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THE DEVELOPMENT OF MODERN TECHNOLOGIES VIA EXPANDING TECHNOLOGY PARKS OF TABRIZ

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ABSTRACT

Technology village is a novel topic that has drawn a lot of attentions during the recent decades. As a matter of fact, the position of science and technology parks has become outstanding in increasing the technological innovations and wealth generation in the communities with the success of these structures in the advanced countries. It has become now clear that such places play an essential role in the entire technological development stages from culture information and organizing the research activities to the production and marketing of technology. In our country, as well, preliminary steps were taken during the recent years for the construction of technology parks and there are even regulations codified for the establishment of these parks in the province. Since building of these villages needs some infrastructures, including university, industries and transportation systems and so forth, and East Azerbaijan Province and Tabriz are considered as academic and industrial regions of the country, it can be stated that the construction of technology village in Tabriz can be increasingly effective in the economic development and flourishing of the province. The present study, as well, is selected and designed in line with advancing such goals and, while the extensive theoretical studies are laid on the foundation of complex technological-philosophical topics, the current research paper takes an approach towards such bioenvironmental problems as air and environmental pollution and immethodical use of fossil fuels and non-renewable resources so as to come up with solutions for rendering consistent the architectural designs with environment and creation of spaces matching with the green architecture.

Keywords: *Technology, Park, Space, Public, Sustainable.*

INTRODUCTION

The nations' success during the upcoming decades will depend on the amount and the quality of their growth and effects in scientific and research relations and their strategic products. It has been through constant progress in technology and culture and other similar issues that the countries have been able to continuously enhance the standards' levels to the extent that they have been able to gain dominance and make their knowledge and technologies rule over the vast global markets in national and transnational areas (Koh et al., 2005).

What is understood in the current era of the technology is its most revolutionary aspect, i.e. technological dynamicity; nowadays, technology goes beyond the racial and lingual borders and its dynamicity is increasing more and more. Learning process occurs in a faster pace for the new technology of microchips and computer software as compared to the technology of coal and iron. If the older countries left three laborious generations behind to dominate the coal and iron technology, the modern industrial like countries in the east of Asia could rule over the modern technology only by the pass of a generation and they passed through a state of

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difficulties to attain power by doing so .this is why the new technology is called the technology of hope. On the other hand, it can be stated that technology is the main pillar of knowledge-based economy and, in fact, wealth is gained via selling technology. Based on the aforementioned discussions, the importance of technological growth and development can be figured out. In line with this, Entrepreneur University is a novel topic formed with the shift in universities' strategy from purely scientific activity towards rendering applied the science and technology with an emphasis on commercialization of the knowledge formed. Putting the scientific researches' findings into effect and making use of modern technologies are the most important duty of the present era universities (Etzkowitz, 1998). One of the best methods of achieving this goal is the creation of technological parks that are established in the scientific universities and communities with the objective of corroborating entrepreneurship spirit and envisioned as institutions for achieving full-scale development (Segal, 1986).

Commercialization of ideas and results of the scientific research, encouraging the formation and support of the newly emerging and technological firms, sustainable employment as well as active performance as the chain joining the universities and higher education institutions, industry and, eventually, market are amongst the objectives of technology parks in such a manner that they ultimately aim at creating value and finally national and regional development (Sana'eipour, 2008).

Resultantly, the final mission of the technological parks is coordinating the results obtained from the academic researches with the industrial needs, therefore, to bridging the gap in industry-university relationship and this would eventually lead to the knowledge commercialization which is the process of converting and altering the theoretical knowledge existent in the academic institutions within the format of some kinds of economic activities (Pourezzat, Gholipour& Nadir Khanlou, 2010).

Statement of the Problem:

Technology parks are now being recognized as part of the national development strategy with the progress and development of the companies established in them and evaluation of their capabilities and performances since 1970s (O'Shea et al., 2005). Because it can be asserted that the technology parks are deemed as panacea for overcoming the national and regional problems parallel to the reduction of unemployment, improvement of the companies' competitiveness and enhancement of quality of life as well as a factor for instigating the comprehensive reconstruction of the region where they are striving. These types of parks are more similar to a special industrial-business zone with modern technologies and they are created with the assistance of the manufacturing (or service) entities based on market needs and substantially for the purpose of completing the economic cluster in a special field (usually modern technologies). The most substantial activities of these parks are research and development, production, business and service-providing and they are predominantly organized aiming at production of export goods capable of international competitiveness.

The creation of environments with distinct cultural relations and specifications, ease of management and planning, accumulation of research centers in one place, possibility of more precise planning, better control of the research budget allocations and evaluation of research institutions are also provided by them.

Study Objectives:

Enhancement and improvement of the country's industrial technology inventory for the purpose of expanding and developing of their competitiveness in domestic and, especially, international markets

Reducing the time required for the commercialization of the research accomplishments, particularly for the newly emerging and vulnerable companies and industries

Offering support for invention registration

Establishment of the relationship between industries, governmental institutions, universities and research centers

Providing proper spaces for identifying and informing the country's technological abilities through market technique

Creation of proper occupational opportunities for attracting the scientists and technologists

Setting the ground for the commercialization of research accomplishments

Paving the way for entrepreneurship and supporting innovation and creativity of the young research forces

Making use of the modern technologies for physical designing of the buildings in order to their energy cost-effectiveness

Replacing the renewable energies with non-renewable ones

Providing an appropriate space for collective activities

Creation of an appropriate place for satisfying the needs of all the social groups

STUDY METHODOLOGY

Complete Explanation of the Study Method based on Objective, Data Type and Implementation Method (Including Materials, Equipment and Standards Used within the Format of the Study Executive Stages in Separate):

Although some examples of technology parks have been constructed in our country, they lack the required performance diversity and there is no organized research regarding the architecture of the scientific and technological parks based on the type of their applied orientations. Thus, the study of the process according to which the technology parks have been formed in the world and investigation of the existing successful parks (within the format of library research), makes it possible to codify and offer the best patterns for the creation of the spaces required in Tabriz's park of technology.

Study Variables within the Format of a Conceptual Model and Explanation of the Variable Examination and Measurement Method:

Information analysis will be carried out based on intellectual, inferential, explanatory, interpretative and comparative methods. Surely, following the taking of the first step in the codification of a dissertation, which means acquiring information and adding to the knowledge, the turn comes to the investigation and examination of the information so as to reach an overview and essential perception for serving the second part, i.e. study design.

So, the creation of the mental background is reached to the design idea thorough recognition of the study goal for attaining the appropriate space and investigation of the performance styles via statistics and criteria and standards of various kinds and also based on observation of

examples made of the sample work as well as by recognition of the factors influencing the design; and therefore, the complex can be designed.

Complete Explanation of the Data Collection Method (Field and Library) and Instrument (Observation and Test, Questionnaire, Interview, Notetaking and so on):

In this research, the library studies are firstly dealt with and, then, the concepts, definitions and general principles are investigated following which the research tool is used to explain the gathered study data.

Information Collection Instrument:

- Written Sources (books, journals, articles and so on)
- Image sources (pictures, slides, maps and so on)
- Architectural indices and standards
- Computer networks (internet)
- Investigation of the documents and evidences

Methods and Instruments of Data Analysis:

Tabriz University's central library

Tehran University's central library

The central library of Islamic Azad University, Tabriz Branch

Scientific History:

Studying three types of managed workspaces, to wit technology units' growth centers, science and technology parks and scientific and technological towns and getting succinctly familiar with their sub-branches, it can be discerned that technology parks are amongst the issues that are currently considered in the developed world and developing countries; moreover, the main idea of the technological development is based on knowledge and also that such spaces are increasing in number on a daily basis. Because the present study has been conducted with the objective of technology park establishment in Tabriz, the present study deals with a more complete case study of technology park and growth center which are inseparable parts of the technology parks.

- ***Rochester Technology Park-New York:***

Rochester is situated on the southern coast of Ontario Lake in New York and it is considered as the third largest urban district in New York as well as a creative and incentive urban set. The existence of a region with a superior technology has contributed to the creation of versatile and educated workforce. The buildings have been constructed with a design structurally featuring a load-bearing capacity of 1470kg/m^2 per every building substructure. The field of vision ranges between 3m to 9m and the columns occupy spaces between 15m^2 to 17m^2.

TELECOM structure has been designed so that the copper cable technology can be used for both voice and information and reinforces the optic fiber structures.

Figure 1: Rochester Technology Park-New York

- *Technology Park-Qatar:*

The cooperation between "Qatar's science and technology park" and "education city" is amongst the main strategies adopted by Qatar's organization of education, sciences and social development. For transforming the country to an important research center in the region, the goal of the foresaid organization by such an initiative is enabling the educated individuals of the "education city" to continue their researches in the research labs in the science and technology park following their graduation. Moreover, the organization tries developing and commercializing any sort of innovation by sponsoring it through Qatar's national research fund.

Figure 2: Technology Park-Qatar

- *Paradise Science and Technology Park:*

Paradise Technology Park, as the heaven of the region's technology, has been constructed under the supervision of the presidency. It is administrated by a board of trustees consisting of 14 members of the various ministries and scientific and academic centers. The first deputy of the president holding the tenure heads the park. This park is located within a 20-km distance from the northeast of Tehran and reaches to 38ha in area. It was constructed in two phases (with a development horizon up to 1000ha).

In contrast to the other parks and research poles of the region, this park features more relative and legal benefits for being converted to a large zone for economic, research and scientific activities. In line with this, Paradise Technology Park possesses the required grounds for bonding to the potential and actual markets around the globe and it can also be expanded based on technological exchanges between international and the home country's market techniques. In terms of the majority of the special privileges and advantages, the park has

provided the opportunities for attracting the modern technical knowledge and proper investment in this center and, according to the fact that it has been established in the heart of the credible research, scientific and academic centers (and being close to two industrial regions, namely Khorramdasht and Firuzkouh with special industrial production facilities) and that specialized cheap and abundant workforce are available there, the environment is appropriate for the establishment and professional presence of small and medium-size enterprises, R&D units hence the development of research industries and institutions.

Figure 3: Paradise Science and Technology Park

Definition and History of Science and Technology Parks:

Technology parks are deemed as a response to the need of the entrepreneur academics as individuals who are willing to the commercialization of their technological innovations, on the one hand, and tending to preserve their relationship with the universities and higher education institutions, on the other hand. The Stanford University's technology park, built in 1951, is the first park that was recognized as a park of science by everyone. The park was born out of the thoughts of the well-known Fredrick Truman. To increase the university's income and improve its status, he, who later on became known as the father of Silicon Valley and gained an international fame, established Stanford Park which is the first industrial region designed for the absorption of the companies and research and development facilities in the vicinity of a university and it is also the first park established based on a superior technology beside a university. The idea of establishing technology parks was later on extensively borrowed in Europe and all around the US. In 1955, seven companies entered this park. In 1960, they were increased to 32 and, now, there are over 140 companies working in the 655-hectare land of this park. The income obtained from land rents in this park has been a good financial source during the past years for the university and this has made the university be recognized as one of the largest research universities worldwide. Furthermore, in regard of the satisfaction of the industries' needs, the park has been able to establish an effective relationship between the university and the industry and set the ground for the industrial generation (from university to industry). Stanford Park is the source of the formation of the world's most famous technology zone, i.e. Silicon Valley. The definition offered by the international association of science and technology parks is that a technology park is an organization administrated by professional experts and its primary goal is increasing wealth in the society via encouraging and enhancing innovation culture and enhancing competitiveness of the companies working based on science

and knowledge in the park. To achieve this goal, technology parks motivate the universities, R&D centers, private firms and markets and manage the flow of knowledge and technology. In addition, facilitate the establishment and growth of the technological companies via growth centers and generative processes and provide facilities with high added value, workspace and appropriate and high-quality installations as well as a valuable chain of resources for the companies.

Definition Offered by the International Association of Science and Technology Parks of Technology Parks:

A scientific park is an organization that is managed by professional experts and its primary goal is increasing wealth in the society via enhancing the innovation culture and competition amongst the companies present in the parks and institutions relying on science and knowledge. To achieve this goal, a science park circulates and manages knowledge and technology between the universities, research and development institutions, private companies and market and facilitates the growth of the companies relying on innovation via growth center and generative processes. Science and technology parks also offer other services with high added value along with high-quality workspace and facilities.

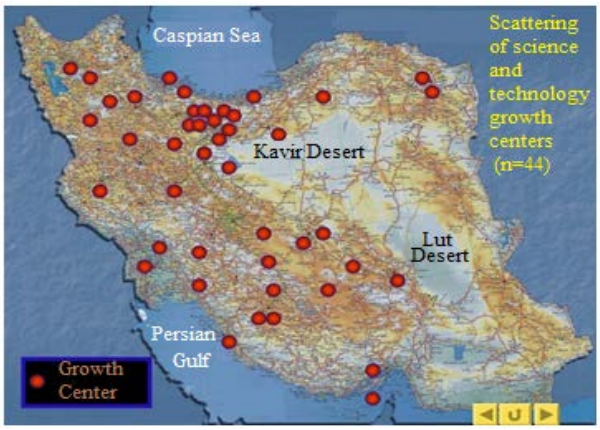

Figure 4: Scattering of science and technology growth centers -Iran

Different Perspectives to Science and Technology Parks:

In sum, the literature related to science and technology parks can be categorized into two substantial research areas as outlined below:

- ***Institutional Perspectives:***

As an institution, Science and Technology Parks adopts an institutional perspective to the science and technology parks as institutions providing facilities for the novel technology-driven companies. The perspective emphasizes on the processes and instruments of the parks' activity policies and mechanisms and investigates such issues as parks and growth centers' duties and missions, the number and size of the academic firms and so forth. The studies conducted regarding this perspective predominantly underline the idea that whether the science park provides the companies with competitive advantage or not?

- ***Economic Perspective:***

As technological and economic zones, Science and Technology Park adopts an economic approach to technology parks incorporating the specialized firms with extensive

communication structure between these firms and their daily increasing effects on the environment. This perspective investigates the effect of parks on the regional development. In this approach, the science and technology park becomes the physical specialized infrastructure for the technology-driven companies and underlines the direct and tangible aids of these parks to the aforesaid companies and their internal mechanisms. The studies carried out in regard of this approach predominantly pertain to the creation of jobs and entrepreneurship, helping the risk-taking investments and R&D activities and changes brought about in the development of the regional and national economies by means of forming technology-driven companies (Saxenian, 1994).

The Necessity for Supervision and Evaluation in Science and Technology Parks:

The success of the science and technology parks plays an essential role in many of the countries in their scientific-economic growth and this causes propagation of this pattern to the various countries. In fact, economic development of many of the developed countries owes to the existence of science and technology parks in them. The visages of the regions where these parks are striving, are completely altered as a result of the successful performance of active companies in the science and technology parks and these inactive regions are converted to the most active and most advanced industrial centers in the world (Kharaghani, &Selseleh, 2009). The main objective of the park is that it has to accelerate the formation of cumulative and synergistic space so that the communications between the established firms and the other scientific, industrial and economic centers can be increasingly augmented. In this regard, the creation of a powerful managerial core in the park is envisaged to be very vital because the existence of this powerful managerial core creates the required attractions for the absorption of companies in chains related to the firms possessing superior international technologies as well as the counselling companies and so forth (Mahdavi, Sheikh Zeinoddin&Khodabandeh, 2010). According to the objectives, missions and admission conditions of the companies, science and technology parks are more than a place for the presence of knowledge-based companies. The supply and offering of value-added services, networking of the supervisions and guidance of programs and missions is very important in these parks. One important instrument of actualizing the skill park management's objectives resides in evaluating the knowledge-based companies' abilities and capabilities that are functions of qualitative and quantitative variables for the evaluation and analysis of the efficiency of which certain indices can be defined. But, the subject of such an evaluation is the knowledge-based companies for the evaluation of which there is a need for a clear-cut definition of their essential activities, such as the commercialization of the research and technology accomplishments (FatehRaad, 2004).

Main Features of Science and Technology Parks:

- The primary theme of these parks' activities is research and development in the area of high-level technologies and the stress is placed on the researches that are organized in line with knowledge-based development. In these parks, mass production is not allowed and the large industries are not established there.
- Research in these parks aims at satisfying the needs of certain industries. It means that no research is performed in these parks to, for example, achieve special physics, chemistry or math-related formula rather research is done to resolve certain problems

and/or scientific bottlenecks of an industry. In other words, the internal activities of these compounds are specifically more of a technological nature rather than academic.

- Industries established in these parks are light and technological ones. These industries produce very high added value and, in the meanwhile, are devoid of noise and pollution and do not harm the environment.
- These complexes are the places where a collection of associated activities are centralized meaning that the activities inside these parks are closely interrelated and they can provide one another with scientific and research feeds, if needed.
- Generation of an industry from another industry (Spin-off) that means a sophisticated researcher familiar with the scientific and technological issues goes out of one of the operating institutions or companies inside the complex and launches a small firm for himself and becomes the competitor of the mother company. One of the most useful aspects of technology parks is that they lead to the creation of novel industries and intensify the competition and improve the quality. Such a valuable phenomenon is termed spin-off which happens to frequently be the goal of a technology park.
- The spaces of these complexes are like parks and the precincts are very beautiful with low-rise buildings equipped with various kinds of recreational and service facilities. The buildings are usually low in density, as well.
- These complexes are mostly in direct relationship and cooperation with one or several universities or technological institutions and they are built via their joint ventures. Of course, a very important research institution can also play this role in lieu of the university. Furthermore, the local governments and the private sector, as well, are amongst the main owners (Agha'ei, 2004).

Investigation of the Research Approach:

Many of the superior technological companies stubbornly defend the bioenvironmental ethics. The application of efficient energy preps in buildings, including centralized installations, is quite common. For instance, in terms of energy output and consumption, the building of Bentall Corporation outperforms the common buildings by over 50%. The staff members in such companies are sensitive to and aware of bioenvironmental issues and follow such rules as recycling and similar behaviors.

Sustainable Design:

The discussions related to the sustainability have become so pervasive that many feel that another term should be used to mean so. The term "green" is used for the fact that its semantic load is more flexible and also for its symbolizing of the sustainable nature. It is exactly due to the same reason that many make use of the term ecological. However, some others, as well, prefer to utilize the phrase "environment accountable". Words may be different but they all have the same intention (Lenker, 2006).

- ***Sustainable Design Topics:***

Creation of a sustainable green building encompasses all the design dimensions. Heating, chilling and lighting are all undertaken via displacement of the energy from interior to the exterior of the building or vice versa. Due to the global warming, air pollution and reduction in energy resources, energy subsystems are amongst the most essential topics that have to be handled in the entire topics related to sustainability.

The famous journal of "Environmental Building News" has published what it believes to be the eleven important topics in sustainable design, including the followings:

- Energy conservation: efficient buildings should be designed and built in terms of energy.
- Building recycling: instead of constructing new buildings in open spaces, the existing infrastructural installations and buildings should be employed.
- Creation of the complexes: to reduce the car dependencies and in order to create a sense of community, compounds should be built.
- Reducing the use of materials: to make use of smaller spaces, the designs should be optimized and the constructional materials should be applied more effectively.
- Protection and improvement of the precincts: the ecology and biodiversity should be conserved and/or treated.
- Selection of materials with less impact: the constructional materials with less impacts in bioenvironmental terms and effective in terms of resources should be used.
- Maximization of the durability: design durable and consistent.
- Water conservation: design buildings and landscapes that are effective in terms of water use.
- Securing the buildings: create a safe and comfortable internal environment.
- Minimizing the wastes resulting from constructional works and destructions: the constructional wastes resulting from works in the precinct should be returned, reused and recycled; experience bio ecological orientations in your professions.
- Greening of the occupation: minimize the bioenvironmental impacts of your commercial occupation and promote this culture (Lenker, 2006).

Protection of energy and sustainable use of it has caused huge technological progresses, oil and other underground reservoirs' extraction and the increasingly higher use of these non-renewable resources. Thus, the building design activity should be in such a way that the fossil fuel consumption is minimized to the least amount possible. Also, it is highly important to pay attention to this issue that where the exploited resources are used in the development system and how they can be rendered sustainable and what other resources can be used with the possibility of faster replacement. As an example, the woods of trees should be used that grow faster and are easily substitutable. However, the offered subjects embrace a set of various principles the consideration of which would result in the balance and the emergence of the green architecture.

Objectives of Sustainable Architecture in Respect to Environmental Issues:

In many of the solutions offered by sustainable architecture, climatic attitudes are posited. With climatic attitude, the human being is reduced to an earthy being in need of climatic comfort. Climate considerations constitute one of the important pillars of Iranian architecture but not all the things terminate in there. Here, a collection of various factors, one of which is climate, join forces and determine the final form of the building in such a way that the individual feels the presence in a comforting space and, simultaneously, receives many messages inside that space (Me'emariyan, 2005).

Renewable Energy Resources:

Solar energy, wind energy, hydropower and biomass all share two very important advantages: renewability and not adding to the global warming. These resources are renewable since they are all altered forms of solar energy. Amongst the renewable energy sources, only thermal energy of the earth is not associated with the sunlight.

- ***Solar Energy:***

The expression "solar energy" refers to the use of solar rays in several different methods, including the followings:

- Static solar system
- Photovoltaic and dynamic solar system
- Natural light

✓ ***Static Solar System:***

Although the sun was used by the ancient Greeks for heating their houses, a substantial part of the heat was adsorbed necessitating the opening of the windows for giving it a way outside of the building. The advantages they took using this style of heating were very ordinary and intermediate. The romans, as very efficient and practical people, seminally resolved the problem about 50 AD via applying glass in the windows of their buildings. Glass assisted by what is known today as greenhouse effect creates a very effective thermal cage. The idea worked so well that the romans found many applications of it for themselves. Static solar systems are employed in the buildings in three ways:

- Direct absorption
- Trombe wall
- Solar space

✓ ***Photovoltaic and Dynamic Solar System:***

Photovoltaic collectors and dynamic solar collectors look the same from the distance. However, they produce energy in a completely distinct style from one another. Photovoltaic panels (PV) produce high-quality electric energy whereas the dynamic solar panels generate low-quality thermal energy in the form of low-temperature heat. Since electricity can be used in all cases (to wit, for the production of light, elevators' drive and so forth), it is called a high-quality energy source whereas the low-temperature heat can only facilitate a little more than heating the water or building (Lenker, 2006).

Characteristics of an Ideal Energy Source:

- Sustainable (adaptable)
- Non-pollutant
- Riskless for the people and the earth
- High-quality energy appropriate for any application
- Noiseless
- Provisioning of the force where it is required (no need for energy transmission)
- Completely available at the peak demand time that is usually the hot and sunny days
- Featuring this extra benefit of creating a wall for the building (meaning that it is replaceable for the common constructional materials)
- Very reliable

- Without mobile parts
- With no maintenance need
- Rotational (capable of being turned to any required size)
- Low exploitation costs
- Low initial costs
- Capable of providing energy at all times

Photovoltaic systems are the only source of energy that can be characterized by properties close to abovementioned ones. PV systems have all these traits except the last one and they even go well beyond them. These two cases are: "low initial costs" and "provisioning of energy at all times". The fact that PV systems cannot produce electricity at night is not a big problem because storage or power grids can be used for storing electricity. Clouds cannot cause much of a problem during the day because PV systems can also make a good use of the reflected light, as well (Lenker, 2006).

Types of Photovoltaic Systems:

There are two main types of Photovoltaic (PV) systems for using in the buildings: standalone and grid-connected. When it is not possible to connect to the power grids or if it is deemed unfavorable, standalone systems can be used; in these case there is a need for several storage for supplying electricity at night and/or during cloudy days as well as when there is a need for a maximum rate of electricity. The size of PV arrays is arranged so that it can control the daytime's ordinary loads and storage charging. When using PV system in places where there is no power grid, the storage is also not needed. During a sunny day, the extra power produced in a PV system can be sold to power companies and electricity can be exchanged in return at night. Consequently, the power grid acts as a very huge storage place of electricity. This can be considered as an advantage for both PV system owners and many of the electricity companies because the highest demand in the grid usually comes about during hot and sunny days while the power firms have extra capacities during the night hence willing to sell them. In a grid-connected system, there is a need for a transformer for changing the DC of the PV to an appropriate AC featuring a proper voltage so the entire electrical appliances in the buildings are 120 V and AC (Lenker, 2006).

- ✓ ***Natural Light:***

Upon the entry to the second half of 20th century, natural lighting turned into an ancillary issue in architecture due to the supply of more efficient sources of electrical light, electricity and electrical lighting. The most important merit of electrical lighting may have been its ability of providing simplicity and flexibility in the designing of the floors' plans allowing the structure to ignore the spatial positioning of the windows. Energy crisis during mid-1970s resulted in the reevaluation of natural lighting potential. At first, the issue was solely underlined from energy perspective but, nowadays, natural lighting has become valuable for its aesthetical competencies and also its abilities of satisfying the biological needs.

Goals of Natural Lighting:

The general goal of natural lighting is the same as that of electrical lighting, i.e. providing sufficient high-quality light and, at the same time, minimizing the direct glare, cover reflections and extreme luminance ratios. Due to the limitations in regard of the spatial position of the windows and natural light variabilities, some special goals apply only for the

natural lighting. Usually, there is a little light in the backside of the rooms and there is also more than sufficient light in the internal diagonal and window of the room. Thus, the first goal is providing more light in the depth of the building so that it can be more lighted and at the same time the lighting gradient can be reduced along the room.

The second goal is reducing and/or preventing the direct intense glare resulting from the unprotected windows or roof balconies. The glare is exacerbated when the walls at the side of the windows are left insufficiently lighted hence looking nearly dark. If a sun beam creates a great deal of light on a part of the work space, the luminance rations will become drastic and unacceptable. Therefore, the third goal of natural lighting is prevention of extreme luminance ratios (especially the luminance ratios created as a result of direct sunlight). Although the little light passing through the inlet angle of the windows is not a source of cover reflections, the light entering from the upper openings is usually the source of such reflections. Hence, the fourth goal is preventing and/or minimizing the cover reflections (especially from the roof balconies and flat windows). (Lenker, 2006)

CONCLUSION:

The primary objective of the technology parks is increasing the income in the society via encouraging and enhancing innovation culture and elevating the competition power in the companies and institutions that work based on science and knowledge in park environment. To achieve this goal, the technology parks create motivation and manage the flow of knowledge and technology in the universities thereby to create and develop new technology-driven companies. It can be stated that the technology parks offer high value added facilities and services and proper work spaces and high-quality installations to the institutions established in park. In addition, technology and Science Park is in a direct relationship with economy and these growth centers can be economy and income sources for the city. The designing of the technology and science parks that occurs based on sustainable architecture solutions and patterns as well as renewable energies sets an appropriate ground in Iran for the creation of science and technology parks. Additionally, consideration of this important issue and these principles can be followed by such contributive outcomes as saving in the consumption of fossil fuels, reduction in air and environment pollution and its preservation for the future generations and so forth.

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