing per capita income has placed it as the richest nation in the region, in terms of per capita production.

Rapid growth has brought many new problems with it. Mono-cropping, and the concomitant need for food substitutes, has caused new nutritional problems. The drivers who transport commercial crops and goods, spread disease. Education has raised expectations amongst the rural youth, and communications have instilled new life patterns in the minds of the people. As people move to towns, the environment is eroded and the consumption distribution becomes noticeably skewed. The number of educated, unemployed Bhutanese youth is on the rise. These educated youngsters will not accept casual labor as a form of sustenance. Filling the resultant gap in skilled and semi-skilled laborers are foreign workers from the south, creating an underclass of casual workers. The Royal Government has adapted quickly to numerous crises over the past decade, muting Gross National Happiness as the singular national goal from which a number of objectives have emerged. Rapid urbanization has been characterized by housing shortages, pollution, congestion and inequalities. Thus, the new Capital Plan for Thimphu must respond to socio-economic demands, as well as physical ones.

A fragile ecology and environment

Thimphu is a humble city nestled into the world's most magnificent range of mountains. The Thimphu Valley has its own ecological requirements. The valley needs the green cover on the hillsides, protecting the Wang Chhu (river) from silting up and flooding. It needs space for the avifauna and fauna that maintain the fragile balance amongst a wide variety of flora and soils. The city cannot overload these fragile soils, which hold back the land from sliding down into the river basin. Such erosion will silt up the river, making it widen and flood over its banks! The downstream effects will be disastrous, and the

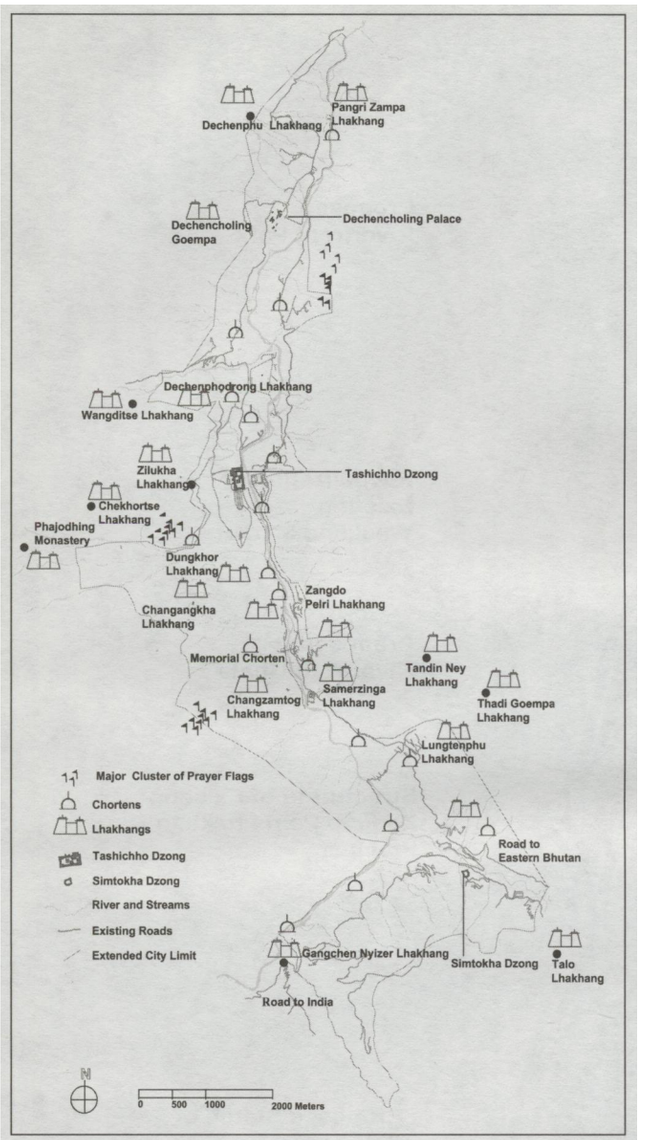

Fig. 13: Thimphu – Plan showing the existing cultural and heritage sites in the Valley. (*Source: Thimphu Structure Plan,* Christopher Charles Benninger Architects and Planners).

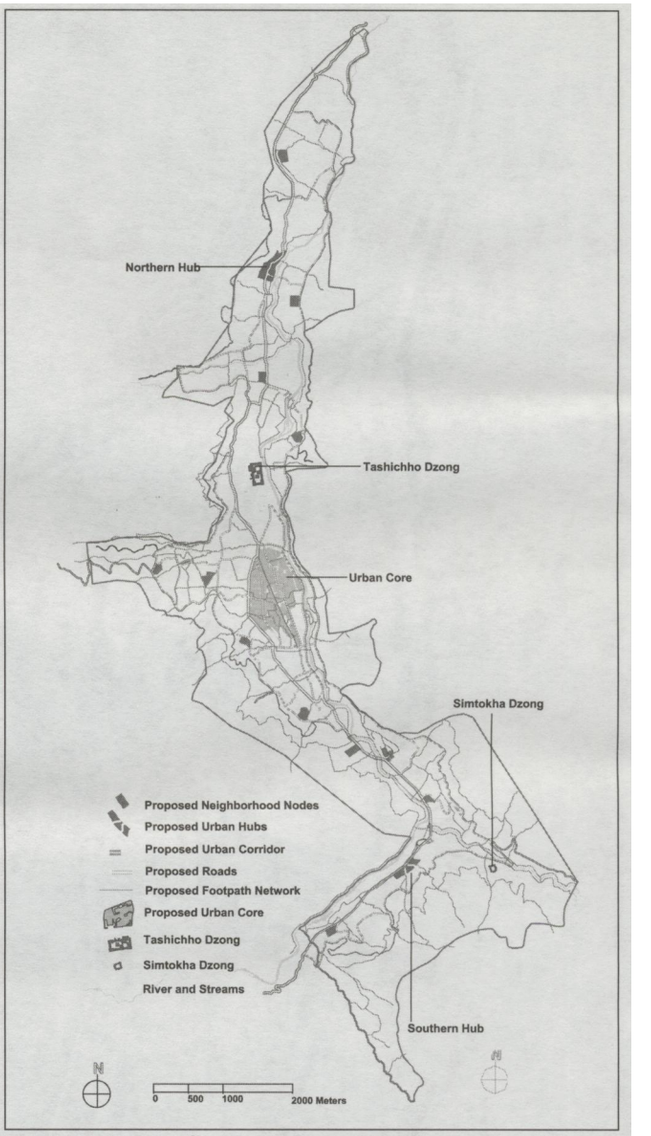

Fig. 14: Thimphu – Concept diagram of the structure plan. (*Source: Thimphu Structure Plan,* Christopher Charles Benninger Architects and Planners).

costs incalculable.

Where others have failed to respect their fragile eco-systems, in a manner balancing man and nature, Bhutan is committed to follow a more dignified path. Bhutan is committed to create one of the first environment-friendly habitats in the world, where mankind and nature find a modicum of eternal harmony. Thus, this new Capital Plan for Thimphu takes on a character of epic proportions as a model for other small towns and cities, spread across the Himalayas, which will expand over the coming century.

Heritage

Rich in history and heritage, the valley needs space for an array of *chortens*, *manis*[3] (prayer wheels), *mani* walls,[4] *lakhangs*[5] (temples) and monasteries. The valley needs space for the Tashichho and Simtokha Dzongs. The city is a virtual living museum of culture. As the transient guardian of this heritage, and as the trustee of this great museum, the proposed plan of the city is the only means for the city to protect the wealth that it has inherited. The Thimphu Valley is the product of millennia and belongs to eternity. In a sense, all the inhabitants of Thimphu are mere visitors to the valley during their short life-times … passers-by, so to speak. It is one of their life's burdens to see that this great heritage is passed on to future generations.

Precincts

Besides all of these profound requirements, the city also needs space for the mundane things that its people do. There must be spaces to work; spaces to play; places to romance, and places to settle down into "householders." There must be spaces to make and sell things; places to buy and to trade things; and places to socialize. People need to celebrate and to make merry! People need to govern themselves and to be administered. All of these needs and requirements demand space. To assure that this space is available and that it is not exploited mindlessly, a system of codes and principles is required that distinguishes the citizens of Thimphu as a civilized people.

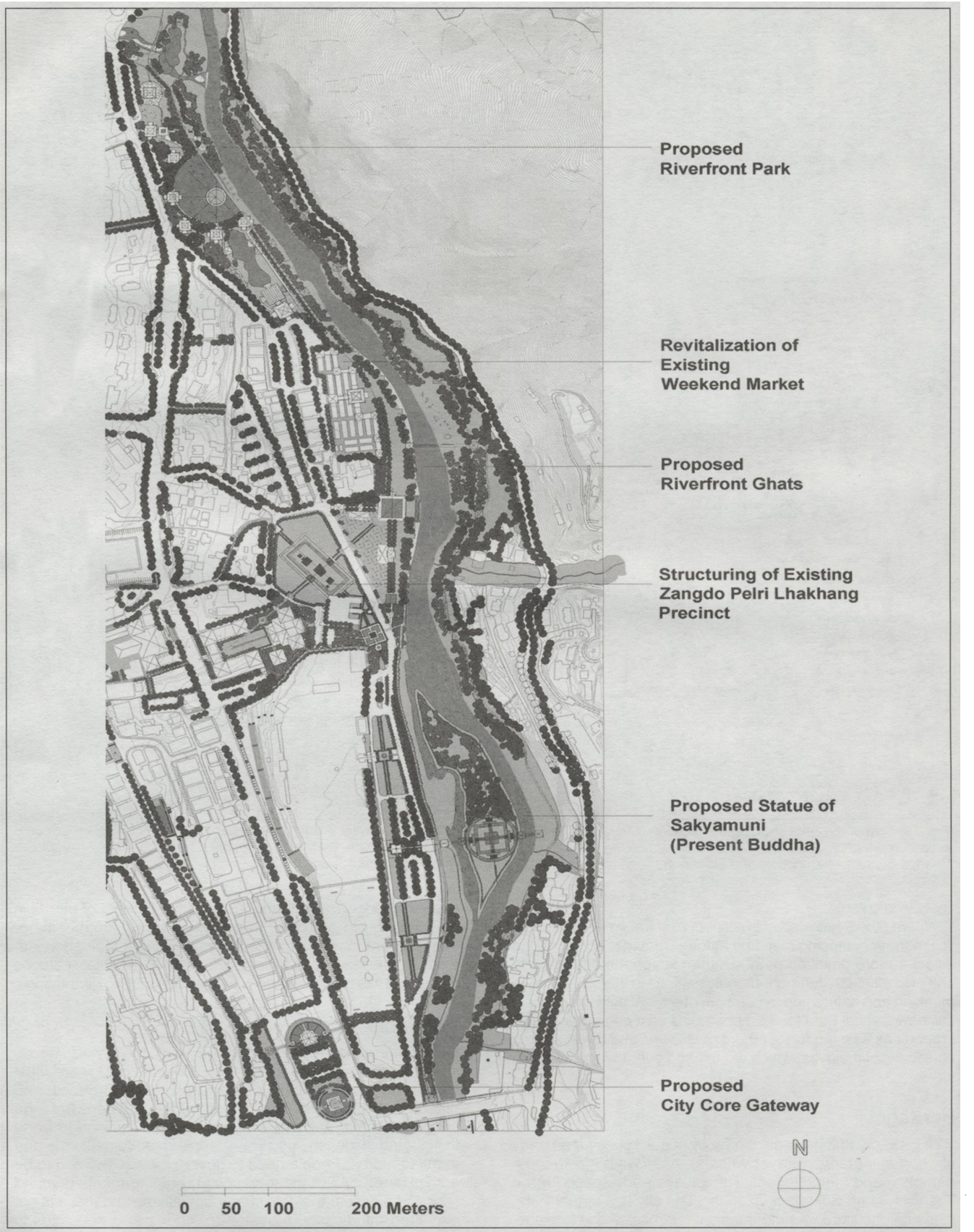

Fig. 15: Thimphu – Plan of the Wang Chhu River Front development. (*Source: Thimphu Structure Plan,* Christopher Charles Benninger Architects and Planners (CCBA), K. Venkateshkumar – CCBA Planning Team Thimphu).

Not only do different people have their unique *dharmas*,[6] their own natures and their own life missions, but also the city has to reflect those different roles and "cycles of life" that are the essence of the Bhutanese way! To celebrate that way, and to enshrine the values that distinguish the city as a place of the Drukpas,[7] there have to be unique spaces, or precincts, for various activities, moods and behaviors. Some of these activities are not compatible with each other, while others are mutually reinforcing. Thus, it is necessary to define precincts that sanctify these activity clusters into coherent functional areas. These precincts need to be sanctified, as the abodes of different *dharmas*.

The last plan

The first plan for Thimphu was prepared in the mid-1980s, when the population was less than 8,000 people. Up until then the valley was under-populated and the Royal Government used incentives to attract investors into land development and into building construction. Though land was practically given away, there were few takers for plots on which taxes would be levied! The scenario has changed dramatically over the last decade. There has been an influx of population into the capital with the growth of commerce and the expansion of government. During this period, several written plan documents have been prepared. These were hypothetical studies, which were not implementable, carried out hastily, with little data or analysis. Donor-sponsored missions prepared some rapid appraisals and plans during brief "missions." A distinguished American university even had the audacity to prepare a plan during a ten day "workshop," claiming later that they had prepared a structure plan for the city! During this period of abuse and neglect, the population grew, and along with it construction mushroomed.

But growth waits for no one, nor for any culture! It has its own mean way of moving on, leaving those who are thoughtless, ignorant and hesitant behind its great wheel of change. This is not a time for the meek, nor a place for the careless, or for those who lack the courage to make hard choices and sensitive decisions. There is but one more chance to make this last plan. By the time this planning cycle is over in 2027, the valley will be filled with people and there will be no room left for pondering and for indecision. There will be no space left for choices, for debates, or for planning. This is it! All or nothing … the Last Plan!

Common set of Principles of Intelligent Urbanism

What is essential to allay this pending disaster is a common set of principles, which all agree upon, and all act by. Such an urban code of practice is the essence of human ascendance and of the civil society. It is what civilization is all about.

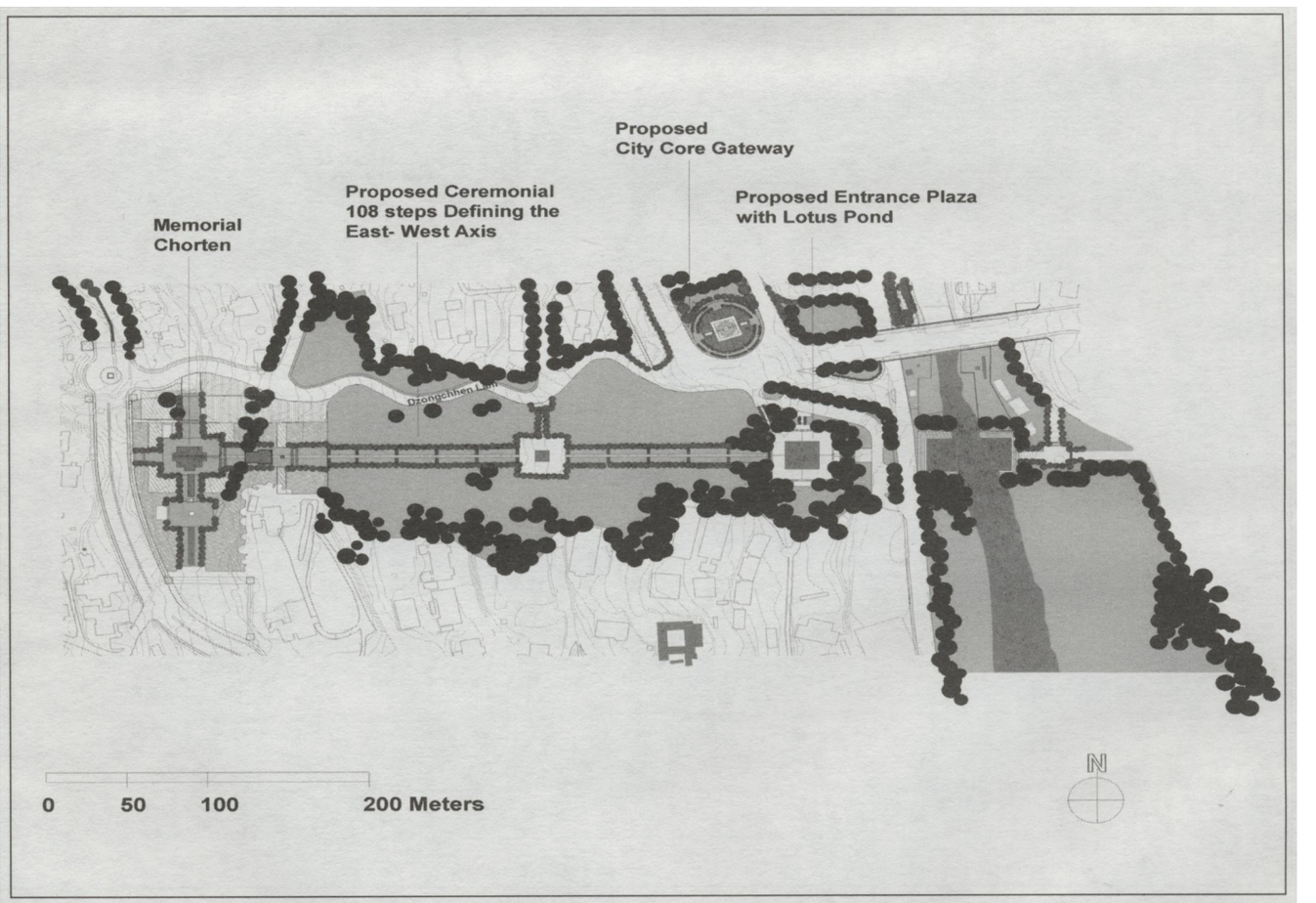

Fig. 16: Thimphu – Plan of the one hundred and eight steps, leading to the Memorial Chorten. (*Source: Thimphu Structure Plan,* Christopher Charles Benninger Architects and Planners (CCBA), K. Venkateshkumar and K. Uday Bhaskar – CCBA Planning Team Thimphu).

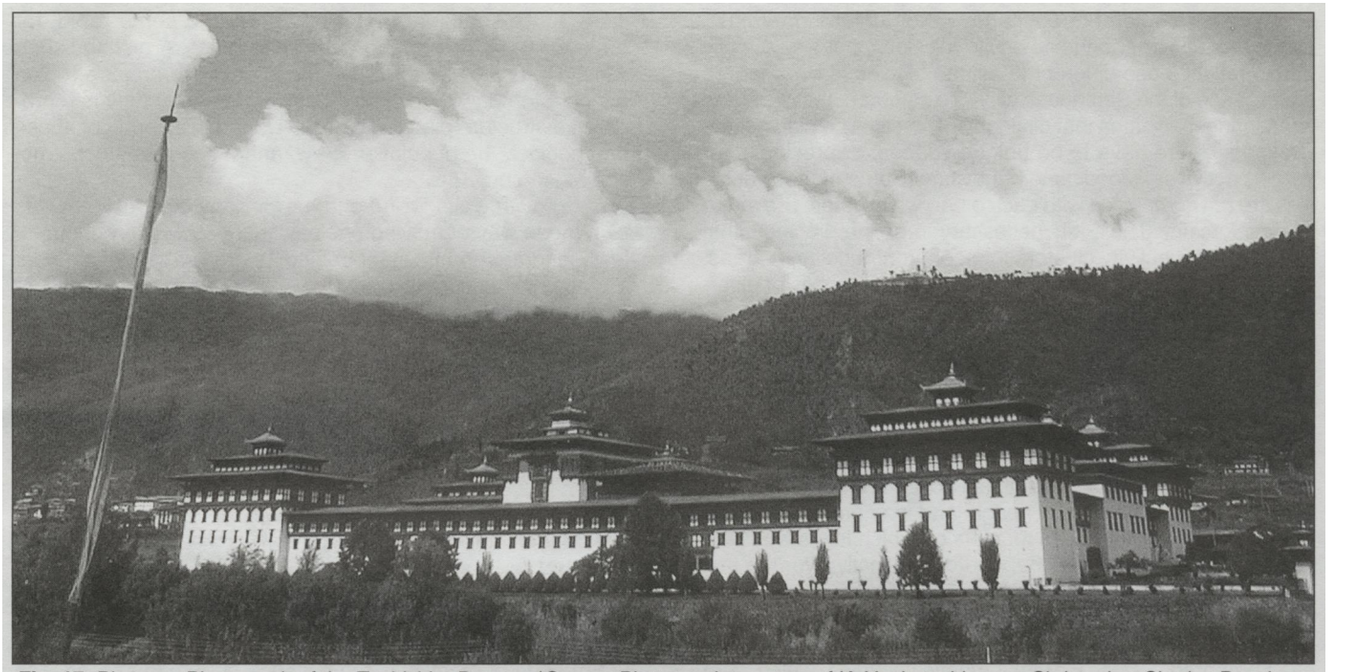

Fig. 17: Bhutan – Photograph of the Tashichho Dzong. (*Source:* Photograph courtesy of K. Venkateshkumar, Christopher Charles Benninger Architects and Planners, Planning Team Thimphu).

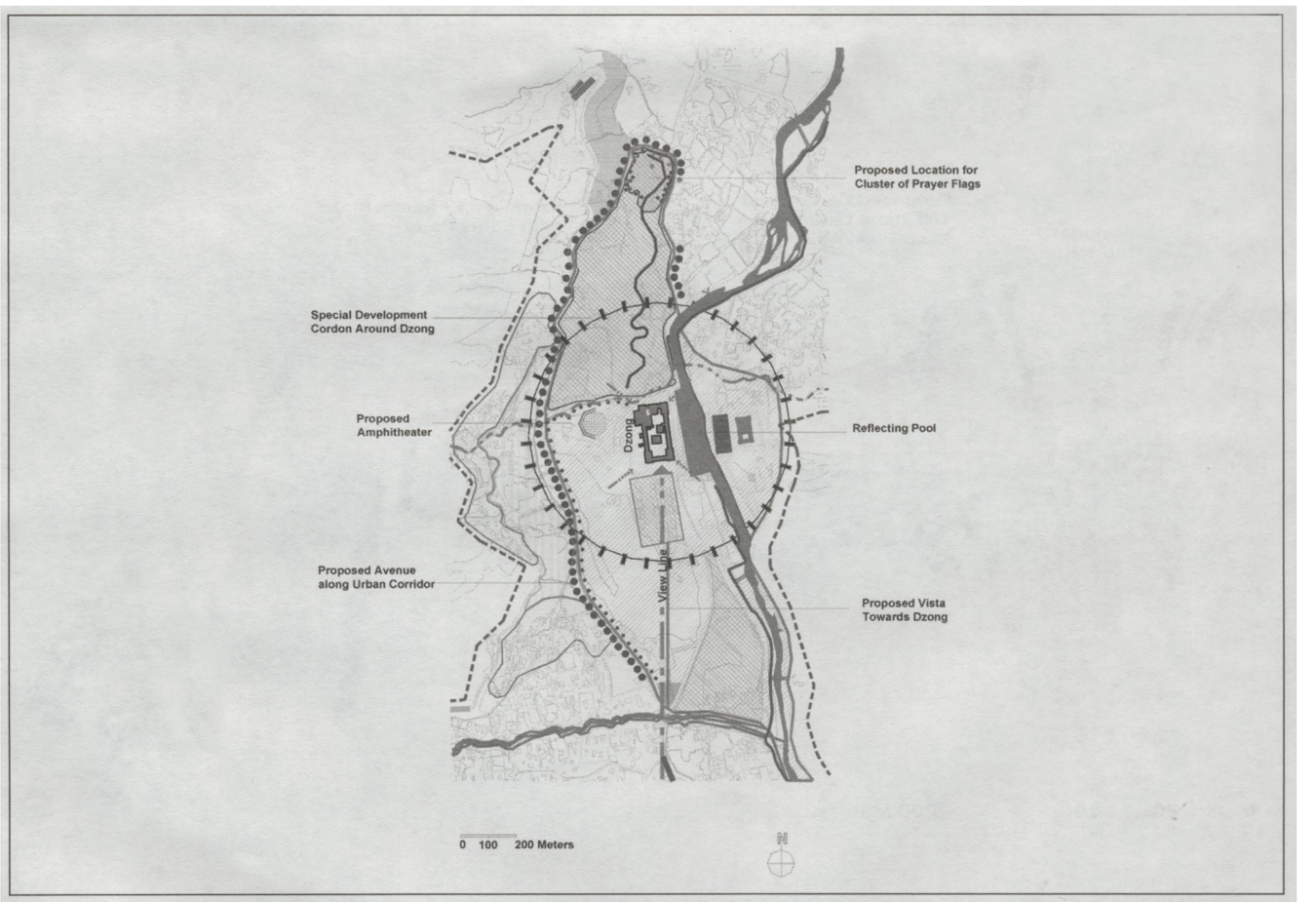

Fig. 18: Bhutan – Precinct plan of the Tashichho Dzong area (the Dzong is the main government and Monks' Body Complex). (*Source: Thimphu Structure Plan,* Christopher Charles Benninger Architects and Planners).

Where people come and live by a common set of civil principles, a civil society is born. The word civil, in fact, is derived from the ancient word for CITY! The concept of civilization emerged from cities. Civilization matures and grows where diverse, varied and multi-interested people all join together under a banner of common rules, tempering mutually beneficial behavior. While one cannot copy any other culture, or ape any other practices, one can learn from the successes and mistakes of others, and from their laws and plans. But in the end each city must debate and finally "own" its civil principles, and follow them!

Emerging societies always have the potential to make a gift to older ones. They have a chance to think afresh what is virtuous, what is right and what will lead to the general good. This is particularly important when fads and fashions, like the New Urbanism and Smart Growth, are sweeping mindlessly across the West.

Emerging societies like Bhutan need a relevant set of principles, born out of their unique environments and special cultures, and their own concept of development. They cannot just borrow what others have done. These principles, in fact, may guide other cities in their search for environmental stability and cultural richness through urban planning and growth. This is an area where Bhutan may take the lead, and others will follow.

During public consultations in Thimphu and meetings with public officials and professionals, new directions emerged. Some were as clear as mathematical axioms, while others were more like general guidelines. We realized that it was worth noting these down and getting a picture for ourselves about where we should be going. When we started to do this we referred back to people who had influenced us, and who would have agreed with our new set of principles. These included Lewis Mumford, José Luis Sert, C.A. Doxiadis, the members of Team Ten, and more recently the advocacy and community planners in America. While the New Urbanists and the Smart Growth sponsors have some laudable ideas, their origins in resort communities, like Seaside, and retirement villages, like Celebration ... havens of the rich in seasonal Florida ... belie their isolation from the core socio-economic issues of urbanism. These cannot serve as models for urbanism in America, and certainly not in Bhutan. Neither, going back further, would the grids and geometric blocks of the old modernists serve our needs! Thus, we relied on our own research in Thimphu, and reviewed our own practical experiences applying urban theory. We needed to find our own feet, so to speak, and to write our own charter.

We realized that the new fashions in the West merely grabbed at significant "starts" from the 20th century, turning the profound into the mundane. We needed our own "starts" based in social, economic, cultural and environmental realities. When we were finished with this exercise we realized that our visions in what is considered an exotic context parallel, rather than diverge from, the needs of urban situations in the West and, moreover, the emerging nations of Latin America, Asia and Africa. The tendency to segment the world serves an agenda of centering idea generation from a few locales. We reject this! Florida and California would better network with the world than float charters, which neglect even their own urban problems. Foreign universities would rather see India and Bhutan through exotic, neo-British Raj lenses, than engage in a debate over urban principles and directions.

This new Capital Plan of Thimphu proposes that a unique set of civil principles, which guide urban growth, planning and urban management, over the coming century, be based on approaches we may call Intelligent Urbanism.

What would a set of intelligent urbanism principles include? Let us put down in writing a few of those principles.

Principle One: A balance with nature

There must be a balance between nature and human endeavor! We must understand the difference between exploiting nature and utilizing nature! There is a level of human habitation wherein the resources that are consumed will be replaced, through the replenishing cycles of the seasons, creating environmental equilibrium. So long as nature can resurge each year; so long as the biomass can survive within its own ecological system; so long as the breeding grounds of fauna and avifauna are safe; so long as there is no erosion and the tree coverage is maintained ... we are only utilizing nature.

But there is a fragile line that we cross when the fauna, which cross-fertilizes the flora, which sustains the soil, which supports the hillsides, is no longer there! When the soil is washed off the land faster than it can be replaced; when the rivers silt up faster than the natural currents can wash them clean; when river basins widen and we have to artificially contain the edges ... then we have destroyed the natural balance. There is an imaginary threshold ... a kind of line that we will cross over ... from where we cannot come back. At that point of no return, utilization of natural resources will outpace the natural ability of the eco-system to replenish itself. This is when we are exploiting nature, exploiting our city, and exploiting ourselves! From there on degradation accelerates and amplifies. Deforestation, desertification, erosion, floods, and landslides all incessantly increase.

Blatant acts against nature include cutting of hillside trees, quarrying on hill slopes, dumping sewerage and industrial waste into the natural drainage system, paving and plinthing excessively, and construction on steep slopes. Intelligent urbanism proposes that the balance of nature can be maintained when fragile areas are reserved for preservation and conservation activities, or used for low intensity habitation precincts. Primary education must include instruction on the theory of ecological and urban balance, including practical fieldwork in threatened areas. Common wisdom must include the fundamentals of balance between man and nature.

Intelligent urbanism operates within the balance of nature. Intelligent urbanism aggressively protects and conserves those elements of the ecology that nurture the environment. Therefore, the first principle of intelligent urbanism is that urbanization be environmentally sound!

Principle Two: A balance with tradition

Intelligent urbanism respects the cultural heritage of a place. It seeks out traditional wisdom in the layout of human settlements, in the order of building plans, in the precedents of style, in the symbols and signs, which transfer meanings through decorations and motifs. Intelligent urbanism respects the order engendered into building systems through years of adaptation to climate, to social circumstances, to available materials and to technology. It promotes architectural styles and motifs, which communicate cultural values.

Intelligent urbanism orients major road axes toward monuments and heritage structures. It leaves open space at the ends of such axes for future institutional buildings and monuments to rise up, or to "frame" existing views and vistas.

Intelligent urbanism respects shorelines, river edges, natural views and vistas. It assures buildings do not block major sight lines toward major public visual assets.

There is a link between signs and symbols; decoration and motifs; iconographic structures and auspicious elements of layouts; and shared cultural wisdom. This is a silent language, which bonds a people together through a meaning system. These all form part of the unwritten, unspoken traditional knowledge system of a culture. All villages, towns and cities

have the generic elements from which such knowledge systems emerge. Some examples from Thimphu are:

- The prayer flags that preside over the city. Fashioned of auspicious colors, and block-printed with favorable mantras,[8] the wind carries their good omens in the aether above the city. Prayer flags are also in the compounds of houses, of temples and of monasteries, and they speak out to the people of their auspicious messages and good sentiments.
- *Lakhangs* and monasteries are located on promontories, overlooking the city. In a protective manner they surround the valley and portend good with their hundreds of monks giving prayers in meditation.
- *Chortens* of many shapes and sizes fill the valley, which have the prayer, "*Om mani padme hum,*"[9] inscribed within them. Larger *chortens* encase the relics of saints, and are known as stupas.[10] The smaller ones house "merit" which can be imbibed by the people nearby. They form an auspicious line along the traditional path leading into the valley. They mark out spaces, as opposed to enclosing spaces. They engender a sense of place!
- Gateways demarcate space into "external" and "internal" protected areas. They welcome home inhabitants and they greet visitors! They transform anonymous space into friendly, protected places. They are the markers between the disorganized and the organized!
- *Manis* (or prayer wheels) and *mani*-walls (that hold prayer wheels) accumulate goodness through their turnings. As these prayer wheel machines churn out thousands of prayers, they produce a wealth of spiritual meaning.
- The monumental Tashichho Dzong visually anchors the upper end of the valley. As the seat of Buddhism in Bhutan, as well as the Royal Government, this heritage site is the image and the icon of the nation.
- The ancient Simtokha Dzong is strategically set at the lower end of the valley where it turns to the west, while joining the valley of the Ola Rong Chhu from the east. Thus, this monolith presides over the meeting point of three valleys, affording it strategic views toward the Tashichho Dzong to the north, and down the river valleys to the east and to the west! It gathers in a magnificent borrowed landscape, while creating a visual landmark around which huge spaces pivot.

These examples give a clear notion of how heritage sites and artifacts can be brought into a modern-day scenario of planning, engendering a sense of place.

Every culture and every society has its iconography, its signs and its symbols. Intelligent urbanism promotes their incorporation into the spatial order of urban settings. Intelligent urbanism promotes the use of local knowledge and meaning systems, as expressed through art, urban space and architecture, to orient and structure urban plans. This is the second principle!

Principle Three: Conviviality

Intelligent urbanism sponsors a convivial society. Vibrant societies are interactive, socially engaging and offer their members numerous opportunities for gathering. Bhutanese society operates within hierarchies of social relations. The hierarchies can be conceptualized as a system of social tiers, with each tier having a corresponding physical place in the settlement structure. Intelligent urbanism identifies these places and assures they become components of the urban milieu.

A place for the individual: There must always be a space for the individual to wander in. There have always been places in the hills, along quiet streams, in open grasslands and amongst trees where one can escape to meditate and contemplate. These are the quiet places wherein the individual consciousness dialogues with the rational mind. Idle and random thought sorts out the complexities of modern life and allows the obvious to emerge. It is in these natural settings that the wandering mind finds its measure and its balance.

In ancient times such spaces were neither contained, nor artificial man-made spaces. They were the great valleys, like the Thimphu Valley itself! They were small cusps of trees, or quiet spots on hillsides. Using *chortens*, gates, *mani* walls and other "silent devices," these spaces were denoted and divined. Places of the individual cultivate meditation. These spaces may also be the forecourts and interior courtyards of *lakhangs* and monasteries, or even the modern reading rooms of libraries. Meditation focuses thought and sharpens one's control over the conscious world. Intelligent urbanism creates a domain for the individual to mature through self-analysis and self-realization. This basic tier is essential for the spiritual life of the individual and of the nation.

A place for friendship: There must be spaces for "beautiful, intimate friendship" where unfettered dialogue can happen. We cannot just assume such places will exist in a modern urban fabric. They must be a part of the conscientious design of the urban core, of the urban hubs, of urban villages and of neighborhoods, where people can meet with friends and talk out life's issues, sorrows, joys and dilemmas. This second tier is important for the emotional life of the populace. It sponsors strong mental health within the people. Intelligent urbanism creates places where friendship can unfold and grow.

A place for householders: Next there must be spaces for householders that may be in the form of dwellings for families, or homes for intimate companions, and where young workmates can form a common kitchen. Whatever their compositions, there must be a unique domain for social groups, familiar or biological, which have organized themselves into households. These domestic precincts are where households live and carry out their day-to-day functions of life. This third tier of conviviality is a very important one. It is where the individual socializes into a personality.

Worldwide, the definition of the "family" has undergone significant change. Bhutan is no exception. It has always been less rigid than other societies. While there are single mothers, childless couples, unmarried couples and friends householding, there is a trend to accommodate variety within a family setting.

Intelligent urbanism creates a variety of household possibilities, which respond to a range of household structures and situations. It recognizes that households transform through the years, requiring a variety of dwellings that respond to a complex matrix of needs and abilities.

A place for the neighborhood: These household domains must cluster into a higher social domain … the neighborhood social group. These are social groups where everyone knows one another. Festivals are celebrated in neighborhoods, and one may passively be drawn into local functions without any proactive effort.

In rural settings these are clusters of houses in hamlets, formed of large extended families, where everyone knows each other, recognizes all of the good and bad qualities of each person, and where social patterns of behavior are enforced without written codes, or oppressive regimentation. In modern, urban social settings the neighborhood takes on some of the roles for the individual that were once sponsored by hamlets of extended family members.

In an urban neighborhood each individual knows each other's face, name, special characteristics, strengths and

weaknesses. The neighborhood space is a domain where women and children are secure, where young girls can relax out-of-doors, fearless of careless glances and thoughtless comments. In an urban village, it is the "eyes of the street" that provides protection and reassurance.

Intelligent urbanism sponsors, through design, such units of social space. It is in this fourth layer of social life that public conduct takes on new dimensions and groups learn to live peacefully amongst one another. It is in neighborhoods where intelligent urbanism sponsors the "social contract" amongst diverse households and individuals. This social contract is the basis for rational social relations and negotiations within larger social groups.

A place for communities: The next social tier, or hierarchy, is the community. Historically, communities were tribes who shared social mores and cultural behavioral patterns. In contemporary urban settings communities are formed of diverse people. But these are people who share the common need to negotiate and manage their spatial settings. In the Thimphu Capital Plan these are called Urban Villages. Like a rural village, social bonds are found in the community management of security, common resources and social places. Urban Villages will have defined social spaces, services and amenities that need to be managed by the community. These Urban Villages will ultimately become the administrative wards, and therefore the constituencies of the elected members of the municipal body. Though there are no physical barriers to these communities, they have their unique social domain. Generally, the geographic features of the valley have defined them. Intelligent urbanism creates dense, walkable zones in which the inhabitants recognize each other's faces, share common facilities and resources, and often see each other at the village center. This fifth tier of social space is where one needs initiative to join into various activities. It promotes initiative and constructive aggression. There are opportunities for one to be involved in the management of services, and amenities and to meet new people. Intelligent urbanism promotes the creation of community places, where community-based organizations can manage common resources and resolve common problems.

A place for the public domain: At the city level, there is the public domain. This social space is where everyone can go. Everyone possesses this space. In the modern world the public domain is shrinking. In many countries one has to pay an entrance fee to access "public domains." Unlike the lower tiers of the social hierarchy, this tier is not defined by any biological, familiar, face-to-face or other exclusive characteristic. One may find Europeans, Japanese, Africans; people from the subcontinent; visitors from the districts ... all kinds of people in the public domain. By nature it is a system of accessible and open spaces. There are no physical barriers. It is the rules of human conduct that set this domain's behavior. It is civility, or civilization, which protects and energizes such spaces. At the lower tiers, one meets people through introductions, through family ties, and through neighborhood circumstances. In the public domain, one can make chance meetings with total strangers, who may become lifelong friends! Public domains are "serendipity places," where pleasant, unexpected meetings and events may occur!

The public domain, at its most basic level, includes the city footpaths; the parks and gardens; large shopping areas; and theaters. The public domain is composed of public places, which belong to everyone. These are places where outdoor exhibits are held, archery matches take place, vegetables are sold and goods are on display. These are places where visitors to the city meander amongst the locals. "Newness" is characteristic! The places may stay the same, but the people are always changing. When one is lonely or bored, one drifts toward such spaces, if not to make a new acquaintance, then to play around with the possibility. There is always a tinge of excitement in public domains. Something new and unexpected may happen. Most important, the public domain fosters public interaction; it sponsors unspoken ground rules for unknown people to meet and to interact. It nurtures civic understanding of the strength of diversity, variety, a range of cultural groups and ethnic mixes. In fact, it is this higher category of social space, or the public domain, which defines truly urban environments.

Intelligent urbanism emphasizes the creation of public domains, nurturing the possibility of chance meetings, catalyzing human interaction, and promoting communications, friendships and even love! Intelligent urbanism is focused on conviviality and social interaction!

Every social system has its own hierarchy of social relations and interactions. These are reflected through a system of "places" that respond to them. A **place** catalyzes a set of human relations and interactions! A space is just four walls around a floor plane!

The fourth principle of intelligent urbanism promotes the planning and design of such "places," as elemental components of urban structure.

Principle Four: Efficiency

Intelligent urbanism promotes a balance between performance and consumption. Intelligent urbanism promotes efficiency in carrying out functions in a cost-effective manner. It assesses the performance of various systems required by the public and the consumption of energy, funds, administrative time and the maintenance efforts required to perform these functions.

A major concern of intelligent urbanism is transport. While recognizing the convenience of personal vehicles, it attempts to place the costs (energy consumption, large paved areas, parking, accidents, negative balance of trade, and pollution) on the users of private vehicles. Presently the private automobile is subsidized by the Royal Government, even to the extent of lower interest rates for car purchases, than for home purchases.

Road taxes cover a fraction of the costs of roads! The costs of respiratory diseases, cancer, and heart ailments generated by the automobile's pollution are borne by active travelers and passive travelers, pedestrians, the public health system and the taxpayers.

Intelligent urbanism promotes alternative choices to dependence on personal vehicles. It promotes affordable public transport. It promotes nodes of medium to high-density residential development along with complimentary social amenities, convenience shopping, recreation and public services in compact, mixed-use settlements. These compact communities have shorter road lengths, water pipe lengths, wire lengths, cable lengths, drainage canal lengths and sewerage system lengths per capita. More people share gardens, shops and transit stops. This pattern is more cost effective, cheaper and the cost recovery for infrastructure is easier. High-density urban neighborhood nodes become the centers of lower density plotted areas, which can use the facilities these nodes support.

Compact urban nodes are spaced along regional urban corridors that integrate the region's urban nodes, through public transport, into a rational system of growth. Intelligent urbanism promotes clean, comfortable, safe and speedy, public transport, which operates at dependable intervals along major origin and destination paths. Such a system is cheaper, safer,

less polluting and consumes less energy. It is more efficient!

The same principle applies to public infrastructure, social facilities and public services. Compact, high-density communities result in more efficient systems. There is an appropriate balance to be found somewhere on the line between wasteful low-density individual systems and over-capitalized mega-systems. For example, individual septic tanks and water bores servicing individual households in low-density fragmented layouts cause pollution of subterranean aquifer systems. The bores dramatically lower the ground water levels. Alternatively, large-scale, citywide sewerage systems and regional water supply systems are capital intensive and prone to management and maintenance dysfunction. Operating costs, user fees and cost recovery expenses are high. There is a balance wherein medium-scale systems, covering compact communities, utilize modern technology, without the pitfalls of large-scale infrastructure systems. Intelligent urbanism promotes the middle path with regard to public infrastructure, facilities, services and amenities.

When the coverage of these appropriate systems physically overlaps communities with elected representatives, the "imagery" between user performance through tax and fee payments, systems dependability through management, and official response through effective representation, all become transparent. Intelligent urbanism fosters and dignifies the pedestrian, linking footpaths and walkways with public transport systems at strategic high-density nodes and hubs. Intelligent urbanism promotes medium-scale infrastructure systems whose catchment areas overlap political constituencies and administrative jurisdictions.

Intelligent urbanism promotes compact settlements along urban corridors, and within networks, such that densities support effective and efficient infrastructure systems. The fourth principle of intelligent urbanism is to plan efficient urban fabric!

Principle Five: Human scale

An abiding axiom of urban design and city planning has been the promotion of people-friendly places, pedestrian walkways and public domains where people can meet. These can be galleries covered with glass, arcades, cozy courtyards, street side walkways and a variety of gardens and semi-covered spaces. In salubrious climates, out-of-doors spaces can be exploited.

The last three decades have seen the loss of such spaces where the public domain has shrunk into privately managed shopping malls, entertainment complexes and gated suburban communities. Development has spread out privately managed, "limited access" public amenities along automobile roads and highways. This has divided society into ability to pay groups and made the automobile essential, not just for every household, but for every person. In some cities, "through grid road networks" have been atomized into dead end cul-de-sacs by closing off roads. Webs of human movement, access and interaction have been cannibalized into limited access "trees," with an entrance gate, a congested trunk road, arteries and small branch streets, "dead-ending" into under-utilized, isolated cul-de-sacs and loop lanes!

In most of the world, where economies are in a transformational stage, this pattern divides already fragmented societies. There are common interests between up-market developers, the energy industry, politicians and investment managers. The interests of the individual are lost in what is often called the "new economy" and a massive infrastructure system is built around this divisive system. The seeds of this deterioration were sown in America when General Motors bought up and then dismantled urban tram systems. The flotsam of this deterioration can be seen in the privatization of Holland's public transport system. In countries like India and China the automobile is being promoted over the bicycle and the pedestrian, excluding 90 percent of the population. Walkable communities remain an image and not a reality.

Movements like Smart Growth have recognized the inefficiency in this system, but have as their goals merely the reduction of pollution, the savings in energy and the creation of more efficient infrastructure. They are not focused on the plight of the individual and the divisions in society. Their goal is not conviviality. The New Urbanism focuses on isolated enclaves. These New Urbanism communities are in fact hideaways for an alienated elite. One must bring human scale, efficiency and, yes, urbanism back to the city where the majority of people actually live and will congregate over the coming century. There is a sleight of hand in these movements and charters that use sound design and planning axioms to marginalize people, subdue traditional solutions and exploit the environment. Personal wealth is created at the behest of public poverty.

Intelligent urbanism promotes the human dimension in a hierarchy of public and semi-public social places, as opposed to atomized and isolated private spaces. Elite enclaves are not the case studies for intelligent urbanism!

A good measure of this hollow faddism was promoted by a clique of elitists who propounded that one could be "*Learning from Las Vegas*." They fooled a generation of young architects into believing that they could go to the periphery of the city and learn, as if they were in Rome or Florence! Students were told that their cultural building blocks could be deciphered from hoardings, visual cacophony and conspicuous consumption. They believed that McDonald's Yellow Arch and the Mickey Mouse icon were their cultural memorabilia! While urbanists were dabbling in suburbia, they could have been learning from the core of the city about interaction, stems and networks and conviviality.

Architecture, campus planning and city planning, over the past half century, have all focused on isolated monuments on their own isolated plots, often enclosed in their own compound walls and behind lockable gates. The emphasis has been on artistic "grand-standing" and institutional self-aggrandizement. Stunts like Potsdamer Platz in Berlin and the Guggenheim Museum in Bilbao, which are over-scaled and grandiose, detract from the human scale. Largeness, grandness and technological feats have been the new trend, where the goal is often to amaze the naïve public, rather than to create humble, walkable human experiences! The end results are tourist destinations and not communities. This anti-people approach to design is anathema to intelligent urbanism.

Intelligent urbanism promotes the scale of the pedestrian moving on the pathway, as opposed to the scale of the automobile on the expressway. Intelligent urbanism promotes the ground plan of imaginable precincts, as opposed to the imagery of façades and the monumentality of the section. It promotes the personal visibility of places moving at eye level, as opposed to vast images, moving in hyper sequence, past one as they move in a high-speed machine.

While city planners talk about mixed land uses they are still merely placing chunks of mono-functional blocks of activity adjacent to one another, on a chessboard-like plan. Each institution, corporation and housing block has their own lockable and secure enclave, surrounded by roads!

Intelligent urbanism conceives of mixing a variety of uses within a rich, integrated urban fabric. This brings into play mechanisms like "the eyes of the street," round-the-clock activities and a more compact networking of services and infrastructure. It greatly enhances accessibility. It brings people together.

In the contemporary city, the automobile is the only link between activities; between work, school and house; between

individuals and group interaction. Intelligent urbanism removes this artificial barrier and promotes face-to-face contact. The automobile, single-use zoning and the construction of public structures in isolated compounds, all deteriorate the human condition and the human scale of the city. The relegation of "good practices" to isolated enclaves of the rich undermines the very concept of the community!

This trend can be overcome by developing pedestrian circulation networks along streets and open spaces that link local destinations. Shops, amenities, day care, vegetable markets and basic social services should be clustered around public transport stops, and at a walkable distance from work places, public institutions, high- and medium-density residential areas. Public spaces should be integrated into residential, work, entertainment and commercial areas. Social activities and public buildings should orient onto public open spaces. These should be the interchange sites for people on the move, where they can also revert into the realm of "slowness," of community life and of human interaction. These should be the interchange nodes at modal split points ... where pedestrians, cyclists, taxi passengers, bus passengers and light rail passengers alight, run errands, stop to rejuvenate and sip coffee.

Human scale can be achieved through building-masses that "step down" to human scale open spaces; by using arcades and pavilions as buffers to large masses; by intermixing open spaces and built masses sensitively; by using anthropometric proportions and natural materials. Traditional building precedents often carry within them a language of human scale, from which a contemporary fabric of built form may evolve.

The focus of intelligent urbanism is the ground plan, the plan, human movement and interaction along lines, stems, at crossing nodes, at interactive hubs and within vibrant urban cores. We have a lot to learn from Transit Oriented Development, but our goal is not merely to replace the automobile, nor to balance it. These are but the mundane requirements of planning, which we all are assumed to seek out in every design and urban configuration. These are but the "base-level aims" of all reasonable plans!

Intelligent urbanism recognizes that "urbanity" emerges where people mix and interact on a face-to-face basis ... on the ground, at high densities and amongst diverse social and economic groups. Intelligent urbanism nurtures "urbanity" through designs and plans that foster human scale interaction. The city must link together a matrix of human scales and human possibilities. It must create activity nodes, which promote interaction, communication, discussion, and the exchange of ideas, play, fun and romance! This is the essence of intelligent urbanism.

Intelligent urbanism conceives of urbanity as a process of facilitating human behavior toward more tolerant, more peaceful, more accommodating and more sensitive modalities of interaction and conflict resolution. In intelligent urbanism, human scale does not merely refer to the human dimension. It refers to the human perspective, and to humanism as a general guiding principle of making things.

Our goal is to enrich the human condition and to enhance the realm of human possibilities!

Principle Six: Opportunity matrix

The city is an engine of economic growth and human development. This is generally said with regard to GNP and balance of trade. More significantly, this is true for the individuals who settle in cities. Moreover, cities are places where individuals can increase their knowledge, skills and sensitivities. Cities provide access to health care and preventive medicine. They provide a great umbrella of services under which the individual can leave aside the struggle for survival, and get on with the finer things of life.

The city provides a range of services and facilities, whose realization in villages are the all-consuming functions of rural life. Potable water; sewerage disposal; energy for cooking, heat and lighting are all piped and wired in; solid waste disposal and storm water drainage are taken for granted. The city offers access through roads, buses, telephones and the Internet. The peace and security provided by effective policing systems, and the courts of law, are just assumed to be there in the city. Then there are the schools, the recreation facilities, the health services and a myriad of professional services offered in the city market place. There are snack shops, fast food joints, restaurants, and grocery stores with food substitutes, precooked and processed foods and ready-made meals. Cooking has become a hobby in the city!

Citizens of urban places are free from the tyrannies of disease, crime, harassment, exploitation, isolation, hunger, ignorance, and drudgery!

While the rural woman is fetching firewood, fetching water, growing vegetables and nurturing backyard poultry, washing clothes, boiling water and cooking, her urban sister may be doing a Ph.D. on "gender issues in rural development!" All of this leaves free time to develop one's own human resources, to pursue business, or gainful employment. One can pursue the arts, community work, politics and social work. This is all a result of the surety and security provided by the city. The city is an opportunity system! It offers a matrix of opportunities.

From the above it is self-evident that by urbanism we mean a process of personal transcendence over the constraints of life dictated by survival ... into a life of dreams and expectations. Urbanization is not just a movement of people from villages to cities; it is the transcendence of individual self-images from "involuntary, dependent conscripts" to self-defined, creative individuals.

Contrary to common wisdom, urbanism is a move away from the mundane objective of consumption, and toward goals of self-redefinition, social contribution, and spiritual realization through creation. Hyper consumption and blatant opportunism are but the ugly shadows of oppressive, subsistence, rural economies ... reflected in the insecure yuppidom of the New Economy. The expansive mansions illustrated in *The Charter for the New Urbanism* are anathema to intelligent urbanism. These excesses are visitors from an insecure and dangerous past into the present! Just as rational utilization of resources can grow into environmental exploitation, so opportunities can expand into crass opportunism. There is both a promise and a danger in urbanization. Intelligent urbanism sees much of the New Economy and the New Urbanism as a retrogressive diversion into exploitation and opportunism.

Intelligent urbanism sponsors opportunities to achieve the finer thoughts, finer things and more sensitive realizations. Life's journey in well-conceived urban places is a pilgrimage to find the "good;" is a seeking for ideals; and not a postmodern accumulation of grandiose possessions.

Yet these opportunities are not equally distributed. Security, health care, education, shelter, hygiene, and most of all employment are not equally accessible.

Intelligent urbanism views the city as an opportunity system. It sees the city as playing an equalizing role allowing citizens to grow according to their own essential capabilities and efforts. If the city is an institution, which generates opportunities, intelligent urbanism promotes the concept of equal access to opportunities within the urban system. If a city is a well-tempered one, it creates an "even playing field" from which the youth of the city seek out their futures!

Intelligent urbanism promotes a guaranteed access to education, health care, police protection and justice before the law, potable water, and a range of basic services. Perhaps

this principle, more than any other, distinguishes intelligent urbanism from other elitist, efficiency-oriented urban charters and regimes. Those are charters more fit for mechanical engineering than for the planning of people's futures!

Intelligent urbanism does not say every household will stay in an equivalent house, or travel in the same vehicle, or consume the same amount of electricity. It says every citizen will have an access to shelter, to transport, to electricity, to potable water, to sanitation, to waste disposal, to the public domain, to knowledge, education, and to basic health care.

Intelligent urbanism recognizes the existence of poverty, of ignorance, of ill health, of malnutrition, of low skills, of gender bias, of sexual orientation prejudices, and ignorance of the urban system itself. Intelligent urbanism is courageous in confronting these forms of inequality, and backlogs in social and economic development. Intelligent urbanism sees an urban plan, not only as a physical plan, but also as a social plan and as an economic plan!

The ramifications of this understanding are that the people living in cities will not experience urban development in "standard doses." People may be born equal, but they grow inequitably! An important role of the city is to provide a variety of paths and channels for each individual to set right their own future, against the inequity of the past. This is a more salient aspect of a free society, than even voting rights. Access to opportunity, to a variety of paths to achieve single ends, is the essence of self-liberation and human development.

There will be a variety of problems faced by urbanites and they need a variety of opportunity channels for resolution. If there are ten problem areas where people are facing stresses, like health, shelter, food, education, recreation, transport, etc., there must be a variety of opportunities through which individuals and households can resolve each of these stresses. There must be ten channels to resolve each of ten stresses! If this hundred-fold opportunity matrix is understood and responded to, the city is truly functioning as an opportunity matrix. For example, opportunities for shelter could be through the channels of lodges, paying guests, rented rooms, studio apartments, bedroom apartments and houses. It could be through the channels of ownership, through a variety of rentals and through various types of tenancies. It could be through opportunities for self-help, or incremental housing. It could be through the up-gradation of "bagos" and slums.

Intelligent urbanism promotes a wide range of solutions, where any stress is felt. It therefore promotes a range of problem statements, options, and variable solutions to urban stresses.

Intelligent urbanism sees cities as processes and not as objects. Good urban plans facilitate those processes and do not place barriers before them. For example, it does not judge a "slum" as blight on society. It sees the possibility that such a settlement may be an opportunity channel for entry into the city! Such a settlement may be the only affordable shelter, within easy access to employment and education, for a new immigrant household in the city. If the plan ignores, or destroys such settlements, it is creating a city of barriers and despair wherein a poor family, offering a good service to the city, is deigned a modicum of basic needs for survival. Alternatively, if the urban plan recognizes that the "slum" is a mechanism for self-development, a springboard from which children have access to education, a place which can be upgraded with potable water, basic sanitary facilities, street lights and paving ... then it is a plan for opportunity. Intelligent urbanism believes that there are slums of hope and slums of despair. It promotes slums of hope, which contribute, not only to individual opportunities, but also to nation building.

The opportunity matrix must also respond to young professionals, to skilled, well-paid day laborers, to the upper middle class and to well-to-do entrepreneurs. If ranges of needs, of abilities to pay, of location requirements, and of levels of development of shelter are addressed, then opportunities are being created.

Intelligent urbanism believes that private enterprise is the logical provider of opportunities, but that alone it will not be just or effective. The regime of land, left to market forces, will create an exclusive, dysfunctional society. Intelligent urbanism believes that there is an essential role for the civil society to intervene in the opportunity matrix of the city.

Intelligent urbanism promotes opportunities through access to:

- Basic and primary education, skill development and knowledge about the urban world;
- Basic health care, potable water and hygiene;
- Urban facilities like storm drainage, solid waste disposal, street lights, roads and footpaths;
- Recreation and entertainment;
- Transport, energy and communications;
- Public participation and debate;
- Finance and investment instruments;
- Land and/or built-up space where goods and services can be produced;
- Rudimentary economic infrastructure;
- Shelter systems offering a variety of "paths" to housing;
- Institutions addressing equitable justice, efficient administration and open debate over the wheedling of public authority; and,
- A wide range of zones, districts and precincts where activities and functions can occur without detracting from one another.

Intelligent urbanism proposes that enterprise can only flourish where a public framework provides opportunities for enterprise. This system of opportunities operates through public investments in economic and social infrastructure; through incentives in the form of appropriate finance, tax inducements, and subsidies; and regulations that protect the environment, safety, hygiene and health. It is through government regulations that private investment can be protected from fraud. It is through government regulation that an equitable "playing field" for free enterprise can be made to function!

Intelligent urbanism understands that the city is not just a thing, or group of objects, that support human endeavors. The city is an institution, which promotes development processes and opportunities.

Intelligent urbanism facilitates a wide variety of channels and paths through which individuals can solve their problems, liberating them to redefine and recreate themselves.

Principle Seven: Regional integration

Intelligent urbanism sees the city as part of a larger social, economic and geographical organism ... the region. Likewise, it sees the region as an integral part of the city. Planning of the city and its hinterland is a single holistic process. Intelligent urbanism respects the fact that a city exerts an influence over its immediate surrounds. It can catalyze upliftment, or deterioration of the hinterland that supplies its raw materials, food, workers, recreation areas and environmental cushion. City growth and development is an organic part of a much larger organism. If one does not recognize growth as a regional phenomenon, then development will play a hopscotch game of moving just a little down the valley, or up the hills, keeping beyond the path of the city boundary, development regulations and the urban tax regime. If one does not recognize the wholeness of the city and its region, the city will ruthlessly exploit its surrounds, denuding the forests of trees, quarrying out hillsides for stone, grassing off the biomass for milk and meat.

Socially the region may be defined as the catchment area from which employees and students commute into the city on a daily basis. It is the catchment area from which people choose to visit one city, as opposed to another, for retail shopping and entertainment. Economically it may be seen as the zone from which perishable foods, firewood and building materials supply the city. The economic region can also be defined as the area managed by exchanges in the city. Telephone calls to the region go through the city exchange; post goes through the city post office; money transfers go through the city's financial institutions and Internet data pass electronically through the city's servers. The area over which "city exchanges" disperse matter can well be called the city's economic hinterland or region. Usually the region includes dormitory communities, airports, water reservoirs, perishable food farms, hydro facilities, out-of-doors recreation and other infrastructure that serves the city. Intelligent urbanism sees the integrated planning of these services and facilities as part of the city planning process.

Intelligent urbanism understands that the social and economic region linked to a city also has a physical form, or a geographic character. This character may be the plain that connects mountains to the sea, or a river valley and the hill-forms framing it. A hierarchy of watersheds usually patterns the geographic character. Forest ranges, fauna and avifauna habitats are set within such regions and are connected by natural corridors for movement and cross-fertilization. Within this larger, environmental scenario, one must conceptualize urbanism in terms of watersheds, subterranean aquifer systems, and other natural systems that operate across the entire region. Economic infrastructure, such as roads, hydro basins, irrigation channels, water reservoirs and related distribution networks usually follows the terrain of the regional geography. The region's geographic portals, and lines of control, may also define defense and security systems deployment.

Intelligent urbanism recognizes that there is always a spillover of population from the city into the region, and that population in the region moves into the city for work, shopping, entertainment, healthcare and education. With thoughtful planning the region can take pressure off of the city. Traditional and new settlements within the urban region can be enhanced and densified to accommodate additional urban households. There are many activities within the city, which are growing and are incompatible with urban habitat. Large, noisy and polluting workshops and manufacturing units are amongst these. Large wholesale markets, storage sheds, vehicular maintenance garages, and wood working mills need to be housed outside of the city's limits in their own satellite enclaves.

Thus, the holistic integration goes beyond the city's immediate region into the entire national system of growth centers and service centers. Growth Centers are urban nodes that can accommodate retail, wholesale, productive, administrative, higher education, health and other higher-level functions. Growth Centers can support and catalyze a nation's decentralization process. They can stimulate the utilization of productive resources of a region. They provide a convergence of services, amenities and economic infrastructure that support various productive and employment-generating activities. Service Centers supply the basic needs of the population, in areas like health care, education, agricultural inputs, surplus production collection and transport. Service Centers provide broad-based and general services. They act as referral points from which people are referred to appropriate higher-level facilities and services. Service Centers operate on smaller thresholds of population than do Growth Centers. But both accommodate a convergence of services and facilities, so that visitors can achieve several objectives in one trip. Each has its own catchment area of users who are connected in an appropriate system of roads and public transport in a hierarchical system of demand and supply. Thus, the preparation of an urban plan, and the plan for its surrounding hinterland must dovetail into a larger and more complex system of human settlements.

Intelligent urbanism is not planning for the present; it is planning for subsequent decades, centuries and forever. Intelligent urbanism is futuristic, in that it must forecast the scenarios to come, within its own boundaries, and within the boundaries of the distant future.

Intelligent urbanism nurtures the potential complementary relations between nodes of activity and the more distant areas that feed and support them. Intelligent urbanism recognizes the holistic and integrated nature of social, economic, political and ecological systems as they act through city systems.

Principle Eight: Balanced movement

Intelligent urbanism sees movement and transport in the city, and in the urban region as a whole, as a balanced group of systems that are integrated with one another. These overlapping systems, or modes of transport, include pedestrians, cycles, automobiles and buses. These modes may be light rail systems, trams or funiculars. Common sense provides for future generations by leaving enough space along corridors to accommodate higher levels of technology when the need arises.

Intelligent urbanism sees the interchanges between transit systems, as the public domains in which intense activities must occur. These should be high-density areas with compact urban fabrics.

Intelligent urbanism sees the automobile as a permanent feature of the urban pattern, but as only one of the modes of movement! Hidden subsidies on energy, roads and parking, or on the interest rates charged to purchase automobiles, should not give an undue advantage to the use of vehicles.

Intelligent urbanism sees a grid of roads serving automobiles, instead of a hierarchy of lanes, arteries and expressways, which funnel traffic into congested collection roads. Dead ends, large gated communities, cul-de-sacs and "feeder roads," are seen as bad practices, as they are socially divisive and slow vehicular circulation, which is concentrated at the gathering areas and junctions where the hierarchy of roads meets.

Intelligent urbanism promotes service roads off of the grid and into pedestrian-dominated lanes. Here, parking along streets, with planting along side walkways act as buffers between pedestrians and vehicular movement.

Intelligent urbanism sees rapid buses, traveling in dedicated express lanes, as the most promising and cost-effective solution for smaller regions. In larger regions, a light rail system can link rapid bus routes and onwards integrate walkable enclaves.

Intelligent urbanism recognizes that even in contexts where there are comparatively high automobile ownership levels, access to these vehicles, even within the same households, may be low. Wives and children must seek other modes of travel. Students, skilled workers, domestic servants and young professionals – just to name a few – need to avail of alternative means of travel.

For all of these integrated modes of transit to operate in a balanced manner in an urban and regional setting it means the pattern must be planned as high-density, compact centers, linked together along a transit corridor.

Societies that have grown to depend on the automobile never seem to move ahead of congestion, nor ahead of the insatiable demand for new roads, widened roads and improved roads.

Intelligent urbanism says a city cannot build its way out of congestion within a one-mode system of transport.

Intelligent urbanism promotes a balanced system of pedestrian communities, integrated with public transit, through networks of compact centers. Intelligent urbanism promotes open-ended grids of streets, using parked automobiles as buffers between the dangerous road and the secure footpath. Within such grids, channels, stems and corridors must be identified to link urban nodes and hubs with the vaster region.

Intelligent urbanism promotes the separation of pedestrians and automobiles through logical design and rational planning. It recognizes that transport is the single most defining crafted element of urban structure. It sees movement as the key experiential element of the city, as well as the most integrating functional component.

Principle Nine: Institutional integrity

Intelligent urbanism recognizes that none of the principles, or good practices, it promotes can be implemented unless there is a strong and rational institutional framework to define, channel and legalize urban development, in all of its aspects.

Intelligent urbanism envisions the institutional framework as being very clear about the rules and regulations it sponsors and that those using discretion in implementing these measures must do so in a totally open, recorded and transparent manner.

Intelligent urbanism proposes that a Development Management System must temper each city and each urban region. This would lay out all of the procedures, through which all proposals would be submitted and assessed. It would clearly define all of the parameters that are being considered and provide the reasons and the conditions on which proposals will be assessed.

Intelligent urbanism facilitates the public in carrying out their honest objectives. It does not regulate and control the public. It attempts to reduce the requirements, procedures and documentation required for citizens to process their proposals.

Intelligent urbanism is also promotive in furthering the interests of the public in their genuine utilization of opportunities. It promotes sites-and-services schemes for households who can construct their own houses. It promotes upgradation of settlements with inadequate basic services. It promotes innovative financing to a range of actors who can contribute to the city's development. This includes financing for entrepreneurs engaged in the production of building materials, in the packaging of land parcels, in the construction of houses and in the promotion of projects. Intelligent urbanism proposes a cautious and limited, yet crucial, role of government. For example the public sector can play a facilitative and promotive role by "packaging" large-scale urban development schemes, so that the private sector is promoted to actually design, build and market urban projects, which government agencies previously built themselves.

Intelligent urbanism is not naïve! It recognizes that there are developers and promoters who have no long-term commitment to their own constructions, and their only concern is to hand over a dwelling, gain their profit, and move on. For these players it is essential to have Development Control Regulations, which assure the public that the products they invest in are safe, hygienic, orderly, durable and efficient. For the discerning citizen, such rules also lay out the system of "civil understanding" by which a complex society agrees to live together.

There must be a Cadastral System wherein all of the land in the jurisdiction of cities is demarcated, surveyed, characterized and archived, registering its legal owner, its legal uses, and the tax credits and defaults against it.

The institutional framework can only operate where there is a Structure Plan, or other document that defines how the land will be used, serviced, and accessed. The Structure Plan tells landowners and promoters what the parameters of development are, which assures that their immediate investments are secure, and that the returns on, and use of such efforts are predictable. A Structure Plan provides owners and investors, alike, with predictable future scenarios. This is essential for an economy to grow and for investors to become active. Cities require efficient patterns for their main infrastructure systems and utilities. Land needs to be used in a judicious manner, organizing complementary functions and activities into compact, mixed use precincts and separating out non-compatible uses into their own precincts, which also have unique mixes of functions. In a similar manner, it is only through a plan that heritage sites and the environment can be legally protected. Public assets in the form of natural features, religious places, heritage sites and open space systems must be designated in a legal plan.

Intelligent urbanism proposes that the city and its surrounding region be regulated by a Structure Plan, or equivalent mechanism, which acts as a legal instrument to rationally guide the growth, development and enhancement of the city.

There must be a system of participation by the "Stake Holders" in the preparation of plans. Public consultations, hearings of objections and transparent processes of addressing objections, must be institutionalized. Intelligent urbanism promotes Public Participation.

Local Area Plans must be prepared which address local issues and take into account local views and sentiments regarding plan objectives, configurations, standards and patterns. Such plans lay out the sites of plots showing the roads, public open spaces, amenities areas and conservation sites. Land Pooling assures that all of those who benefit from the provision of public infrastructure and amenities equally contribute, and that a few individuals do not suffer from reservations in the plan.

There must be a system of Floor Area Ratios (FAR) to assure that the land and the public services that support urban activities are not over-pressured. No single plot owner should grab more than their fair share of utilization of the access roads, amenities and utilities that service all of the sites. Floor Area Ratios temper this relationship and equalize the manner in which public services are consumed. The Transfer of Development Rights benefits landowners whose properties have been reserved under the plan. It benefits the local authorities that lack the financial resources to purchase lands to implement Structure Plans. It benefits concentrated, city center project promoters who have to amortize expensive land purchases, by allowing them to purchase the development rights from the owners of reserved lands and to hand over those properties to the plan-implementing authority. This allows the local authority to widen roads and to implement the Structure Plan, with a minimum expenditure of funds. The local authority then transfers the needed development rights, in the form of additional FAR, to the city center promoter. Intelligent urbanism favors such innovative mechanisms.

Intelligent urbanism supports the use of Architectural Guidelines where there is a tradition to preserve and where precedents can be used to specify architectural elements, motifs and language, in a manner that reinforces a meaningful cultural tradition. Building designs must respect traditional elements, even though the elements may vary greatly to integrate contemporary functions. Architectural Guidelines are required to assure harmony and continuity of building proportions, scale, color, patterns, motifs, materials and facades. They give cities and cultures alike their unique identities and character.

Intelligent urbanism guarantees access to all public services and amenities to the specially-abled. It facilitates access to pri-

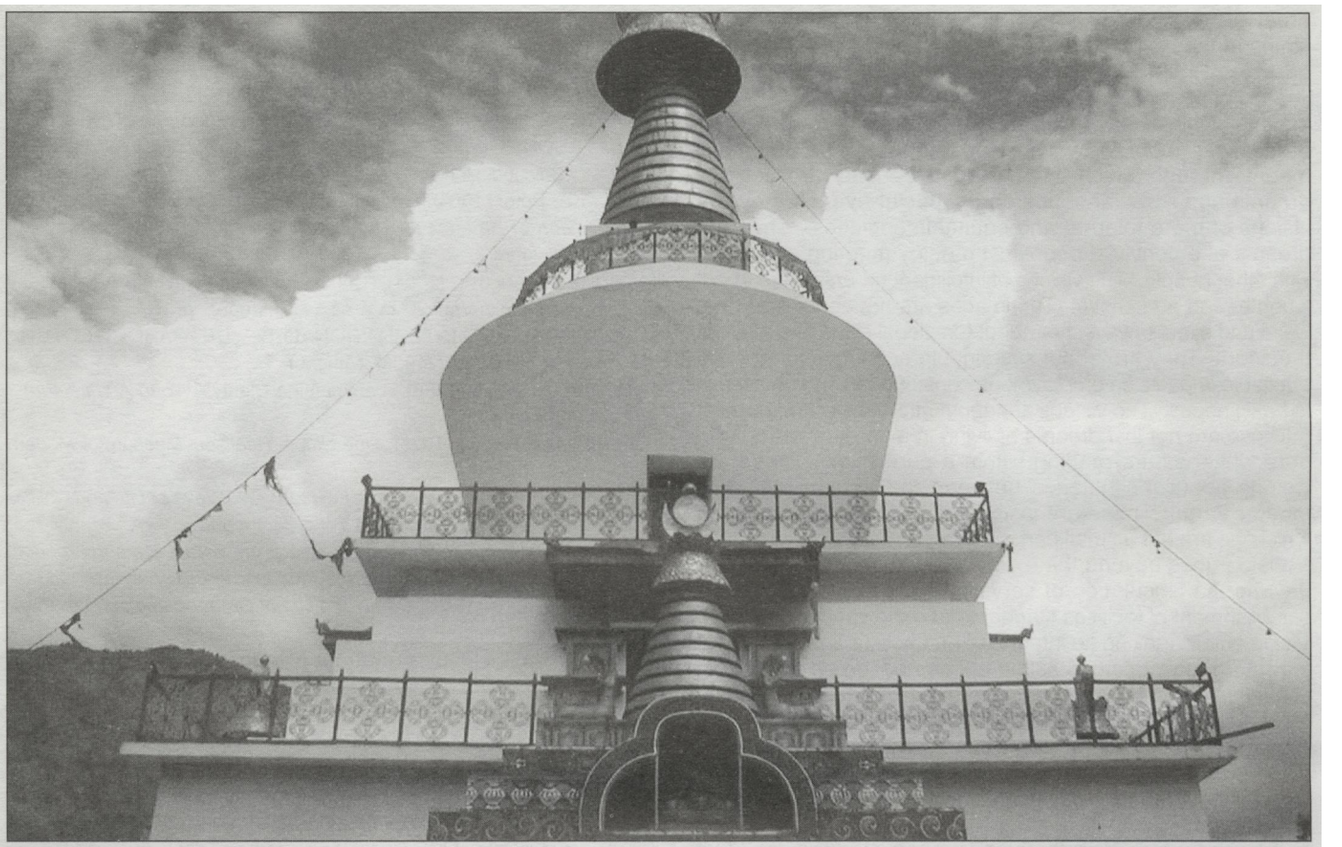

Fig. 19: Bhutan – Detail of a Chorten in Thimphu. (*Source*: Photograph courtesy of K. Venkateshkumar, Christopher Charles Benninger Architects and Planners, Planning Team Thimphu).

vate areas as well! Intelligent urbanism insists on safety, hygiene, durability and utility in the design and construction of buildings. Where large numbers of people gather, in schools and hospitals, which may become emergency shelters in disasters, special care must be exercised. A National Building Code is the reasonable instrument to achieve these aims, in the public's interest.

Those who design buildings must be professionally qualified architects; those who design the structures (especially of structures more than ground plus two levels) must be professionally qualified structural engineers; those who build buildings must be qualified civil engineers; and, those who supervise and control construction must be qualified construction managers. Intelligent urbanism promotes the professionalization of the city-making process. While promoting professionalism, intelligent urbanism proposes that this not become a barrier in the development process. Small structures, low structures, and humble structures that do not house many people can be self-designed and constructed by the inhabitants themselves. There must be recognized Professional Accrediting Boards, or Professional Bodies, to see that urban development employs adequate technical competence.

Finally, there must be legislation creating Statutory Local Authorities, and empowering them to act, to manage, to invest, to service, to protect, to promote and to facilitate urban development and all of the opportunities, which a modern city must sponsor.

Intelligent urbanism insists that cities, local authorities, regional development commissions and planning agencies be professionally managed. City Managers can be hired to manage the delivery of services, the planning and management of planned development, the maintenance of utilities and the creation of amenities. This must be institutionalized.

Intelligent urbanism insists that appropriate institutions be established and that these clearly separate the roles and the powers of government from those of administrators. Elected officials are all ultimately responsible to their Council of Ministers and Head of Government. Competent administrative officials are ultimately responsible to the Head of State. This distinction assures that implementation remains in a professional arena, and that policy formation and law making are in the sphere of elected representatives. This is an evolutionary process wherein a clear distinction between the chain of command down from the Head of State and the Head of Government separate and become distinct.

Intelligent urbanism views plans and urban designs and housing configurations as expressions of the people for whom they are planned. The processes of planning must therefore be a participatory one, between professionals, administrators, elected officials, users and stakeholders. The process must be a transparent one, which makes those privileged to act as guardians of the people's will accountable for their decisions and choices.

Intelligent urbanism sees urban planning and city governance as the most salient expressions of civility. Intelligent urbanism fosters the evolution of institutional systems that enhance transparency, accountability, rationality and participation in public decision making.

Principle Ten: Vision

The last principle of intelligent urbanism is that decision making, even the smallest decisions, must be based on a broad vision of the future. This vision must be nurtured from positive and constructive dreams of the nature of the future. These

dreams must go beyond the scientific projection of future states of the city; they must form ideal patterns of living and qualities of life! The visions of intelligent urbanism are not just images of physical forms and end products. They are not the dreams of things that architects often ponder. They are about processes, about the ways things happen, and about the means through which things happen! They are not just dreams about social spaces and special events; they are visions of more tolerant and equitable societies. They are dreams of a convivial people who enjoy meeting and being with other people. The visions of intelligent urbanism are about laughter and about love! The images are not about new freeways and expressways, nor about functional cities and efficient transport. They are about sustainable economies that have equitable impacts on employment, consumption and on access to basic needs. The visions are about affordability and access!

These are not just dreams of living in a verdant valley, with pure white waters running within a pure river. These are visions about the balance between the human race and mother earth! These are visions of a balanced ecology in which we are but a small part.

Vision goes beyond the extrapolations of population size; beyond the calculation of services thresholds; beyond the establishment of facilities standards and the setting of targets. Vision entails making an integrated and holistic assessment of the future; evaluating possible options based on their likely impacts. Vision is not an easy dream, but a difficult assessment of strategies and their resultant scenarios.

Intelligent urbanism proposes there can be no intelligent city plans, or intelligent urban designs, unless there is a common vision of the city by the city users and their leaders. There can be no urban virtues, which are greater than the inherent virtues of the people for whom the plan is made. Virtues don't just happen!

Intelligent urbanism is therefore a process of communication, of realization, and of education. Intelligent urbanism is about creating knowledge systems, debating knowledge systems, and about questioning the underlying meaning systems on which knowledge itself is built. Intelligent urbanism is the difficult task of turning meaning systems and knowledge systems into concrete actions. It is about vision!

Notes

1. **Chorten:** A small, stupa-like structure, commemorating a saint or the Buddha often near a house, a public building, or along a path used as a "marker."
2. **Dzong:** A castle in which the monks' bodies and the administrative cadre of an area reside and function. In the Tashichho Dzong in Thimphu, these bodies rule the entire nation.
3. **Mani:** A prayer wheel, derived from its meaning as a script recited for the accumulation of merits to be carried to the next life.
4. **Mani Wall:** A wall, in which prayer wheels are fixed.
5. **Lakhang:** A Buddhist temple where rituals are performed. These can be grand, or mere gathering places in villages for festivals.
6. **Dharma:** Conduct, morals and ethics suitable to one's station in the social system.
7. **Drukpa:** A Buddhist sect brought to Bhutan in the 8th century from Tibet. While most of the people of Bhutan are "drukpas," the sect is in harmony with other Buddhist sects and religions.
8. **Mantra:** A verse or phrase believed to have magical or religious efficiency. These are printed on prayer flags and these favorable ideas float off with the wind over the valleys.
9. **Om Mani Padme Hum** meaning, "I am the Gem and the Lotus." These six syllables are recited for the accumulation of merits in the next life. They are found on chortens, stupas and other spiritual devices.
10. **Stupa:** A mound commemorating Buddha's Death, often purporting to have his relics buried within.

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