Privatization of urban public space:
A case study of Des Moines skywalk system

by

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CHAPTER I. INTRODUCTION

Elevated pedestrian skywalks are becoming an increasingly popular element of the downtown streetscape. During the past two decades, skywalk systems have been constructed in numerous downtowns, particularly cold weather cities of North America.

Skywalks, skyways, and pedways are different names for elevated pedestrian walkways connecting buildings in a city core. In most cases, skywalks are enclosed. Crossing above congested streets, skywalks offer pedestrians a safe, in terms of traffic accident, and weather-protected alternative to city sidewalks.

Skywalk systems consist of bridges, second-story corridors within buildings, and activity hubs. They contain retail and service establishments, and permit pedestrians to walk indoors for blocks. In Minneapolis and St. Paul, for instance, each system links over twenty-five blocks, passing across elevated bridges and through buildings whose second-level corridors are lined with shops. Along with covered shopping malls and enclosed sport stadiums, skywalks suggest an indoor, climate-regulated city of the future.

The development of skywalks in North American cities began in the 1960s. Skywalks offered the shelter from harsh winters, and allowed shoppers, businesspersons, and visitors to frequent downtown facilities all year around. Later, the benefits associated with skywalks were seen to extend beyond

mere shelter from the bad weather. The current large-scale development of skywalks in cities of widely varying size, congestion and climate suggests multiple intentions, overlapping functions and complex effects. In fact, many think this was a response to the threat of the suburban shopping mall. In some cities with previously decaying Central Business Districts (CBDs), skywalks are an integral part of a resurgence of development interest in the CBDs.

Skywalks are no longer an isolated winter-city phenomenon. They have given an economic boost to both cold- and warm-weather communities, and some in between. Louisville, Charlotte, Cincinnati, and Des Moines have developed major systems. Skywalks are in place as far north as Edmonton, Alberta, as far east as Rochester, New York, and as far south as Dallas, Texas.[1]

The basic objectives underscoring the development of most skywalk systems are twofold. First, they are constructed to facilitate pedestrian mobility and safety. Skywalks permit most pedestrian trips to be made in more comfort, especially in bad weather, and since pedestrians are separated from

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[1]The most extensive systems have been constructed in medium-sized northern cities such as Calgary, Des Moines, Edmonton, Milwaukee, Minneapolis, Spokane, St. Paul, and Winnipeg. Smaller cold weather cities, including Cedar Rapids, Iowa, have built systems as well, as have several cities that enjoy relatively milder climates such as Charlotte, Cincinnati, Dallas, and Portland.

vehicular traffic, improved pedestrian safety is accomplished. Second, skywalks are being used as a downtown redevelopment tool because of their ability to encourage density, to create a new layer of commercial activity on the second level, and to attract people to downtown.

Statement of Problem

The elevated skywalk systems have so completely entered our consciousness that they seem to be, like house numbers, completely natural. From its modest beginnings in downtown Minneapolis, this wondrous urban phenomenon has gained general acceptance at all levels of public and private sectors. It has been and continues to be emulated elsewhere in America and Canada.

Skywalk systems are self-proving and self-fulfilling. Once a system is built, the pressure to expand it is also created. Des Moines, for example, like Minneapolis and St. Paul, has various plans for the future extension of its skywalk system. Usually, these plans indicate where bridge connections will be located. Developers buy land, anticipating they may make a connection somewhere. When the advisability of a part of the plan is questioned, the developers typically protest to protect their interest in the skywalk development. The arguments about urban planning and design, and imagery and vision of the city take a back seat to

the economic argument. It becomes difficult to step back, look at the system again, and ask, "is this really what we want?"

Integrating them into existing cities, socially, economically and architecturally, has become a critical planning and design issue. While some see skywalks as a relatively inexpensive way of keeping downtowns competitive with the suburbs, others see this system as aesthetically, economically and socially anti-urban. Cities, contemplating skywalks as a method of downtown revitalization, should proceed, if at all, only with the utmost in foresight and creativity. In their current manifestations, skywalks can weaken the social and aesthetic foundations of urban life.

Despite the popularity of skywalks, many criticize them for extensive visual damage. There are also economic problems such as the drop in retail sales and property values on the street when skywalks succeed. Other problems are user-oriented. For instance, many pedestrians report getting lost easily and struggling to find entrances and exits. Security becomes an issue when retail shops front on the skywalks or when pedestrian traffic is light. Accessibility for the handicapped and elderly is another concern. There are also social problems. For instance, skywalks have been criticized as elitist because they tend to segregate people, according to their economic class.

Purpose of Study

During the recent decades, America has become a private affair, a society, in John Kenneth Galbraith's words, of "Private Affluence and Public Squalor." Recently, many municipal and state governments find themselves taking a smaller role in society. Therefore, the society has turned to the private sector for the creation of skywalks, a new kind of public space, to the retailers, developers, and corporations who, for their own economic return, are creating them in record numbers. Private developers build skywalks to connect office buildings to the commercial cores, thereby making winter office life more palatable for workers while giving retailers the benefits of lunch-hour traffic. The skywalks themselves would increase retail profits, since they, unlike sidewalks, work like capillary tubes, pushing a high volume of buyers through a severely constricted area.

The problem in pluralism is to balance individual and communal rights. A pluralistic society should have a set of agreed-upon criteria in planning and design, which will outline the just, elegant and practical city. Otherwise, we will achieve merely a depressing series of buildings and connecting bridges, with commercial but no other values.

There is no doubt that skywalks are here to stay and that they would become an integral part of our cities. Without them, suburban development most probably would be much

stronger than it is, and the downtown would be much weaker. We have been able and willing to bear the costs of the system. However, after twenty-five years of vigorous growth, it might not be too soon to assess the wider effects of the privatization of the skywalk system on downtowns.

With all its apparent values, the skywalk concept retains some questions. Whom do and do not they serve? Do they work as a public space? Do they texture a city richer, more dynamic, more provocative? How can skywalk systems be designed so as to enhance urban life as a whole.

A relatively small amount of skywalk-related research, together with the rapid and sometimes haphazard rate in which these systems are being constructed, leads to a basic assumption that underscores this research. The assumption is that cities are adopting public/private partnership for the skywalk development as a panacea for solving downtown redevelopment and budget problems without first assessing its positive and negative attributes. More importantly, evaluations of their long-term impact of this new kind of urban public space on urban environment are scarce. The type of research most urgently needed, therefore, should be comprehensive, examining a wide range of planning and design issues, as well as comparative, encompassing every element of the system.

The intent of this research is to take a major step

toward filling this need by examining skywalk systems in Des Moines. It describes and evaluates skywalks on the basis of system usage, public perception and their use as a public space in downtown, thereby formulating a generic planning framework for a more inclusive, open and democratic skywalk system.

Scope of Study

What real functions are the skywalks to serve? It is a basic issue about how people organize their lives, and how they are able to find out where they are, both in space and value. Does the design of skywalks control our environment and the manner in which we live? Even if we invite skywalks to protect us from natural elements, do we mind if they also control where and when we walk, who will be walking along with us, and in what types of activities we may participate?

Related to this issue of control is the increase in the privatization of public space. As a space becomes more private, either perceived or real, it becomes more restricted and an individual is able to exert less control over his or her environment, activity, and behavior. This is obviously a major concern for the privately-owned skywalks, but is also most troublesome for the public systems as well, due to the skywalk's perceived exclusiveness. In Des Moines, for instance, the bridges are built primarily with public funds,

but they connect, for the most part, privately-held buildings, thus raising profound questions that persist between the private and public realms.

Within this line of thinking, a major hypothesis has been put forward: skywalks are privately controlled in reality, regardless of which sector they are owned and maintained by, even though they are new public spaces, dealing with public right-of-way. At their worst, the intent of these spaces is not to provide a path for generalized pedestrian movement, but to steer potential consumers to retail purchases. They can be constrained spaces whose objective is only consumption.

This and other hypotheses about the apparent effects of privatization of skywalks on the environmental and social quality of the skywalk system are tested in this study.[2] To achieve the research objectives previously presented, a comparative case study method was selected that can encompass: off-grade skywalks and on-grade streets; system's elements such as bridges, interior corridors, and activity hubs; and skywalks both in different locations and different ownerships.

The findings of this study are based on observations, interviews, and a user survey conducted in Des Moines. The information and data obtained via these three techniques were then categorized by issue, interwoven with other secondary

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[2]See page 56 for more detail.

sources of information (for example, key informant interviews, local newspaper articles, and relevant literature), compared, and analyzed. Utilizing this research approach, the subsequent chapters of this research examine the major categories of skywalk-related issues.

CHAPTER II. GRADE-SEPARATED PEDESTRIAN SYSTEM

Grade-separated pedestrian systems are not new. For hundreds of years, architects and planners have struggled to achieve a peaceful coexistence between vehicular traffic and pedestrian movement.

Leonardo da Vinci is said to have worked out a scheme of elevated streets to protect the pedestrian from the weather, street vehicles and horses, and to unite buildings. Some 500 years later, American cities are trying to catch up with da Vinci.

During the 1950s, there was a tendency to overlook downtown potentials in favor of what appeared to be more competitive suburban shopping centers and office complexes. Suburban competition has not dwindled of course, but the central business district has been rediscovered as planners, developers, and citizens alike have recognized that this small area typically offers the region's best overall accessibility and provides a variety of concentrated urban activities unmatched in other portions of the city or metropolitan area.

The character of most central business districts is one of high intensity development within a small area. Typically, streets and parking areas comprise over 50 percent of a central business district's land area, which unavoidably extends the length of pedestrian trips. The accommodation of heavy volumes of motor vehicle travel also discourages walking

by causing greater pedestrian delays and increasing accident probabilities. Due to this high density, it is usually impossible to separate the conflicting transportation elements in a horizontal manner, thus it becomes appropriate to examine a vertical grade-separation whenever possible.

Increasing attention has been directed toward providing special improvements to assist the movement and enjoyment of pedestrian travel within many central business districts. While at-grade pedestrian malls of various types and sizes have been successful in some cities, a perhaps more significant functional development has been the evolution of grade-separated pedestrian systems linking significant portions of downtowns. There are currently over 20 cities in North America with some type of grade-separated pedestrian system which offers complete separation of pedestrian and motor vehicle traffic, including elevated pedestrian skywalks and underground pedestrian tunnels (Blunck, 1984).

Grade-separated pedestrian systems tend to advance the objective of a pedestrian-oriented downtown by encouraging a compaction of retail and service activities on a level above or below existing activities. Because grade-separated systems can foster uninterrupted pedestrian travel over or under existing streets and can provide this in an environment free from inclement weather, pedestrians are encouraged to walk longer distances than they would within an at-grade system.

As a result, other planning objectives, such as encouraging walking to peripheral parking garages, may become a realistic objective. This, in turn, can enhance the goal of decreasing motor vehicle traffic in the CBD cores.

Brief History

The first reasons for elevated-level communication leaping over streets have been secret and political rather than public and climatic. Colin Rowe (1985) gives an interesting example as follows:

> "In the fifteenth century, a judicious prince was advised to build a convenient bridge which, if necessary, would lead him to a place of refuge. While private passages for princes seem distant from the skywalk context, we might still pause to reflect on the concepts of escape and refuge" (Rowe, 1985, p. 8).

One of the earliest of these elevated passages was that leading from the Vatican to the Castello Sant'Angelo in Italy. Unprotected from rain or sun, it was over this structure that Pope Clement VII scurried, in May 1527, in order to save himself from the strange international army that was about to sack the city (Rowe, 1985).

About thirty years later, Cosimo de Medici, first Grand Duke of Tuscany, felt the need for an equivalent 'corridoio', in this case, from the Palazzo Vecchio to the Palazzo Pitti. Cosimo's passage is one of the most famous private bridges. Beginning at Palazzo Vecchio, it penetrates a number of houses, becomes the facade of the church of Santa Felicita,

and finally terminates at Palazzo Pitti, from where further escape to the Fortezza del Belvedere was always available (Rowe, 1985).

Cosimo's Corridoio Vasariano always dissimulates its own presence, however. These early skywalks are primarily advertisements of subterfuge. Secrecy and privacy are their controlling ideas. They lead from specific points of origin to specific points of destination, barring all other points of entrance or exit (Rowe, 1985).

A skywalk theme envisages not only elevated, but also multi-level circulation. From these precedents, one must descend from the princely skywalk to what might have been the city that, in the 1490s, existed in the mind of Leonardo da Vinci (Fruin, 1973).

In his last years in Milan, Leonardo was preoccupied with a city of great complexity: canals, subterranean service streets and upper level 'strade nobile'. All these may be represented by a model in the 'Museo della Scienza e della Tecnica' in Milan. That is a contemporary model of an idealized city as it was envisioned by Leonardo da Vinci. The vision is an entirely arbitrary grouping of Leonardoesque propositions. Still, it may represent a state of mind which was not to be recovered, in any important way, until the present century (Fruin, 1973; Rowe, 1985).

Above- versus Below-Ground Separation

Most of the existing, significant grade-separated pedestrian movement systems developed in CBDs have been located below grade (Podolske and Hegulund, 1976). Rockefeller Center in New York City might be considered the grandfather of the underground pedestrian network, except the network lacks the continuity and coherence that are considered as prerequisites of the modern planned system (Fruin, 1973).

Montreal, Canada has one of the largest and best known systems, extending for more than two miles beneath the city center. The system got its start in 1962 with construction of the Place Ville-Marie shopping mall complex and connections to associated buildings and transit stations in the area. Well lighted and attractively designed, the system is most appreciated during the long Canadian winter. Following Montreal's successful lead, Houston, Texas and Toronto, Canada have developed similar systems beneath their city centers (Fruin, 1973).

While a number of such below-grade networks have been successful, particularly where connections to rail mass transit systems have been made, there has been another alternative of providing pedestrian movement systems: above-grade systems. There are a number of cities in which a pair or several pairs of buildings located on the opposite sides of a street are linked by skywalk bridges. These skywalk systems

are located one or more levels above street level, connected by escalators and elevators to the ground level, and most of them are completely climate controlled. Such pedestrian networks become a very common sight in many major downtowns once the economic advantages are assessed by civic officials and private developers (Podolske and Heglund, 1976).

Advantages of underground systems are that they might be easier to expand to all portions of a downtown area because they do not require existing buildings for structural support. Below-grade systems are better suited for direct connections to below-grade rapid transit systems. Moreover, below-grade pedestrian systems, by means of ground cover insulation, experience less heat loss than above-grade counterparts which would typically involve liberal amounts of glass in the skywalk bridges spanning streets. On the other hand, disadvantages of these systems are high excavation costs, conflicts with underground utilities, and loss of visual identity with the cityscape above (Podolske and Heglund, 1976).

Although the majority of existing grade-separated pedestrian systems are below-grade, there is evidence to suggest that above-grade systems might be a preferable design approach. Clearly, an above-grade system offers the advantages of better pedestrian orientation and a minimized sense of confinement. Skywalk system users often pause at

skywalk bridges to view other pedestrians at the street level, the weather conditions, and passing motor vehicle traffic. In most cases, skywalk system construction should cost less and be less disruptive to existing utilities than below-grade systems (DR&P Center, 1983).

However, the construction of skywalk bridges above grade does involve potential aesthetic problems, which are not a concern in the design of below-grade systems. In particular, older buildings may not gracefully accept skywalk attachments. Focal points at the termination of streets may also be obscured by the placement of skywalk bridges over streets.

Even though there seem to be distinct advantages of above-ground pedestrian systems as compared to below-ground systems, whether to place the system above- or below-ground should be determined by local conditions.

CHAPTER III. LITERATURE OVERVIEW

Despite the growing popularity of skywalks in North American cities, the literature devoted to this subject over the years has been sparse.

Jack Fraser (1970) and John J. Fruin (1973) provided brief early discussions of the skywalk concept, the latter in comparison to other pedestrian mall and underground systems.

One of the pioneering research efforts was conducted by Podolske and Heglund (1976), who studied usage patterns and economic activity on the Minneapolis and St. Paul skywalks. Heglund (1982) later used these data to evaluate the prospects for skywalks in Des Moines, Iowa.

All these studies are pro-skywalk and, on the surface, less than objective.

Several case studies have emerged during the 1980s that are more analytical and somewhat critical of skywalks.

Among others, Bernard Jacob and Carol Morphew conducted a long-term study of skywalk systems in Minneapolis and St. Paul, and it was published as Skyway Typology: Minneapolis by the American Institute of Architects (AIA) in 1984. They surveyed the skywalk systems, identifying typical problems such as pedestrian congestion, confusing signage, discontinuous pathways, uneven climate control, ill-considered aesthetics, and unreasonable trip lengths. The study attributes many of those problems to the piecemeal development

of the systems. The remainder of the study recommends ways of better coordinating future skywalk development. That includes instituting design criteria from the construction of the bridges to the location of signs; continuing research into the long-term social and economic impact of the skywalks; and refining the existing public review process to insure better coordination of various private skywalk projects. Their research brought our attention to the enormous impact these systems have exerted on the fabric of our cities.

In April 1985, a two-day conference was held at Walker Art Center and the University of Minnesota in Minneapolis, and it was devoted to the design and use of skywalks, streets and underground systems in American cities. It included presentations by a number of distinguished planners, architects, sociologists, geographers, and critics of the urban scene. A 1985 issue of Design Quarterly contained a collection of these articles and essays focusing on skywalks, the majority of which are quite critical of the aesthetic and economic impacts associated with these systems.

Colin Rowe (1985), an architecture critic of the Charlotte Observer, gives a capsule history of skywalks, citing significant examples from Venice, Florence, and New York. He suggests various ways in which skywalks might enhance contemporary urban design and ways that are analogous to the great designs of the past.

Sam Bass Warner, Jr. and Galen Cranz approach the topic of pedestrian systems from the political-social standpoint. Warner (1985), a Boston University urban historian, discusses a number of legal issues relative to public access and free expression, and argues about skywalks as largely private networks that pose a growing threat to the traditional open or liberal city. Cranz (1985), a sociologist, makes comparisons between pedestrian movement through the skywalk system and the parks in our cities.

Jaquelin Robertson (1985), a former New York City planning commissioner, states the skywalk topic with an astute discussion of the generic city. He emphasizes that we must have a clear vision of what we want our urban areas to be before we can provide a useful framework for a multi-level pedestrian system.

Warner, Cranz, and Robertson all focused on the tendency of a skywalk system to stratify the void of a city street along class lines: businesspeople and their supporting staff above; the lower classes below and out in the cold.

Bernard Jacob (1985), who received a 1983 Progressive Architecture Award for his research on the twin cities' skywalk systems, raises the issue of architecture and second-level bridges: how these bridges cross streets; how they enter old and new buildings; how they join interior pedestrian corridors; how they impinge on street vistas; and how they

relate to existing urban form.

Using Dallas and Houston as cases in point, David Dillon (1985a) discusses the economics of multi-level systems: how they are funded and how location on and off systems has affected the success or failure of businesses in communities with grade-separated pedestrian systems in place.

Most recently, Kent A. Robertson (1987a, 1987b, 1988) discusses numerous issues related to pedestrian systems, with particular attention to the existing skywalk systems of Calgary, Cincinnati, Des Moines, Duluth, Minneapolis, and St. Paul.

Skywalk System Evolution

In 1962, the first skywalk was erected between Northwestern National Bank and the Northstar Center complex in downtown Minneapolis. It was an immediate success and followed by others. It then became possible to travel through several blocks without having to worry about slushy sidewalks or street traffic.

St. Paul also has an extensive skywalk system in its downtown core. The skywalk system in St. Paul is one part of the ambitious framework for downtown development. It links major redevelopment areas in downtown St. Paul at both the ground and skywalk levels.

Other American cities are adopting the skywalk strategy

for downtown revitalization, and for basically the same reasons as Minneapolis and St. Paul to combat shopping malls and render the downtown competitive.

Financing formulas for skywalks have varied markedly even between the twin cities. Minneapolis has the largest privately built system in America while across the river, St. Paul has the largest public system (Morphew, 1984).

Minneapolis, Minnesota

The history of the modern skywalk system began in the early 1960s in Minneapolis, as a means of countering the flight of business from downtown to the suburbs. City officials began studying elevated and heated skywalk systems as early as 1958, but literally could not get the development off the ground because of merchants' concern for potential losses from street-level stores (Fruin, 1973).

In 1962, a few pioneering developers thought the skywalk system was economically feasible and built the first skywalk bridge within the Minneapolis CBD. One skywalk bridge linked two office buildings. Both of these buildings were owned by the same development corporation, IDS Properties, Inc.[3], which foresaw the benefits of tenants in these buildings being able to use each other's facilities (Fruin, 1973).

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[3]In 1976, 7 of the 12 skywalk bridges in the CBD had been financed by IDS Properties, Inc. (Podolske and Heglund, 1976).

The popular acceptance of the first bridge, plus the increased rentals from the newly created second level, led to the construction of five more bridges, linking a total of 16 downtown buildings. Two of the bridges won a 1970 National Honor Award for design excellence from The American Institute of Architects for the Cerny Associates Inc. of Minneapolis (Fraser, 1970).

In 1970, the Minneapolis Planning and Development Commission issued a report, Metro Center '85 which offered guidelines for relieving the problems (Carpenter, 1975). One paragraph from that report, for instance, states the problems as follows:

> "During a typical business day masses of pedestrians move through downtown, a movement that is heaviest in the heart of the retail area. But downtown gives its pedestrians neither protection from vehicles, polluted air, growing worse with traffic congestion and severe weather, nor plazas designed for human comfort and leisure, nor even safe streets at night. Downtown has an active, yet unappealing, entertainment district, a nearly complete lack of cultural facilities, and only a few historic buildings, a number of them continuously threatened by haphazard destruction. Downtown's total image, in fact, lacks both distinctiveness and coherence, and fails to reflect either the unique character or history of the city" (Carpenter, 1975, p. 35).

The Metro Center plan calls for a skywalk system connecting buildings by enclosed bridges above street level, thereby allowing people to move through the city on foot despite the weather. Much of this has been realized (Carpenter, 1975).

In 1973, Philip Johnson's IDS Center gave downtown

Minneapolis four new skywalks radiating from a two-level public artrium. After the completion of IDS Center, the city made an attempt to pull its skywalks into a cohesive pedestrian system. A group of downtown executives, a spinoff of the Chamber of Commerce called the Downtown Council, took an interest in the concept of a skywalk system and actively promoted them to other businesses in the downtown area. The business community and city officials were eager to connect office workers with parking ramps and to provide easy access for people driving into the downtown area (Podolske and Heglund, 1976; Wright, 1981).

As the system enlarged, the reasons for expansion multiplied: "to create indoor routes to all major department stores; to connect residential complexes with business offices; to connect downtown edge parking areas with city core businesses" (Jacob and Morphew, 1984). The skywalks acted like a gigantic drawstring that pulled the downtown together while providing protection from the brutal Minnesota winters.

The skywalks in Minneapolis are privately built and managed. The owners of connecting blocks negotiate the design and financing of each new segment. The city participates in skywalk financing only when a skywalk directly connects to a public building, such as a municipal parking facility. From the city's point of view, this financial arrangement is very attractive, leaving the city free of capital and operating

costs of building and maintaining the system (Dillon, 1985a).

St. Paul, Minnesota

It is said that if Minneapolis gave the modern American city the concept of climate controlled skywalks, St. Paul made sense of it and developed it to its ultimate potential. While the Minneapolis system has developed primarily through private initiative, skywalk development in St. Paul is essentially a public venture (Wright, 1981; Andersen, 1988).

St. Paul's early skywalk system elements, including bridges, corridors, escalators, stairs, and graphics, were financed by the public until early 1979. Now costs are split 50-50 between the city and benefiting merchants, and there is a unified, energetic public/private thrust toward revitalization (Wright, 1981).

During the late 1950s and 1960s, downtown St. Paul found itself suffering like many American cities from declining business prospects and a deteriorating stock of quality buildings. Many blocks were cleared in the name of urban renewal and remained vacant for lack of interested developers. Through the concerted efforts of a group known as the Metropolitan Improvement Committee, composed of representatives from the business and labor communities, and the St. Paul Housing and Redevelopment Authority, a master plan was produced for developing a 12-block core of the central business district. What distinguished this plan from

any other urban redevelopment proposal at the time was the concept of a skywalk system (Wright, 1981).

Developers are reimbursed for a portion of the system, including escalators, that passes through new construction, and the redevelopment authority installs furniture and graphics. The authority also pays for the entire cost of pedestrian bridges within project boundaries and one-half of the construction costs of those bridges passing over project boundary streets (Podolske and Heglund, 1976).

The first bridge, forming a part of the skywalk system in St. Paul, was opened in 1966. This bridge linked the new Federal Courts building with an existing office building which contains a parking ramp. In 1968, the skywalk scheme received a national design award from the U.S. Department of Housing and Urban Development (Fraser, 1970; Podolske and Heglund, 1976).

At the ground level, planning and building a network of pedestrian space is in the process, the key element of which is a major mall that will connect the east and west ends of downtown. Overlaying the ground-level system is the skywalk system. At the center of the two interrelated systems, they are rebuilding the retail heart of downtown that includes department stores, the Minnesota World Trade Center, shops and offices - a new regional shopping center (Jacob, 1985).

St. Paul's active business district is a compact entity,

thus downtown becomes one large climate controlled shopping center. It is conceivable, once the projected housing developments were tied into the system, that one could eat, sleep, work inside the skywalks and connected buildings (Wright, 1981).

In St. Paul's system, the design is standardized and inoffensive, and it is easily accessible for people in wheelchairs. St. Paul has organized a 25-block downtown, second-level pedestrian system which goes to and through some key buildings (Jacob, 1985, Andersen, 1988).

Des Moines, Iowa

In 1974, the City of Des Moines proposed a skywalk system in the core of the central business district. The area is bounded on the north by Grand Avenue, on the west by 8th Street, on the south by Mulberry Street, and on the east by 4th Street. This plan had evolved over several years, and in 1978, the city submitted an application to the Federal Highway Administration (FHWA) and the Iowa Department of Transportation (IDOT) requesting the pedestrian skywalk system to be eligible for Federal Aid Urban Development Funding. This would allow the City of Des Moines to use Federal Aid Urban Development funds for the planning and construction of pedestrian skywalk system (Des Moines, 1986).

The FHWA and the IDOT responded to this application by asking the City of Des Moines to make further studies in order

to complete their application. In reply to this request, Des Moines commissioned a study by Barton-Aschman Associates to estimate the volume of pedestrians anticipated to use the skywalk system, the resultant savings in vehicle delay, an examination of vehicle-pedestrian accidents, and a cost-benefit analysis of the proposed skywalk system (Des Moines, 1986).

The study estimates that annual dollar benefits attributable to faster pedestrian and automobile movement and to fuel saved were $561,000, and annual costs were $375,000. The results of this study were printed in a report (Barton-Aschman, 1978) and submitted to the FHWA and the IDOT. After reviewing the report, these agencies declared the proposed Des Moines Skywalk System to be eligible for Federal Aid Urban funding.

Shortly after this declaration, the City of Des Moines commissioned a design study (Barton-Aschman, 1980) for the proposed skywalk system. The study outlined fundamental design, operational and economic directions for system development. Most importantly, the study tackled the issue of skywalk locations and methods to ensure unhindered growth. A system based on using existing building interiors was proposed with a goal of "promoting interesting, activity-oriented pedestrian connections." Undoubtedly, this basic design proposal continues to be the most difficult to achieve.

From the Des Moines' point of view, the skywalk system "was to be a public system which would serve two public purposes. It would be an integral part of the public transportation system in the downtown and would also serve as an urban renewal project to prevent deterioration and to encourage downtown rehabilitation" (Blunck, 1984).

Tax Increment Financing (TIF) has been used extensively to finance the Des Moines skywalk system. A tax increment district, so-called skywalk district, around the proposed development is established. The city has funded construction through general revenue bonds repaid by tax revenue accruing from downtown property owners via TIF (Neudorf, 1986).

On June 23, 1980, the Des Moines City Council adopted a skywalk ordinance for the purpose of coordinating and integrating the development and operation of a skywalk system to serve as an integral part of the downtown transportation system. The ordinance includes many of the operational aspects of the skywalk system including hours of operation and vertical access to the system (Des Moines, 1987).

Construction of the system was initiated in 1981 with dedication of the first segment, "the 7th Street Spine" from the Mulberry Parking Garage to the Marriott Hotel and across Seventh Street to the Financial Center and to the Ruan Center, taking place on April 4, 1982 (Des Moines, 1987). The Des

Moines' skywalk system has now grown to connect 22 downtown blocks, includes 35 skywalk bridges across streets or alleys, and is approximately two miles in length. An additional bridge under construction are to be completed in 1989.

Other American cities

Possibly spurred by success in Minneapolis and St. Paul, many other cities have embarked on programs for skywalk systems in their central business districts: not only such medium-sized cities as Cincinnati, but also such small cities as Cedar Rapids in Iowa.

Cincinnati, an old river city, has one of the most extensive skywalk systems. The Cincinnati network is comprised of 23 skywalk bridges in the heart of the downtown area. Cincinnati has a very narrow street system and a very compact business district. Thus, the second-level skywalks, which open to hotels, stores and parking, have great attraction, states Willard C. Pistler Jr., AIA, who designed the Stouffer Cincinnati Inn that opens on the system. The skywalks evolved to maintain this tight business area which brings convenience to office workers, shoppers and convention goers, and also to separate trucks and cars from pedestrians (Fraser, 1970).

The most distinctive feature of Cincinnati's skywalk system seems to be its connection to the city's 56,000-seat lakefront stadium. This connection has proved to be one of

the most commercially valuable links in the system. Originally intended to make downtown parking more readily available to stadium spectators, skywalks bring large numbers of these persons into downtown restaurants and stores on game days (Fruin, 1973).

While skywalks have made news in a number of large downtowns, the fact is that a few smaller downtowns have built or started to work on the systems. Fargo, North Dakota and Cedar Rapids, Iowa are good examples.

In 1985, a brand new skywalk system was officially opened in downtown Fargo, ND. The system interconnects six blocks of downtown. The entire skywalk system is enclosed, carpeted, and well lighted. The system is managed by the Fargo Parking Authority, which also provides security services in conjunction with the police department (Alexander, 1986).

Funding for the project came essentially from two sources. One half, or about $1 million, was financed through a special assessment against property owners organized through a special assessment district. The other million was obtained from the U.S. Department of Transportation's Urban Roads Program (Alexander, 1986).

Fargo is emphasizing the good business opportunities available to firms that locate along and tie into the system. A report from Fargo concluded that "merchants along the system have said they look forward to increases in business due to

the convenience and accessibility of the skywalk" (Alexander, 1986).

In Cedar Rapids, Iowa, major downtown business interests have formed a corporation to initiate and expand skywalks. Under this organizational scheme, decisions regarding skywalk development are reached under a consensus among members of the skywalk corporation. Rules such as those setting minimum design standards for skywalks are also set by this corporation. The costs of each bridge in the skywalk system are shared between the owners of the two buildings to be spanned. The two parties would form a corporation for the management of the bridge, and the City of Cedar Rapids is a party to these separate skywalk corporations in cases where public parking ramps or buildings are to be linked into the system (National League of Cities, 1983).

Calgary, Canada

Although most familiar as a feature of American cities, the most extensive skywalk system in North America is not in the United States, but in Calgary, Canada (Robertson, 1987a; Andersen, 1988).

In 1970, Calgary's skywalk system, known colloquially as "Plus 15", was started as a response to problems of adverse weather, crowded streets, etc. It has evolved through the vision of downtown planners and others into an innovative tool, enhancing and coordinating the design and development of

the central business core (DR&P Center, 1983).

The skywalks hover along the main routes of downtown and through public easements in private buildings. According to the Calgary Planning Department (CDP), the system incorporated 42 bridges and over two miles of public easements in 1988. As the system grows, it has been fast winning favor with Calgarians, especially during the bitter months of winter when temperatures often fall below minus 30 degrees (Park, 1977; Andersen, 1988).

The system's expansion is aided by a bonus policy, which was adopted in 1972, offering incentives to developers who include provisions for skywalk bridges, easements and public spaces in their projects. Floor area bonuses are awarded progressively for each public space a developer provides. Each "Plus 15" addition builds on the previous one, and bonuses add cumulatively. The bonus, 30 square meters of floor area for every one of skywalk, is gained by building bridge connections across the streets. Other lesser bonuses offer floor area at 5:1, 10:1 and 20:1 ratios (DR&P Center, 1983).

The private developer or owner is responsible for design, construction and maintenance of skywalks in the bonus deal. Security for the system, which is open 24 hours, is handled by the city police. City officials also monitor the conditions of the various public spaces, and recommend - or if necessary,

mandate - appropriate action by building owners (DR&P Center, 1983).

The manner in which Calgary's skywalk system developed has resulted in a radically different configuration from what can be observed in American cities. Its skywalks evolved incrementally, with locations of skywalk bridges and interior corridors not being predetermined. While the evolution of each of the American systems can be described as incremental to a degree, they all conform to an overall long range plan (Robertson, 1987a).

In Calgary, skywalks are built only when new buildings are erected in downtown, regardless of location in relation to the system as a whole. Since the downtown was in the midst of a construction boom during the 1970s and early 1980s, skywalks were materializing everywhere new development took place. However, there was little coordination between these new buildings. Therefore, the development of an integrated skywalk system was sporadic at best (DR&P Center, 1983; Robertson, 1987a).

The most significant outcome of this development pattern is that Calgary today possesses a system that is not continuous. Most American systems modestly began with the implementation of a few bridges near the core of the downtown and gradually expanded outward over the years. For the most part, skywalks were only constructed when they could be linked

to the remainder of the system, thereby maintaining a continuous, non-interrupted grade separated network (Robertson, 1987a).

In Calgary, the so-called system consists of over half a dozen segments that are not connected, thus forcing pedestrians to leave the skywalk for the sidewalks below, should they wish to utilize different parts of the system. Eventually, perhaps, these segments will be linked together to form one integrated system, but the current non-contiguous configuration confronts the skywalk users with a confusing and inconvenient system (Robertson, 1987a).

One of the most distinct aspects of Calgary's skywalk is that there are a lot of outdoor open spaces linked to the system, and also the numerous inner block corridors that are not enclosed. In fact, a few of the original skywalks are not even covered (Robertson, 1987a).

Another distinct aspect of Calgary's skywalks is the way in which they interelate with the overall downtown movement system. In American cities, the extent to which skywalks are coordinated with any other form of transport is limited to linkages with parking ramps, both public and private, generally situated at the peripheries of the systems. Parking ramps in Calgary serve a similar function, allowing commuters to park in one of several peripheral locations and then to utilize the skywalks to reach their final destination

(Robertson, 1987a).

However, Calgary's skywalks, unlike their American counterparts, are integrated with transit as well. The city's public transit consists of buses and a recently constructed light rail transit (LRT) system, both of which serve downtown via a transit corridor implemented on centrally located Seventh Avenue. LRT station location has been coordinated with the skywalk system to permit easy transferability between the transit and pedestrian modes (Robertson, 1987a).

Planning and Design Issues

Skywalks have increased in number both in winter cities and in non-winter cities. The main reasons center about both user comfort and economic benefits. The general public, whether the downtown workers, the downtown resident or the visitor to the downtown area, can reap benefits of greater comfort especially in inclement weather, greater convenience and greater safety. The property owners and businesses stand to benefit from increased sales, a greater demand for lease and increases in property value. The Wall Street Journal recently reported that "the use of skywalks as an economic tool in a downturned downtown area has overriden the climate-control issue" (Lublin, 1984).

While many merchants continue to have reservations about the system, downtown appears as one immense, labyrinthine

building at the second story. This creates a second building base, a platform on which numerous activities are interconnected.

The convenience and success of this climate-controlled, elevated pedestrian system are so overwhelming that it seems to be nearly scandalous to raise questions. However, elements of change usually carry costs along with benefits. Skywalks are no exception; they are not without their critics. For instance, Atlanta zoning officials are considering a recommendation by the 300-member Central Area Study Group to prohibit further skywalk construction downtown (Andersen, 1988).

In Minneapolis more so than in any other city, the skywalk system is an accretion of disparate bridges and passages which multiplied like the first streets from the original crossroads. To a very great extent, "our senses have been blunted and blinded" by the system's convenience and success (Jacob, 1984). Colin Rowe criticizes the Minneapolis skywalk system by saying that "the only function of these skywalks is to sell kitsch to the masses" (Williams, 1985).

Challenges in the development of skywalks include aesthetic, economic, social, and operational issues. The skywalk extensions have altered how downtown looks from the street level. Moreover, placing these bridges overhead will radically change the urban form. Some fear that skywalk

patrons will not descend to the street level at all, increasing second level lease rates but ultimately deflating street level values. Security, daily and long-term maintenance and operations are recurring questions.

Aesthetic issues

Some local planners argue that the Minneapolis skywalks are "too disparate" and the St. Paul skywalks are "too regimented and architecturally confining" (Morphew, 1984). Bernard Jacob refers to this as an architectural violence:

> "The more violence we see, psychologists report, the more we become desensitized to it. There is a particular kind of violence to which we, in the Twin Cities, have become immune. It is an architectural violence: a violence perpetrated upon our buildings, our streets and our vistas. In a generation's time, we have become accustomed to it; we are less and less offended by it" (Jacob, 1985, p. 29).

Aesthetic issues on skywalk systems can be summarized in four categories: inadequacies in system-wide bridge design, lack of harmonious design with adjoining buildings, negative effects on the the street level, and blocked vistas.

One of the major aesthetic issues facing city planners today is how to insert a skywalk bridge between pre-existing structures of different architectural styles. In Minneapolis, a skywalk plan, charting where it would like the crossings to be located, does not demand uniform design. Each one is individually designed. On the other hand, St. Paul develops a neutral bridge design that would appear as a "background"

structure. A neutral expression would allow the architecture at either side of the street to manifest itself. All bridges would be of the same design, which would provide a unified street environment. For a number of years, such cities as St. Paul and Des Moines have followed a policy of building their standard skywalk bridge with minor modifications. Recently, developers have challenged the standard design insisting that it should be changed to reflect their particular new development in downtown. This has become a long and involved debate over the issue of uniformity versus individuality in skywalk bridge design. Still, the issue has not been resolved (Fraser, 1970; Morphew, 1984; Jacob, 1985).

The second concern is whether a skywalk is compatible with the design of the two buildings it connects. An even more delicate problem arises when the buildings are old and have historic value. What skywalks can do in reviving an older part of a city "is to provide a quick and easy way of overlapping the old with the new," notes George T. Marcou, a planning consultant (Fraser, 1970). However, it appears to be not so simple to place a bridge between two buildings. It also turns out that no one was going to worry much about that at an early stage of skywalk development. Unfortunately, the skywalk is often an awkward appendage of both buildings, particularly if one or both are historically significant. In Des Moines, for instance, a distinctively designed skywalk

clashes with the Insurance Exchange Building. City officials have become increasingly concerned with this design problem. Four solutions have surfaced (Morphew, 1984; Jacob, 1985; Robertson, 1987b; Andersen, 1988).

First, where it is feasible, tunnels can be substituted for skywalks. This solution was used successfully at the historic city hall in Minneapolis. Here, pedestrian traffic was not distrupted because the city hall is at the end of the network. However, the level change might be a problem if a tunnel is placed in the middle of a skywalk system.

A second solution is to locate skywalks in alleys, thus the face of the building is not obscured. Des Moines and St. Paul have tried this technique in several places with good results. This backdoor approach can effectively avoid difficulties in attaching new buildings as well.

Third, where alleys do not exist, and tunnels are ill-advised, linking the skywalk to the side of the building can be a good compromise because it leaves the building's facade undisturbed.

Finally, no link at all, if no good alternatives are allowable.

The third problem is the negative effects of the skywalk system on the street level. A major refinement in recent years involves the slope between buildings. In hilly St. Paul and Duluth, the newer bridges remain parallel to the streets

below, and the interior path is inclined to guide pedestrians from one building to the next. Instead of turning corners or angling across streets, bridges take the shortest route from building to building. In Minneapolis, where skywalk bridge design for the most part is the responsibility of the individual developer or renovator, the bridges come in all shapes and sizes. Some of the most recent bridges slope across the streets, falling and rising to meet existing floor levels. Another newly built bridge turns a corner as it crosses over the street to connect a new office tower with the county government center. Moreover, newer bridges are often twice as wide as the bridges of the 1960s. Bridges now vary from 9 to 29 feet in width. The extra girth relieves morning and mid-day congestion, but it also increases the dark place underneath at street level (Morphew, 1984).

Robertson (1987b) shows how a skywalk system changes street-level activities and design:

> "First, if it is successful in attracting pedestrians, the system removes people from the sidewalk. Even if the buildings and skywalks pulsate with people, the lack of human traffic on the street level creates the impression of an inactive, barren city center. The second stage takes place when stores and businesses relocate on the skywalk level to take advantage of heavier pedestrian traffic. Eventually, a third stage may occur in which the design of the building and streetscape is oblivious to sidewalk pedestrians. The boarded-up display windows and the blank street-level walls provide indications of this stage" (Robertson, 1987b, P. 46)

Related to the negative effect on the street level, the last problem arises when skywalks block or cut across

sightlines of vistas or important civic landmarks. The worst problem seems to be on Locust Street in Des Moines where several skywalks bridge the street, intruding on a spectacular view of the State of Iowa's capitol building located on a bluff overlooking the downtown. Rather than violating views of landmarks, skywalks can be placed elsewhere on the block or in the next block, even if that disrupts the flow of the system. Unfortunately, however, this is not possible for long vistas such as Locust Street in Des Moines and Nicollet Mall in Minneapolis. Because of their central location, skywalks must cross these corridors somewhere. In Des Moines, planners have agreed that in order to preserve a view of the impressive Polk County Courthouse, no skywalks will cross Court Street (Robertson, 1987a). In Seattle, officials recently passed an ordinance forbidding skywalks along designated view corridors, and they even ordered the dismantling of a skywalk that blocked a view of the Space Needle (Lublin, 1984; Andersen, 1988).

Economic issues

In thinking about the economics of skywalk systems, one has to examine three elements: the costs for the system development; the benefits for developers who are on the system; and the difference, if any, between retailing located on and off the system. These are questions to which there are no hard answers.

It is very hard to quote the precise construction costs for all skywalk system elements due to a great variety of skywalk types built. According to Andersen (1988), as a rough guide, construction would run as much as $300,000 per linear foot. Information on the costs involved in inserting an interior corridor through an existing building is even harder to come by, mostly because this type of installation is often undertaken as part of a larger remodeling, making segregation of skywalk costs difficult.

Minneapolis' extensive system has been purchased by private land owners and building developers. St. Paul's early skywalk system was financed by the public. In recent years, there has been a public/private sharing of the costs. Other cities use a combination of public and private money, and all require some form of contribution from private owners. The Dallas funding formula, for instance, is a standard one-third, one-third, and one-third. The city pays one-third of the cost of skywalk bridge over a city street, and the adjoining developers share the other two thirds (Dillon, 1985a).

The problem is to get all property owners at a place to behave like brothers. It takes a little government muscle in the form of an tax incentives or incentive zoning system. Such cities as Des Moines established a tax increment financing district - Skywalk District - which can greatly enhance the attractiveness of skywalk development. An

incentive zoning (or bonusing system) would allow not only floor area bonuses, but also the right of developers to exceed the maximum height limit in return for the provision of skywalks and/or the provision of improved public amenities.

Known as "Plus 15", the idea of the Calgary's skywalk system was at first encouraged by offering developers added height bonuses if they made provision for skywalk bridges and public plazas. The basic limit for downtown land was actually rather strict - floor space could not exceed 8 times the site area. In return for providing Plus 15 links, however, developers could build to 14 times the site space, or almost two times more than local zoning law normally allows. It was a carrot-and-stick policy by city hall that is mostly carrot (Park, 1977).

Skywalks are not cheap. However, developers usually say that buildings which are on the system are leased faster than those buildings which are not. Therefore, the carrying costs on interim-financing loans tend to be considerably less when two or three months are subtracted from the time until the building is leased. Moreover, developers can charge 5 to 10 percentage rent premiums to tenants in buildings plugged into the systems (Dillon, 1985a).

Some developers, for instance, estimate being located on the skywalk system is worth, in 1984 dollars, $1 per square foot on office leases, not counting the benefits gained from

leasing space faster than the competition (Dillon, 1985). While not everyone agrees with these estimates, no one believes that skywalks are an economic liability.

There is a general impression among developers that skywalks are good for business. In fact, the skywalk systems are playing a significant role in bringing shoppers back downtown. Skywalks now connect all major department stores and hundreds of smaller shops and retail services. Minneapolis city planners estimate that "two to three million square feet of downtown retail space" is now accessible via the city's 28 existing skywalks (Morphew, 1984).

While skywalks have boosted retail sales on the second and third levels, they also have created a wasteland for street-level shops. In St. Paul, about 90 percent of the city's downtown retail business is now located on the second level; street-level shops are a rarity (Morphew, 1984). On the streets below, there are long stretches of shopless blank walls. Third-level skywalks, a reality in Calgary, Canada, remove shoppers even further from the street.

Only Minneapolis has street-level shops which thrived because of Nicollet Mall. David Dillon argues as follows:

> "Does a second-level system kill the street? It depends on the city. In this respect, Minneapolis has been a misleading model for many cities. Few cities have an IDS Center that can become a kind of municipal living room, in which four thousand people or more per hour are moving. That volume can easily support two levels. Parallel with the early development of the skywalk system came the development of Nicollet Mall, a distinctive

> street with strong commitment from its users" (Dillon, 1985a, p. 27).

For a city to lure pedestrians off the streets, whatever the reason, it can be suicidal in the long run. "The retail shop on the street is the key to a multi-use downtown," states Jaquelin Robertson. "It is the life and character of a city" (Andersen, 1988).

Social issues

Since the pedestrian traffic now flows mainly at the second level, routes have been raised and new commercial centers created with banks, cafeterias, and shops. The result is that urban social life has been changed a great deal.

Some insist that the skywalk is anti-urban and anti-democratic, turning its back on the city. Others like the skywalk because it is new, protects them from a social mix, dirt and chaos, and most importantly, brings great commercial benefits (Williams, 1985; Andersen, 1988).

It should be noted that the economic benefits of skywalks must be balanced against their social costs. City schemes reflect the values of our society. In most cities with skywalk systems, one may read only laissez-faire capitalism (Dillon, 1985a; Robertson, 1985; Williams, 1985).

Richard Maschal and Colin Rowe, architecure critics of the Charlotte Observer, explain that the introduction of the skywalk system has altered downtown Charlotte's once vigorous

street life, with the skywalks remaining mostly white, the streets and sidewalks mostly black, and very little interaction between them (Dillon, 1985b; Rowe, 1985; Andersen, 1988).

Downtowns are comprised exclusively of large department stores and major corporate businesses that can afford the higher rents that the skywalk system has inadvertently created. The result of an extensive and unchecked skywalk system can be a structure, the majority of which is linked to office buildings, up-market stores, luxury hotels and expensive condominiums. It prompts some critics to charge that skywalks are elitist (Rowe, 1985; Robertson, 1987b).

For instance, the Minneapolis system has a heavy commercial flavor, often routing the pedestrian past displays of high fashion merchandise, rare coin collections on sale or through the luggage department of a department store. Moreover, St. Paul city planner Douglas Walker admits that the skywalk systems in the Twin Cities are far more heavily policed than sidewalks, even though they are identical at least in legal terms (Williams, 1985).

In Charlotte, North Carolina, Rowe (1985) states, the small, upstairs "bourgeois boutiquesville" appears to be simply an added agent of ethnic discrimination. Maschal notes that as rents on the skywalk level rise, less expensive stores are being forced down to the street, creating a kind of

economic stratification to go with a bi-racial society (Dillon, 1985a; and Andersen, 1988).

Kent A. Robertson (1987b) states that "the tendency is for skywalks to separate people according to economic class, in part by sending signals to people with low and moderate incomes and perhaps to some minorities that they are less than welcome."

In some fundamental ways, skywalks are perniciously anti-urban like as the shopping malls they are intended to compete against. Skywalks appear to be pedestrian freeways, streets distilled to the strictly utilitarian function of providing transit from Point X to Point Y.

Sam Bass Warner Jr. refers to skywalks as a symbol of urban abandonment, not reinvigoration. As Warner states, "they treat the street as essentially an automobile place. That is going to make for a very poor downtown" (Andersen, 1988). Cities are places where people are drawn together to experience one another. "Street" in general term should be democratic.

Operational issues

Some of the keys to a successful and heavily utilized skywalk systems are:

(1) the ease with which people can gain access to the system;

(2) the ease with which people can orient themselves once on the system;

(3) the consistency in operating hours of the system;

(4) the confidence in security of the system; and

(5) the quality in maintenance of the system.

Access is usually a controversial and complicated issue. Especially, access from the street level is often problematic in many skywalk systems, because entry points are usually found in the center of private buildings, not detectable from the street, thus detracting from their effectiveness in terms of increased accessibility. To make matters worse, in Calgary for instance, there are few directional signs outside to give the would-be users any clue that the skywalks might be entered from within the buildings (Robertson, 1987a).

One remedy to this problem is to provide direct access to the skywalk from the street level, without requiring pedestrians to enter private buildings. The cities that have done this are Calgary and Cincinnati, which have numerous escalators and stairways leading directly to the skywalks, thereby enhancing the system's visibility and use by a wide cross-section of people (Robertson, 1987b).

Elderly and Handicapped access have to be taken into consideration in the design phase, otherwise possible law suits would be risked. In 1983, the skywalk system in the City of Cedar Rapids, IA was threatened with closure by the

Iowa Deputy Building Commissioner for the lack of access for the handicapped (Carlson, 1983). Since then, access has been improved. However, the system is still not barrier free (Neudorf, 1986).

Orientation on skywalks is another major problem because of the virtual absence of directional signs and maps and because of the inconsistency of what few signs exist. Appropriate signage is an important and often neglected aspect of skywalk systems. As an example, the Minneapolis system has only recently been retrofitted with a complete skywalk map system, but there is no skywalk system reference map anywhere in the huge IDS Center, a activity hub where four major links converge. In contrast, the St. Paul and Duluth systems have carefully designed illuminated signs, appropriately placed at points where skywalks enter buildings and cross (Morphew, 1984). If a system is not contiguous, it would add to the dilemma, as pedestrians have a difficult time working out how to move from one segment of the system to another.

There have been other problems, such as a lack of consistency in operating hours. Private operation of the system, in Minneapolis for instance, often conflicts with open public use. The coordination of operating hours is a continuous challenge. Physically, the system connects, but the system becomes compromised on evenings and weekends with a variety of closing hours. The result is confusion about the

availability of the whole system (Morphew, 1984).

In St. Paul, the skywalks take on a more public nature by keeping the system open until 2 a.m. while allowing greater security to individual stores. As a result, bars and restaurants that serve dinner have opened along them (Wright, 1981).

Another important item to consider in a skywalk system is security. Security can be grouped into two categories. One is the security of the buildings through which a skywalk system would pass, and the other is the security of people using the system.

Security of buildings can be maximized by placing the skywalk system in public areas such as over alleys, over streets, or over sidewalks. However, the security to users of the system is minimized by using any of these locations because the maximum security for the users is within a store where many people generally are congregated at any one particular time (Heglund, 1982).

Incidents of personal assault have been reported in skywalk systems, especially in segments that are poorly lit or unused for long periods. With more cities planning outlying parking lots that are linked to the city center by long skywalks, the dangers will increase and additional security measures will be needed (Morphew, 1984).

Carol Morphew (1984) suggests that skywalks should be

designed to minimize blind corners and dark alcoves. Long-span bridges ideally should be designed with large transparent areas to allow observation from the street level. Corner mirrors also add to the security of people.

Maintenance of the skywalk system is also an essential element to consider. If the system is placed over alleys, streets, or sidewalks, or both, the maintenance may become a public function only and the quality of maintenance may not be the same as that in the adjacent stores (Heglund, 1982).

If the system goes through private buildings, then the maintenance of the skywalk system would be a portion of the regular maintenance of the building, and the quality of the maintenance of the skywalk would be the same as the adjacent private properties. This would create less of an impact on the pedestrians in any given area than to have separate levels of maintenance (Heglund, 1982).

Summary

In early 1960s, Minneapolis started moving pedestrians through the Minnesota winters and above traffic by way of elevated, enclosed and heated skywalk system. In more than twenty five years since the inception of the Minneapolis and St. Paul skywalk systems, the systems have been heavily used, and new developers are generally amenable to making system extensions. Many other cities have adopted and expanded

systems until we now have, in effect, second-story cities.

As the systems grew, skywalks played positive transportation and economic roles, and as a result, skywalks are seen as much more, as a unifying force, tying the development together and making it work. They segregate pedestrians from vehicle traffic, thereby improving the flow of both people and automobiles and reducing accidents.

Skywalks are popular with downtown workers, shoppers, and visitors, especially in northern cities, providing protection from unpleasant weather, thereby making downtown more convenient, safe and comfortable. The economic development potential of these systems now outweighs the advantages of climate control, as shown by the increasing number of skywalks in cities with mild climate.

Skywalk systems appear to support the goal of a "compact" downtown. They are binding the retail section of the city into a concentrated area. By tying groups of buildings together, skywalks can compete with the suburban shopping centers. They offer attractive economic returns to those fortunate enough to be on them. Some developers state that skywalk systems are costly, but "marketable" (Podolske and Heglund, 1976). Skywalks also improve links between development projects, helping businesspeople and city officials to promote the downtown, as a tool in downtown revitalization.

Whatever the reasons for their implementation, skywalks have proven to be immensely popular with the public, who use them heavily. Skywalks pull pedestrians off the streets year round, regardless of weather conditions: rain or shine; hot or cold. As a result, the concomitant commercial success of the skywalk system was inevitable.

Although skywalks have resolved many urban needs, they have had major impacts on downtowns, creating aesthetic, economic, social and operational problems.

Aesthetic impacts can be grouped into four categories: inadequacies in systemwide bridge design; lack of harmonious design with adjoining building; negative effects on street level; and blocked vistas.

There are also economic, social and operational problems as well. Economically, skywalks can cause significant shifts in where and how people shop, entertain, and conduct business, thereby affecting land use and investment patterns. The planners admit that in the core's retail strongholds, the most successful business is at the skywalk levels. Many cities live on the skywalks, while the street level is given over more and more to marginal retail activity, or to none at all.

Socially, skywalks seemingly represent segregating people by race and economic class. Skywalks have been heavily used, but not widely used. Especially in the skywalk system which was developed privately and on ad hoc basis, the

physical design of the skywalks appears to compound the social fragmentation they encourage, discouraging one's inclination to congregate.

Access is usually a controversial and complicated issue. Elderly and handicap accessibility has been problematic, often creating potential litigation. Also, the skywalk connections across the downtown streets are increasingly hindering us in from the ability to gaze down a street which is an important means of orientation. Concerns about system security and maintenance have resulted in several skywalks shoved to the perimeter of the buildings they were intended to serve.

A frequently cited planning objective is to try to create a more pedestrian-oriented downtown, permitting the clustering of a wide variety of activities that are easily accessible to all. Skywalks are likely to contribute to a major economic and social transformation of urban public space. Many cities have left many of the problems unresolved and have created new ones (Podolske and Heglund, 1976; Morphew, 1984).

Though the original rationale for building the skywalks was civic minded, the reasons for their continued development and proliferation have been economic. The only criterion by which projects are evaluated in such a setting can be short-term commercial return. That can not be enough. Certainly, no reason only based on market demand or utilities can be justified. Various data should be equally related and

analysed, by looking at inherent impacts of skywalks on the users' everyday urban life just as looking at economic and transportation statistics. All of those things really ought to be looked at together (Robertson, 1985).

It is one of the most serious concerns that skywalks represent an anti-urbanistic, anti-democratic privatization of urban public space, even though skywalks have the potential to be a truly heterogeneous public sphere like as streets. Inside their hermetic and controlled world, urban dwellers are deprived of much of the richness of a city.

Unfortunately, there have been no studies, except in passing, to address this serious but hidden issue related to skywalks: their leading to the substitution of a privately controlled public space for the urban experience of the city as a conglomeration of buildings. Moreover, research devoted to perceptual and behavioral impacts of the privatization of skywalk systems on urban life is virtually nonexistent. If any, most of them lack clarity about what the methodological basis was for their analysis and recommendations.

If all of this literature did not produced a full understanding of issues and concrete solutions, part of the reason may be that skywalks are such a recent urban phenomenon. As a measure of the accumulated experience and wisdom in urban planning and design, a twenty-five year period is a very short time indeed.

Along with the vigorous growth of skywalk systems, however, it might not be too soon to step back and assess skywalks' influence, especially on downtown activity in this new kind of urban public space.

From the literature reviewed and on-site obervations in Des Moines and Minneapolis, some hypotheses about the apparent aspects of privatization of skywalks on the environmental and social quality of the system have been put forward. As briefly stated in the introductory chapter, the first hypothesis is that skywalks are privately controlled in reality, regardless of which sector they are developed, owned, or maintained by.

The second hypothesis begins with an simple observation that the skywalks in Des Moines rapidly become empty after 5 p.m. during weekdays. After 6 p.m., they are deserted except for some movie-goers or sporadic groups of teenagers. On the basis of this observation, one can hypothesize that the skywalk system functions as such only during limited hours, namely during business hours of offices and shops linked to the skywalk system.

This hypothesis brings the third one: the skywalks are planned solely to accommodate office workers and shoppers.

The last hypothesis is provided by Collin Rowe, Jaquelin Robertson, and Kent A. Robertson. In their studies of the several skywalk systems in North American cities (Rowe, 1985;

Robertson, 1985; and Robertson 1988), they insist that the skywalks segregate people by race and economic class. Based on their studies, it may be reasonable to hypothesize that skywalks send signals to people with low and moderate incomes that they are less than welcome. These hypotheses are tested in the following chapters.

CHAPTER IV. METHODOLOGY AND CASE STUDY

To analyze privatization of the skywalk system in Des Moines, the following three steps were involved: on-site observation, interviews and data collection; user surveys; and system analysis. These techniques provided important information about the people, activities, problems and conflicts that occur in public use spaces. Specific attention was given to exploration of public and private needs within the skywalks in Des Moines. Figure 1 shows the current status of the skywalk system in Des Moines, which is one of the most extensive and newest systems in existence.

Observation and Data Collection

The initial phase of the study entailed several days of observing the skywalk system in Des Moines, with particular focus on usage, design, signage, obstacles, activities, and any unique characteristics. This phase included interviews with public officials involved in skywalk planning, design, and implementation, private building managers and security persons to discuss the observations and to gather additional insight and factual information.

Skywalk pedestrian informations used in this study were obtained from the skywalk systems in Des Moines. The City of Des Moines provided pedestrian counts at each of skywalk bridges. Skywalk systems in Minneapolis and St. Paul in

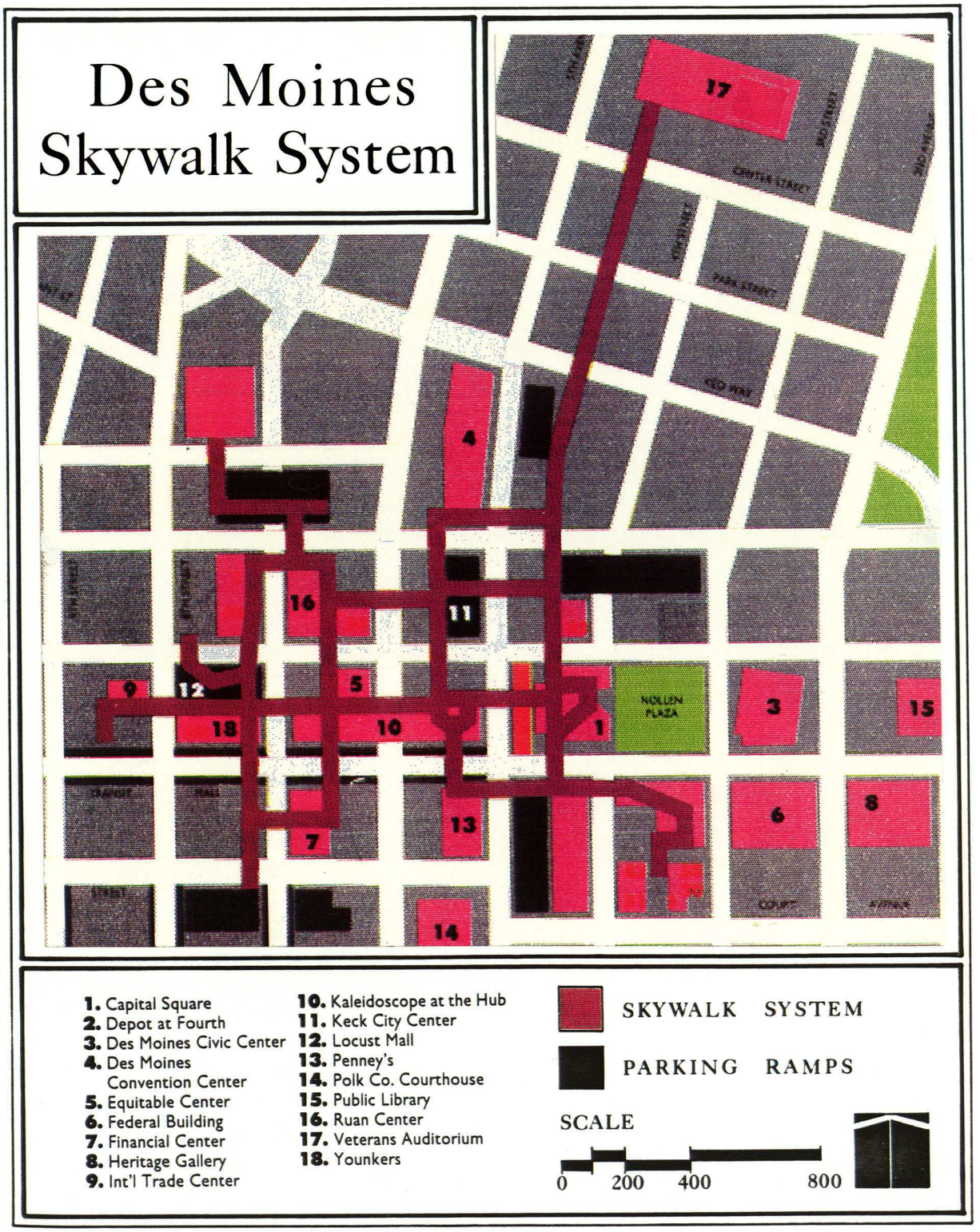

Figure 1. Skywalk system in Des Moines

Minnesota also provided pedestrian information. These systems are the oldest ones, and therefore have the largest data base.

User Survey

The second phase of the study involved surveying 140 skywalk users in Des Moines to ascertain their usage patterns and perceptions concerning a wide spectrum of skywalk features and possible problems. The surveys, which contained 12 questions, were conducted between 10:30 a.m. and 3:30 p.m. on randomly selected weekdays and weekends in January and February of 1989.

Based on the previous observations and pedestrian traffic volume, four locations were selected. The researcher dressed in light colors, and wore a bright red name tag which bore the researcher's name and the legend: "Des Moines Skywalk System Study." The researcher asked the first passerby for an interview with a friendly smile on his face. If the passerby refused, the researcher attempted to stop the next passerby of the same sex and race until he obtained an interview in an attempt to minimize the biases that may be inherent in the analysis. Less than 50 percent of those approached agree to participate. Before each interview, the researcher handed a questionnaire to the respondent, and assured each respondent that their answers would be confidential and that there would be no right or wrong answers.

Survey locations

In order to minimize the chance that usage patterns on a skywalk would be markedly different from those on other skywalks, four locations within the Des Moines system were monitored. Four locations with different characteristics were carefully selected to ensure a reasonable cross-section of skywalk users (i.e., residents, office employees, and tourists). The survey locations are shown in Figure 2. On each of four locations, 35 skywalk users were surveyed; 25 users on weekdays and 10 users on weekends.

Location 1 is located on the skywalk bridge over 5th Street, and the skywalk bridge links two major activity hubs in downtown Des Moines, Kaleidoscope and Capital Square. Those activity hubs contain a variety of retail establishments. The average daily pedestrian traffic volume in 1986 was 7,600 person-trips.

Location 2 is located on the skywalk bridge over 7th Street, and the skywalk bridge links Ruan Center and Marriott Hotel. The bridge is also linked to another skywalk bridge which links Ruan Center and Grand Avenue Parking. The average daily pedestrian traffic volume in 1986 was 4,500 person-trips.

Location 3 is located on the skywalk bridge over Walnut Street, and the skywalk bridge links Younkers, Walgreens, and Employers Mutual. One reason to select Location 3 was that

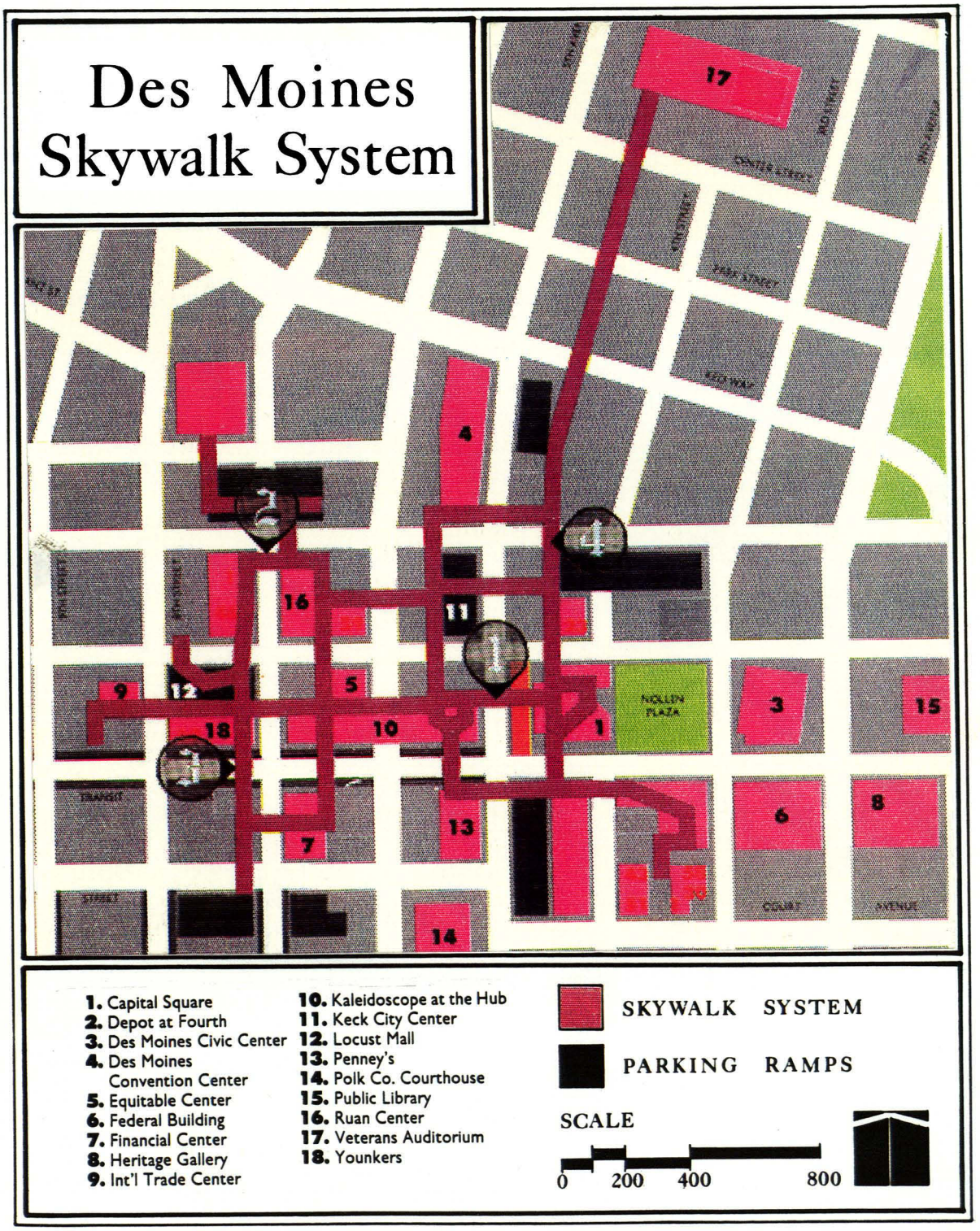

Figure 2. Four survey locations

the skywalk bridge has an access point from Walnut Transit Mall and bus-stops. The average daily pedestrian traffic volume in 1986 was 5,200 person-trips.

Location 4 is located on the skywalk bridge over Grand Avenue, and the skywalk bridge links 4th Street Parking, Brown Garage and the Insurance Exchange Building. This skywalk bridge was not extended to Veterans Auditorium when the survey was conducted, but now it is completed. The average daily pedestrian traffic volume in 1986 was 7,000 person-trips.

Survey respondents

One hundred and forty skywalk users participated in the survey, 100 users on weekdays and 40 users on weekends. Table 1 shows the distribution of survey participants by location, day, and linkage of working place to skywalk.

Table 1. Survey participants by location, day, and linkage of working place to skywalk

Day	Linkage of Working place to skywalk	Location 1	2	3	4	Total
Weekdays		25	25	25	25	100
	Linked	12	19	11	14	56
	Not-linked	13	6	14	11	44
Weekends		10	10	10	10	40
	Linked	3	5	5	4	17
	Not-linked	7	5	5	6	23
Total		35	35	35	35	140

Of those surveyed, 52.1 percent work in a building which is linked to the skywalk system, and 47.9 percent do not. In general, more users work in a linked building on weekdays, and fewer users on weekends, even though there were some locational differences. It is interesting to note that there were 76.0 percent skywalk users working in a linked building at Location 2 where major service business establishments are located.

When asked for their residence, it was found that the 140 respondents could be categorized as 15.0 percent residents in downtown Des Moines, 57.1 percent in Des Moines Metropolitan area, 23.6 percent in Iowa, and 4.3 percent visitors from outside of Iowa (Table 2). It was observed that 35.0 percent of the total respondents were female, and 65.0 percent male.

Table 2. Survey participants by location and living place

Living place	Location 1	2	3	4	Total
Downtown Des Moines	5	5	5	6	21
Des Moines Metro Area	18	20	22	20	80
Iowa	12	7	6	8	33
Outside of Iowa	0	3	2	1	6
Total	35	35	35	35	140

Table 3 shows the distribution of survey participants by sex and age, and by location. Of those surveyed, 23.6 percent are in their 10s or 20s, 57.8 percent in their 30s or 40s,

Table 3. Survey participants by sex and age, and by location

Age	Sex	Location 1	2	3	4	Total
10s and 20s		9	6	12	6	33
	male	6	4	8	3	21
	female	3	2	4	3	12
30s and 40s		19	23	17	22	81
	male	13	13	10	12	48
	female	6	10	7	10	33
50s and 60s		6	6	6	7	25
	male	6	6	4	5	21
	female	0	0	2	2	4
70s and over		1	0	0	0	1
	male	1	0	0	0	1
	female	0	0	0	0	0
Total		35	35	35	35	140

17.9 percent in their 50s or 60s, and 0.7 percent in their 70s or over.

Table 3 also shows that there are very few female users who are in their 50s or 60s. Of those users who are in their 50s or 60s, only 16.0 percent were female. There are more females in their 30s or 40s, and fewer in their 50s or 60s. In general, women are the buyers. Getting less females in their 50s or 60s as participants in the survey indicates that the skywalks may not successfully capture those females who are not in the working-age group or do not work downtown.

Moreover, the largest number of skywalk users are in their 30s and 40s. These possibly mean the skywalk system is primarily serving those who are working in downtown Des Moines.

Table 4 shows the distribution of skywalk users by race and location. It was also observed that a majority of the skywalk users are white, and only 11.4 percent were non-white.

Table 4. Survey participants by race and location

Race	Location				Total
	1	2	3	4	
White	31	31	28	34	124
Non-white	4	4	7	1	16
Total	35	35	35	35	140

Even though income-level categorization by simple observation of users' personal appearance cannot be entirely correct, it is believed that such categorization can provide meaningful information for this study. Therefore, the analysis of the Des Moines skywalk system was partially based on these limited data. Among 140 users surveyed, 17 persons could be categorized as high-income level, 88 persons as moderate-income level, and 35 persons as low-income level. Even though the skywalk system seems to attract the variety of group of people in different income levels, it is interesting to notice that there are some locational differences. The largest number of high-income level group was found at

Location 1 where the bridge links two major retail cores with activity hubs, while the largest number of low-income group was found at Location 3 where the bridge is linked to bus stops on the transit mall.

Survey questionnaire

The standard questionnaire, consisted of 12 questions[4], asked people to rate each question on a scale of one to five: scale 1 represents "strongly disagree" to a question; 2 represents "mostly disagree"; 3 represents "not decided"; 4 represents "mostly agree"; and 5 represents "strongly agree". The questions dealt with trip purpose, orientation, system operation, discrimination, linkage, private control, and etc. The survey lasted approximately three minutes.

[4]See appendix on page 116 for the list of 12 questions and the summary of the results.

CHAPTER V. SKYWALK SYSTEM ANALYSIS

It was expected that the pedestrians' usage patterns and perception in the skywalks would reveal planning and design issues related to the privatization of skywalk system. Therefore, The analysis in this chapter is intended to discover the views and perceptions of users, concerning activities occurring in the skywalk system and the impact of privatization of the skywalk system on their usage patterns and perception. The analysis is categorized by four groups: system usage, public perception, privatization of public space, and finally skywalks as public space.

System Usage

Skywalk preference

It was observed that the skywalks in Des Moines receive their heaviest use during the midday period. This heavy use of the skywalks during midday generally reflects the overall interblock pedestrian activity in the CBDs. Given that the skywalks are heavily used, it might be worthwhile examining whether there are any differences in the users' preference of skywalk as opposed to sidewalk. Table 5 shows the users' preference of skywalk by linkage of working place to the skywalk system.

When asked about the preference of skywalk as opposed to sidewalk, most skywalk users surveyed in this study were in

Table 5. Preference of skywalk by linkage of working place to skywalk

Linkage of working place to skywalk	Preference of skywalk to sidewalk					Total
	1[a]	2[b]	3[c]	4[d]	5[e]	
Linked	0	5	3	33	32	73
Not-linked	0	5	8	27	27	67
Total	0	10	11	60	59	140

[a]Strongly disagree.

[b]Mostly disagree.

[c]Undecided.

[d]Mostly agree.

[e]Strongly agree.

favor of using skywalk rather than sidewalk, even though the users' preference would be lower than this figure, if the survey was conducted during milder seasons rather than winter. 85 percent of those users were in favor of using skywalks, 7.9 percent undecided, and only 7.1 percent were in favor of sidewalks. When compared by linkage of working place to skywalk, the preference remains almost the same. However, Table 6 shows there is a slight difference when compared by living place. Of those who live in Des Moines, only 5.9 percent were in favor of sidewalks, while 10 percent of those who live outside of Des Moines were so. This possibly means that the skywalks do not fully accommodate visitors or

commuters from outside of Des Moines.

Table 6. Preference of skywalk by living place

Living place	Preference of skywalk to sidewalk					Total
	1[a]	2[b]	3[c]	4[d]	5[e]	
Des Moines	0	6	6	46	42	101
Downtown Des Moines	0	0	0	6	15	21
Des Moines Metro Area	0	6	6	40	27	80
Outside of Des Moines	0	4	5	60	59	140
Iowa	0	3	3	11	16	33
Outside of Iowa	0	1	2	3	0	6
Total	0	10	11	60	59	140

[a]Strongly disagree.

[b]Mostly disagree.

[c]Undecided.

[d]Mostly agree.

[e]Strongly agree.

Trip purpose

An examination of why people walk in a skywalk can help understand whom the skywalks serve. Table 7 shows the distribution of person trips by purpose: work, home, shop, eat, and others.

The highest number of trips were made for purposes of working. These trips are essential to retail/commercial business sector, and the skywalk system in Des Moines seems to

Table 7. Trip purpose

Origin	Destination					Total
	Work	Home	Shop	Eat	Others	
Work	34	11	11	9	6	71
Home	10	0	16	0	4	30
Shop	4	0	1	2	1	8
Eat	5	3	1	2	1	12
Others	6	1	3	0	9	19
Total	59	15	32	13	21	140

be capturing this traffic successfully. Other high number of trips were for shopping and eating. Of those trips surveyed, 68.6 percent were working-related trips, 27.9 percent were shopping-related, and only 16.4 percent were eating-related trips. The skywalk system in its present state appears to be used as principal connection between prime office space and the retail core. Table 8 shows the distribution of trip purposes for those living in Des Moines (including downtown

Table 8. Trip purpose for those living in Des Moines

Origin	Destination					Total
	Work	Home	Shop	Eat	Others	
Work	26	9	7	6	4	52
Home	9	0	11	0	3	23
Shop	3	0	0	1	0	4
Eat	4	3	1	1	1	10
Others	5	1	0	0	6	12
Total	47	13	19	8	14	101

Des Moines and Des Moines Metropolitan area), and Table 9 for those living outside of Des Moines (including outside of Des Moines Metropolitan area but in Iowa and outside of Iowa).

Of those living in Des Moines, 72.3 percent were made for working-related trips, 22.8 percent for shopping-related trips, and only 16.8 percent for eating-related trips (Table 8), while of those living outside of Des Moines, 59.0 percent was made for work-related trips, 41.0 percent for shopping-related trips, and 15.4 percent for eating-related trips (Table 9). It is interesting to notice that working-related trips were more than half of the total trips even on weekends, and that there were relatively few eating-related trips both on weekdays and weekends.

Table 9. Trip purpose for those living outside of Des Moines

Origin	Destination					Total
	Work	Home	Shop	Eat	Others	
Work	8	2	4	3	2	19
Home	1	0	5	0	1	7
Shop	1	0	1	1	1	4
Eat	1	0	0	1	0	2
Others	1	0	3	0	3	7
Total	12	2	13	5	7	39

Table 10 and Table 11 show the distribution of trip purpose by day; Table 10 for weekdays and Table 11 for weekends. For working-related trips, 74.0 percent of the

Table 10. Trip purpose on weekdays

Origin	Destination					Total
	Work	Home	Shop	Eat	Others	
Work	30	9	7	6	2	54
Home	7	0	6	0	2	15
Shop	3	0	1	2	1	7
Eat	4	3	1	2	1	11
Others	6	1	1	0	5	13
Total	50	13	16	10	11	100

total trips on weekdays were made, and 55.0 percent on weekends. For shopping-related trips, 22.0 percent of the total trips on weekdays were made, and 42.5 percent on weekends. For eating-related trips, 19.0 percent of the total trips on weekdays were made, and only 10.0 percent on weekends. One reason for more eating-related trips on weekdays and less on weekends is that most restaurants on the skywalk system open late and close early, or even do not open on weekends. While it is too early to determine all of the reasons for the lack of restaurant establishments being open on the weekends, one reason is that existing restaurant establishments on the skywalk system account for most of their business during the midday period on working days. Table 10 and Table 11 also shows that only 14 percent of weekday-trips and 15 percent of weekend-trips were not for working or shopping.

Table 11. Trip purpose on weekends

Origin	Destination					Total
	Work	Home	Shop	Eat	Others	
Work	4	2	4	3	4	17
Home	3	0	10	0	2	15
Shop	1	0	0	0	0	1
Eat	1	0	0	0	0	1
Others	0	0	2	0	4	6
Total	9	2	16	3	10	40

Table 10 and Table 11 also show that skywalk users on weekdays and weekends formed populations exhibiting different characteristic: more are shopping than their weekday counterparts. In both groups, however, the greatest majority of their trips were still working-related. People who came for shopping or working may have tended to be more task or schedule oriented, thereby those people did not tend to participate in the survey. If this explanation is valid, it would make sense that real figures for working or shopping related trips would be much higher than this. Therefore, it would be reasonable to state that the skywalks are planned mainly to accommodate office workers and shoppers.

Public Perception

In the process of skywalk development, a portion of the existing systems already developed perhaps cannot be changed so much physically. However, it is believed that even already

developed systems should be changed according to the way people perceive their environment if there are any problems. It is therefore important to know how people perceive the skywalk system.

Orientation

Signage is extremely important for pedestrian orientation. Because the vast portion of the total skywalk system is comprised of interior corridors, it is extremely important that the system be well marked and that overall graphic treatment be uniform. Those persons using the internal corridors of skywalk system cannot use outside landmarks as a means of orientation. Pedestrians also need signs directing them to public services such as telephones, restrooms, emergency exits, and security offices. It should be noted that the City of Des Moines is aware of this orientation problem and is in the process of installing a systemwide series of directional signs. Figure 3 shows one of the directoral signs in the Des Moines skywalk system.

One of the most significant factors which affect public perception is the ease and ability with which pedestrians can negotiate the skywalk once they have entered the system. The other fundamental principle for skywalk development is that there are two types of populations who must be distinguished and accommodated: those who are territorial residents and those who are visitors or commuters from somewhere else.

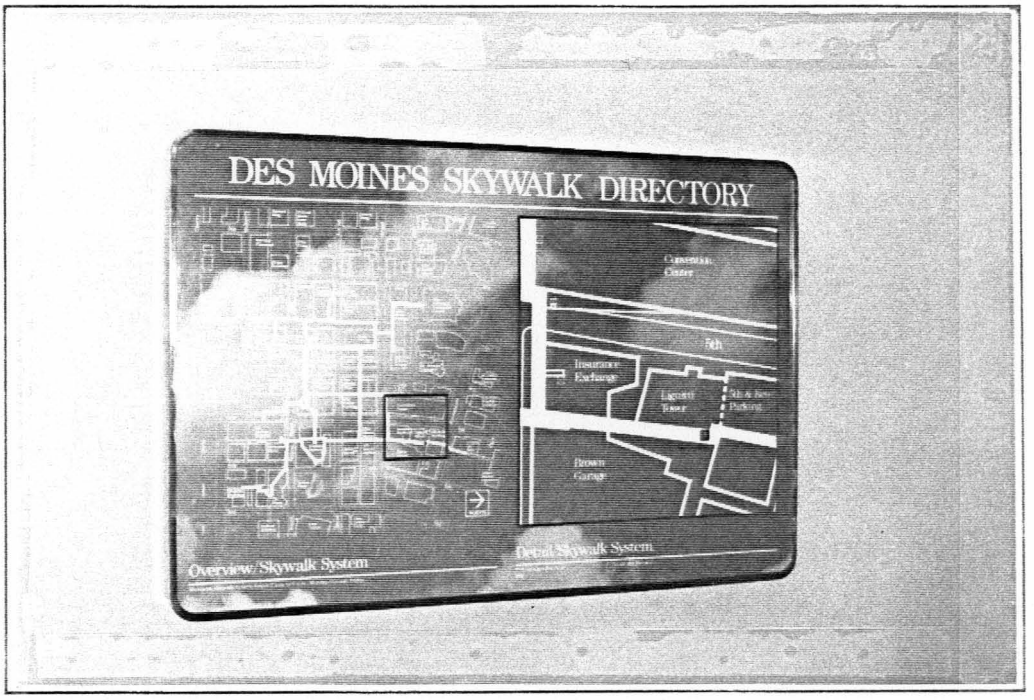

Figure 3. A directoral sign in the Des Moines skywalk system

Table 12 shows the distribution of experience of being lost or disoriented on the skywalks by living place and linkage of working place to skywalk. Of those surveyed, 62.1 percent did not experience being lost or disoriented, and only 28.6 percent did such. Although complaints were not numerous, they were felt relatively strongly by those users who live outside of Des Moines, as one might reasonably expect. 42.4 percent of those living in Iowa (but outside of Des Moines) and 83.3 percent of those living outside of Iowa have experienced being lost and disoriented, while 23.8 percent of those living in the downtown and 20.0 percent of those living

Table 12. Experience of being lost or disoriented by living place and linkage of working place to skywalk

Living place and linkage of working place to skywalk	Lost or disoriented					Total
	1[a]	2[b]	3[c]	4[d]	5[e]	
Living place						
Downtown Des Moines	10	5	1	3	2	21
Des Moines Metro Area	32	26	6	10	6	80
Iowa	6	7	6	9	5	33
Outside of Iowa	1	0	0	3	2	6
Linkage of working place to skywalk						
Linked	35	18	6	10	4	73
Not-linked	14	20	7	15	11	67
Total	49	38	13	25	15	140

[a]Strongly disagree.

[b]Mostly disagree.

[c]Undecided.

[d]Mostly agree.

[e]Strongly agree.

in Des Moines Metropolitan did experience being lost or disoriented. Although the Des Moines skywalks attempt to facilitate clear user orientation through maps and signing, their degree of effectiveness seems to vary significantly especially for those from outside of Des Moines. The Des Moines skywalk system should provide clearly marked and uniform signs that indicate directions to not only buildings and facilities, but also the street below.

System operation

It was observed that for most parts of the skywalk system are open Monday through Saturday from 6 a.m. until 2 a.m. Some skywalks are closed at 6 p.m with closing delayed until 8 p.m. or 9 p.m. on shopping nights. For instance, when the Yonkers has a bargain-sale event until 8 p.m., an adjacent hub - Locust Mall - follows Younker's closing hour.

Skywalk users were asked whether they were sure exactly when the skywalk was open and closed. Table 13 shows the distribution of awareness of operation hours by living place and linkage of working place to skywalk.

Of those surveyed, 40.7 percent reported they were sure about operation hours, and 38.6 percent not sure. When compared by living place, 23.8 percent of those living in downtown Des Moines were not sure about operation hours, while 40.0 percent of those living in Des Moines Metropolitan area, 42.4 percent of those living in Iowa but outside of Des Moines and 50.0 percent of those living outside of Iowa were not sure about operation hours. The table also shows that only 26.2 percent of those working in a building linked to the system were not sure about the operation hours, while 52.2 percent of those not working in those buildings were not sure. This possibly reveals that the skywalk system in Des Moines is not operated to fully serve those people who are not working in a building linked to the system.

Table 13. Awareness of operation hours by living place and linkage of working place to skywalk

Living place and linkage of working place to skywalk	Sure about operation hours 1[a]	2[b]	3[c]	4[d]	5[e]	Total
Living place						
Downtown Des Moines	3	2	4	3	9	21
Des Moines Metro Area	6	26	14	17	17	80
Iowa	2	12	9	6	4	33
Outside of Iowa	2	1	2	1	0	6
Linkage of working place to skywalk						
Linked	5	14	18	15	21	73
Not-linked	8	27	11	12	9	67
Total	13	41	29	27	30	140

[a]Strongly disagree.

[b]Mostly disagree.

[c]Undecided.

[d]Mostly agree.

[e]Strongly agree.

It might be worth noting here that satisfaction with the system's operation hours were found to correlate with user's awareness of them. Therefore, it is important to keep the system's operation hours uniform, at least for those people who do not live in Des Moines.

Social discrimination

Simple observation on four skywalks in Des Moines reveals a clear difference between the typical skywalk user and the street level pedestrian. This suggests the beginnings of a dual level downtown society in which people are physically separated. However, most of skywalk users surveyed did not seem to perceive the skywalk system in that way. When asked whether skywalk sends signals to people with low and moderate income that they are less than welcome, 70.0 percent of those surveyed skywalk users reported they did not think so, and only 13.6 percent thought there is such discrimination. However, there was some difference when compared by race. Table 14 shows the distribution of users' perception of discrimination by race. While only 8.9 percent of white skywalk users think there is discrimination by economic class, 50.0 percent of the non-white users surveyed think there is such discrimination. However, it would be inaccurate to conclude that skywalks send signals to low or moderate income people that they are less than welcome. Although the survey findings do not clearly validate the hypothesis on social discrimination, it should be noted that perception of such discrimination was so strong among non-white users. If the skywalk system is regarded as a public system open to general public, this problem should be solved through careful consideration on system design and operation.

Table 14. Perception of discrimination by race

Race	Discrimination					Total
	1[a]	2[b]	3[c]	4[d]	5[e]	
White	60	32	21	7	4	124
Non-white	2	4	2	3	5	16
Total	62	36	23	10	9	140

[a]Strongly disagree.

[b]Mostly disagree.

[c]Undecided.

[d]Mostly agree.

[e]Strongly agree.

It should be noted that the findings can not be definitive because of small sample size of non-white users. Moreover, individual perception may be influenced by many diverse factors rather than a single factor. Therefore, revealed positive relationship between perception of discrimination and race are probably due to the social problem in society as a whole.

Moreover, it also should be noted that when the researcher asked if there is any negative points about the skywalks, local people may not have wished to reveal that to the foreign researcher even though they may privately acknowledge that their system is unsatisfactory. They may

refuse to complain in order to keep up their local pride in their system or social image.

Privatization of Public Space

A new word has been added to the downtown redevelopment vocabulary: "privatization". It has gained attention in the 1980s, stimulated by municipal spending limits. In their efforts to economize, local governments have shifted services to private sectors. In the process, they have applied privatization to skywalk system development. Privatization of skywalk systems, the private sector's taking over of or participation in the development and management of the systems, is one of the latest forms of private involvement in public space provision.

Although privatization in skywalk development and management is economically attractive, there are some basic issues to be solved. Control - who and what is in control, what is to be controlled, how control is practiced, and on what grounds control is justified - is a guiding issue that shapes concerns over privatization. The issue of control touches upon three parameters in the development and management of the skywalk system: control of public access, control of public use, and control of system operation.

Control of public access

Accessibility is an integral part of attraction. People's attachment to the skywalks has a lot to do with their knowledge and information about accessibility. It is necessary to realize, for whom improved physical accessibility should be made and what the consequences will be for the content of the improvement.

Public access from the street level is often problematic in the Des Moines system because entry points are usually found in the center of private buildings. Not only are the skywalk entrances not detectable from the outside, but people may get the feeling that they are treading on private space when they have to walk far into the interior of an office building or hotel to locate the skywalk. It is apparent in many places throughout the Des Moines system.

To protect their investments, developers attempt to internalize spatially all positive externalities by controlling public visual and physical access to a skywalk system. Thus the economic motives that drive skywalk development manifest themselves spatially and subsequently are expressed in the design and the operation of the skywalk system.

A good example of skywalk ambivalence is the Capital Square Building on Fourth Avenue. The main entry to the building is on the second floor, on the skywalk level.

Escalator and elevator take the users from the Fourth Avenue entrance up to the second floor for access to the skywalk level, but there is no sign at the main entry which indicates the way to the skywalk level. This indicates that the building is completely committed to the skywalk system, but the skywalk is not committed to the street level.

It is observed that access to the skywalk level is via stairs and elevators such as those in the hotel, parking ramps and other buildings. Mechanically-assisted vertical connections are imperative system elements. Unlike at-grade networks which typically involve street crossings, a major advantage of skywalks is the lack of travel interruption within the system. The pedestrian should be able to enter the network without a great deal of effort. This does not seem to be overcome in Des Moines skywalk system. This can be done by the liberal uses of escalators and elevators, connecting the various pedestrian levels and the street. Most escalators and elevators are located within private buildings, so they do not seem to be open to the general public. Elevators are also needed at periodic locations to provide skywalk access for the handicapped.

A substantial part of the total skywalk length is routed through private buildings. When such establishments as banks and restaurants in those buildings close for the day, they also close the skywalk corridors through their establishments.

Consequently, this places restrictions on the hours of operation and, of course, on the total effect of the skywalk system. Control of skywalk access is very important. Greater attention should be focused on being able to provide open public access into and out of the skywalk system along its entire length.

Control of public use

Do the skywalks do what they set out to do? Although it is not necessarily the sponsorship of the skywalk system that determines whether or not it is perceived and used as public space, the change in the organization of capital investment has led to a concomitant change in the kinds of experiences that are provided for or occur in the skywalk system. The developers develop skywalks that reflect the concentration of control over public use, as well as the singularity of intent that underlies their investments.

Private developers' strategy is usually based on "target groups." Inherent in this concept of target groups can be the idea of exclusion (Drummond, 1987). Exclusion should not be allowed in public space such as skywalks, however, it nevertheless seems to exist. The skywalks are devoted to attracting consumers rather than offering a public space for all members of the community to engage in a variety of social encounters and activities.

Generally, the downtown is the only place in the whole

region, where one can be open and make contact with or look at a broad section of people from different and often quite segregated neighborhoods of the entire region. The downtown is the only place where people from many different groups, characterized by age, income, race, employment and lifestyle, actually come together, where they can meet and look at each other. Therefore, the attraction of the skywalks also lies in such diversity. While the streets are drained of their vitality, the skywalks are dynamic, but in a directive fashion.

The skywalks are increasingly specialized, geared less to the spontaneity of unplanned congregation than to serving a specific function for the adjacent private buildings. The positive externalities of pedestrian movement are circumscribed by the developers so as to maximize the financial returns to their properties. Although the skywalks provide some amenities that are seemingly available to the public, the range of facilities offered, design elements, and policing by private security guards seem to filter the public use.

When the skywalks are really open to all and serve as an inducement for people to linger, some of those attracted may be considered undesirable by private property owners. However, the benefits which come from more users in the skywalks are undoubtedly worthwhile. A sense of security is

important, but security control must be carefully counter-balanced against freedom in using the skywalks. People get a sense of security, which all humans need, from the proper management of public space and more importantly from the presence of other people, not necessarily from the high-tech monitoring and visible security personnel that predominate in the Des Moines skywalk system.

Most of private buildings' entrances which also serve as the skywalk entrances have signs which say "No Loitering." In other words, "Do not come in unless you have business here." This sign fails to recognize the importance of the fact that the skywalks should be designed for those who use them or are affected by them, rather than only for those who own them. In fact, no one is just passing through. Any public space should invite people to linger or to explore it. The skywalks can be more than a means of arriving at a place to spend money or to work. They should be more diverse.

It also should be noted that administering functions related to public events - permit issuance, scheduling, and programming - is one of the private management organization's major tasks. Private management, with a greater capability for programming than that available from public agencies, can solicit private contributions and participation as well as promote public events in the skywalk system. Undoubtedly, this arrangement responds more effectively to the widely

acknowledged role that public events are credited for in enlivening the life of the skywalks (Kim, 1987). However, this does not seem to be realized and accomplished in the Des Moines skywalk system.

Control of system operation

Is a skywalk system essentially a public right-of-way or an "envelope" penetrating through privately owned buildings? Related to this issue, there is another simple question: are the skywalks a place prepared for diversity of activity over long periods of the day, or for concentration of similar activities at short intervals, namely business hours? Unfortunately, the survey results and on-site observation revealed negative answers.

It is argued that the private management of the skywalk system, over that of public management, achieves greater effectiveness by offering two major benefits. Firstly, resilience of management: private management is flexible in hiring and contracting out services without being required to go through complex public bidding processes. Secondly, responsible and localized care-taking, through a constant monitoring of a space under a definite jurisdiction, by a private management organization can articulate local needs and respond promptly to them (Kim, 1987).

These benefits are inarguably positive. Their success in attracting retail and service activity very visible, and their

other possible ramifications notwithstanding. However, it should be noted that the skywalks separate the public from the public domain. The skywalk system seems to be one example within a pervasive pattern of private control of the operation of the public system.

The control of the skywalk system directly confronts the need to maintain civil liberties. Here the issue is private management of areas intentionally built and offered as public space. Yet the City is able to exert little control over the operation and management of the skywalk system especially skywalk corridors. This suggests that the system may be public in name yet privately controlled in reality. City dwellers' civil liberties should be maintained when public space is controlled privately. The Des Moines skywalks seem to have too often fostered an unwarranted degree of control of system operation by private interest.

Skywalk as Public Space

The aim of this study has been to show that some very important, possibly unintended, results have emerged as a consequence of the way in which the skywalk system has been developed: privatization of the skywalk system. The skywalk system can be structured and financed in various ways. However, the process must reconcile the objectives of the public, who want good-quality space at minimum cost, and

private developers, who want maximum profits from the space provided. But privatization is not necessarily a zero-sum game. Properly conceived and implemented, it can improve the quality of the urban public space as well as it can save time and money. It is therefore necessary to reformulate the concept of the skywalk system as public space and accordingly the tools for implementation of this concept.

The basis for people's decisions in making visits to the skywalks is normally the broad experience of expectation, i.e. the sum of several single attractions and the experience of the environment in general, the skywalks' "atmosphere". This involves both planned outings and unexpected experiences. The skywalks that claim to revitalize the downtown must do more than produce tax revenue and provide an attractive environment in which to make or spend money. This public space must also be expected to contribute to the variety of experience available both with respect to built form and to social opportunity.

Public facility

Public users need walkways, they need second-story stops, and they need rest areas. The worst use of the skywalks is simply put one up as a showpiece of modernity to connect two buildings. There is a need to look at different ways of locating public facilities along the system. Des Moines has been unsuccessful in providing sufficient public facilities to

reinforce urban life, because, in part, the system seems to have been thought of only in the narrow sense.

To create an attractive environment that fulfills public needs, such public facilities as telephones, furniture, restrooms, and emergency exits should be provided. These public facilities together with the presence of food outlets, plants, fountains, art, falling and flowing water elements, and so on, can contribute to the sense of public space.

The relatively low percentage of elderly in the skywalks suggests that the skywalks are not fulfilling a social need of this age group. One of the major needs of them might be the provision of reasonably comfortable benches. Scattered resting places, benches, chairs and tables near fast-food shops can actually encourage socializing. It can results in a visual, social class mix in the skywalk system. There is the need for sitting at key skywalk entrances also. These entrance benches may be especially attractive to people coming to the skywalks for recreational purposes. They may find the location for greeting friends. These sitters also perform a useful surveillance function.

It also should be noted that there are very few restrooms directly connected to the pedestrian networks which could avoid the need to search for them in private establishments. Also, some restrooms that are shown on the directory maps as public restrooms are not actually open to the public.

Visual transparency

In general, high visual transparency - quality of openness not only in physical terms but also in social terms - speaks of active and public use as well as strong linkage with the public domain. Conversely, low transparency is more exclusive and speaks of more private uses and more restrictive linkage (Curran, 1985).

As private building owners and individual retailers have directed their attention inward, the relationship between skywalks and the street level has been weakened. Skywalks, especially skywalk corridors and activity hubs are designed to orient pedestrians inward. The skywalks turned themselves inward, their shopfronts facing the interior corridors or activity hubs, all the fun tucked inside. When skywalks separate users from public domain, it becomes difficult or even impossible to produce a balanced, restful and inspiring urban environment (Findlay, 1986; Beauregard, 1986).

One of the basic issues for definition of urban public space is orientation with openness (Warner, 1985); how does one enter and leave, how does one ascend and descend, and how does one determine where he is in this network? Indoor public spaces should be highly visible from the street, linked with other public spaces to form a network of pedestrian environments.

There are also certain features of the environment which

seem invariably to draw people's attention. These are prominent tops of hills, open view of city and landscape and other spectacular or unusual objects and sights. In Des Moines, skywalk users may experience only the climatized indoors. Direct contact with the outdoors and, more importantly, with the city itself is diminished. Pedestrians may not feel, hear, or smell the downtown, and they may see only brief glimpses of it when crossing skywalk bridges, because in many parts of the system visual transparency is blocked.

A city should be a place where strangers come together to share experiences, to trade and exchange. The essential urban values of such a city are the qualities of openness. Skywalks also depend for their creativity and health upon peaceful coexistence, toleration and pluralism. Without these values to guide all others, a skywalk system cannot function as a gathering place or a market (Warner, 1985).

Variety

Skywalks are a good example of the ongoing debates about the social purposes of a range of public spaces. These kinds of conflicts are continuously being addressed through public/private cooperative efforts. An elevated transportation system, like the street system, belongs to everyone, because it deals with public rights-of-way. In Des Moines, it is public and it is also private. Like the

streets, it can be expected to adhere to certain standards of design, and of performance. And like the street system, it can be expected to serve as a social marketplace. The skywalk system should be inviting and comfortable for all. It should have sense of life. A lively atmosphere should be encouraged, for instance, through the provision of roving musicians, soapbox speech-making or clowns that would give warmth and enhance the atmosphere of the skywalk system. It must also be maintaining its function and attraction through the seasons.

A definition of urban design is the meaningful making of spaces and connections for human use. When looking at the skywalks in Des Moines, these concerns are largely absent. One can see the human use, but hardly see the meaning. To be a preferred indoor public space, the skywalk system should improve its attractiveness through the provision of variety. This relates to the concepts of place identity developed by Kevin Lynch (1960) in the classic reference, Image of a City. In essence, it is the premise that specific descriptive elements such as edges, paths, nodes and landmarks are needed to clearly define a human environmental space to give it its place image. It means more than just aesthetic design. Use of a pedestrian space should be an experience by itself, through the application of interest features and special entertainment events as well as well-designed landscape and public facilities.

One of the striking responses from the skywalk users survey is an extremely low proportion of people who use the skywalks because of their variety. Only 3.6 percent of those surveyed skywalk users reported variety as the most significant reason for using skywalks, while 5.0 percent safety, 36.4 percent convenience, 36.4 percent climate control, and 18.6 percent others.

Skywalks are commonly designed as if all users were individuals walking directly from one place to another. In fact, users may be pairs, groups, or families, some with single destinations, others with multiple schedules, some moving quickly, others ambling, some bent on eating, most talking, some looking for a place to sit and others gawking. Certainly, any part of these social activities should not be excluded from this image of a skywalk habitat. It is important to consider providing a variety of human amenities that make the pedestrian environment on the skywalk system an extremely attractive one. The mix of social activity and the opportunity to observe and participate in it contribute to the development of a pedestrian environment with variety. One of the most attractive aspects of cities, the very essence of urbanity, is their variety.

The variety of the skywalks can be intensified by including a number of non-commercial activities, for instance, such different activities as music, theater, dance and

furthermore expositions. An exhibit area or a stage can provide free public entertainment. This does not necessarily means only non-commercial activities can intensify the variety of the skywalks. Such a series of commercial activities as bookshops, card shops, record and tape shops, stamp dealers, traders in coins and medals, or antique shops can also intensify it. These activities can be added to the skywalks and possibly operated by not-for-profit organizations. The result will be that the more users spend more time in the skywalks.

It should be noted here that the word 'variety' in the questionnaire was used as a characteristic of the environmental sequence in the skywalk system made up by mixtures of a wide range of human activities. However, users' lack of interest in variety reveals that they probably did not understand the question.

Open plaza

Generally, it can be said that the milder the temperature, the less competitive the skywalk system. While the effectiveness of climate-controlled pedestrian systems in winter weather seems self evident and climate control is a very essential design feature, there are other amenities to be considered. To be loved by the users, it is essential for the skywalk system to provide the art of passing and turning with excitement on foot from space to space, from skywalk to

street.

The entire skywalk system does not necessarily have to look like one big cake. Instead, it is desirable to build up new subareas in the system, each subarea having its specific theme and functional composition. The skywalks can, in this way, be considered as a series of specific areas, each with its own distinctive identity, which can be connected to people's needs for leisure, relaxation, culture and shopping. In this manner, a livable environment can be created, the result being that the skywalk can become even more attractive.

One of the strategies that might improve the physical environment and social quality of the skywalk system is the development of outdoor public spaces linked to the skywalk system, e.g., small open plazas for relaxation and congregation. Des Moines can learn from Calgary which has gone out its way to retain the abundance of public open space, both interior and exterior, related to the skywalk system and the street level as well[5]. Many of the buildings have second level outdoor plazas which comprise part of the skywalk system, and most are directly accessible to the street via stairways as well. The majority of these plazas are attractively landscaped and heavily utilized, especially by

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[5]Even though Calgary's system may fail to form one integrated system with continuity, Des Moines can learn from its way to retain the abundance of public open space, both interior and exterior.

office workers at lunch hour in the summer (Robertson, 1987a).

In Des Moines, outdoor second level plazas can be built in a place linked to the skywalk corridors or over the alleyways between buildings that provide livable pedestrian environment with variety, or, they can be built at a building's major entrance that can improve the linkage to the street level by providing gradual transition from street to skywalk. The distinct dividing line between inside and outside would be eliminated.

In Des Moines, elevation differences pose functional and design challenges throughout the system. Skywalks linking Yonkers, Employer's Mutural and The Financial Center connected second floor levels with over five feet of elevation variance. Even where at-grade differences are insignificant, second level elevations can vary greatly, particularly when new office structures connect with older retail buildings with intervening mezzanines, or grand first-level spaces. In Des Moines, the potential for second level public plazas has yet to be realized.

Implemental tool

Ideally, skywalks should provide the sense of a public space not only on the bridges but within the skywalk corridors and activity hubs. Passing through the skywalk system, one should be aware of a public sequence. However, one could not impose this unified skywalk expression through private

buildings.

As virtually all multipurpose projects involve local government in matters such as land assembly, zoning modifications, and pedestrian traffic management, the city government has a responsibility to ensure that the interests of the overall community are considered. To do this, the skywalk development should be carried out by means of integrated public and private contributions (Brown, Sijpkes and McLean, 1986).

From the public perspective, it is essential that there should be an acceptance of the public goals that need to be met. It is critical that the public sector clearly establish and articulate these goals for the skywalk development. On the other hand, however, there should be a recognition that profitability is the driving force that motivates the private sector. Furthermore, the public sector needs to understand the limits to which they can extract concessions from the private developers.

The first step in insuring the success of the skywalk system is to incorporate a broad base of interests in establishing the public objectives for the skywalk system and to give consideration to diverse points of view. For example, public and private sectors can coordinate an idea design competition that involves the local design community in generating conceptual designs for a more open and attractive

as well as profitable system. These in turn can help to spark interest in the community as a whole. Further, public concerns expressed in the process can help to create a balance among public objectives, private interests and broader community goals.

The implementation of the skywalk system development does not and should not end with a developer's selection. It only begins there. Typically, the developers should be given an option on the skywalks with specific performance conditions and improvement in the system management and operation. Bonus zoning is an old tool which recently is being used by such cities as Calgary in Canada to foster pedestrian improvements. The bonus is incorporated in special zoning amendments which trade added development rights in exchange for desirable pedestrian improvements, which the developer might otherwise not have an incentive to provide. It should be noted that an incentive system must be fair and conducive to coordination of combined public and private interests. A bonus can consist of adding a specific number of square feet to the allowable building area for each pedestrian improvement unit, such as a pedestrian plaza (Robertson, 1987a). Finally, it should be noted again that not only for public sector but also private developers, a rich environment can add value to the skywalk system by attracting more users.

CHAPTER VI. CONCLUSIONS

Overview

There has been a development resurgence in many of North American central business districts over the last twenty five years of decade. What are the implications of public works in the city? The purpose of all planning, design and development is to produce an urban environment that is practical, elegant and just. Urban planning and design should produce a city that is an accurate reflection of values, priorities and aspirations.

The skywalk system in Des Moines has evolved into a substantial new form of urban development, and a number of important lessons regarding the planning, design, and implementation have been learned. Key issues to be resolved include the over-privatization of public space in terms of public use, public access and system operation. The skywalk system should be created as a system which integrates public amenities and private interests through practical planning and design to this issue.

Privatization represents a process in which the values and the purposes of urban public space are redefined and reshaped. The survey results and on-site observation has revealed that the Des Moines skywalk system fails to fully serve as public space in many aspects.

Skywalks should offer a variety of possible legitimate usages. That means that the really attractive public space is the one which enables the same person to enter it for different reasons at different times of the day and still enjoy it. The frequent and legitimate usages of the skywalks should be associated with supporting facilities as well as features providing people with access from and to other place such as bus stops, building entrance, exit to street level, stairs, etc., and with various types of information such as directories, time-tables, displays, etc.. Skywalks also should have some mixture of uses. The mixture responds to the values of publicness and diversity that encourage local community identity. Excitement, spirit, sense, stimulation, and exchange are more likely when there is a mixture of activities than when there is not. It is the mix, not just the density of people and uses, that brings life to a public space.

Another concern with the skywalk system is that it should induce shared sequential experiences among large numbers of people who use it, what can create a consensus leading to a political force desiring or demanding enrichment of the skywalk system into a broader, more inclusive, more functional and aesthetically more satisfying system. This provides a framework for a more inclusive and satisfying perception of the city as a whole, strengthening and enriching the sense of

orientation of the individual to the city as a larger system as well as to the skywalk system, and inducing or generating a deepened and enriched sense of identification of the individual within the city.

The result of skywalk development should be more than merely bridges connecting buildings together. The intent should be to bring about a true sense of place: a setting for a wide range of human activities. This is, after all, what cities at their best are all about.

Without thoughtful consideration, the notion of the public realm in the American city can be all but vanished. The moment that we abandon the public realm for an privately controlled skywalk system, we will further that privatization and remove the citizen farther from the city.

Recommendations

The elements that will help to make a skywalk system open to the public, mutually supportive with street level, and most-like a public space can be briefly summarized as follows:

1. Even though the Des Moines skywalk system attempts to facilitate clear user orientation through maps and signs, their degree of effectiveness seems to vary especially for those from outside of Des Moines. The user survey revealed that approximately 50 percent of those living outside of Des Moines have experienced

being lost or disoriented, while approximately 20 percent of those living in Des Moines did so. The Des Moines skywalk system should provide clearly marked and uniform signs that indicate directions to not only buildings and facilities, but also the streets below.

2. The user suvey revealed that the majority of pedestrian trips in the skywalk system were working-related. Those trips were more than half of the total trips even on the weekends. However, a public space preferred by a broader cross-section of the general public should be the City's objective, rather than a showpiece of modernity simply to connect several buildings for downtown workers. Toward this objective, the Des Moines skywalk system should improve its attractiveness and openess through the provision of variety and visual transparency. Also, the skywalk system should maintain its function and attraction through different times, days and seasons.
3. Most skywalk users surveyed in this study (85 percent) were in favor of using skywalk rather than sidewalk. While the skywalk-level activities have been boosted, the skywalks have discouraged street-level activities. In the long run, street life is one of the keys to the multi-use downtown. Therefore, the skywalk system and the streets should be connected directly and reinforce

one another through the provision of mezzanine-level plaza.

4. The on-site observation revealed that the skywalk system functions as such only during limited hours, namely during the business hours of offices and shops linked to the system. It was observed that the skywalks receive their heaviest use during the midday period, and they rapidly become empty after 5 p.m.. After 6 p.m., they are deserted except sporadic groups of movie-goers or teen-agers. Also, this limited function partly comes from inaccessibility to parts of the system. There are several dead-end skywalk corridors and closed exits to the streets during the late night and early in the morning. Accessibility is an integral part of attraction and use. The Des Moines skywalk system should provide unbroken public use, physically and in operation hours.
5. As the "Skywalk Ordinace" of the City of Des Moines clearly declares the skywalk system a public system because it deals with public right-of-way, the skywalk corridors within private buildings should be considered spaces open to the public. The Des Moines skywalk system should be designed for those who use it or are affected by it, rather than only for those who own it.

Concluding Remarks

A skywalk system can change access, service, the ways in which people will use retail establishments or office entrances and the way in which people will entertain. We should understand the change as a major system of public works. If not seen in this way, we will make a mistake. These debacles are symptomatic of the many unresolved issues which are inherent in the current understanding of this new urban element. Some of these issues may be resolved pragmatically over a long period of time. However, we should not overlook the possibility of providing some new measures of liveliness, if they can be accomplished through careful planning and design of the skywalk system.

There remain some important questions which reveal problematic dilemmas as the use of skywalks proliferates. Before they become widely applied and promoted as a downtown redevelopment tool, their impact on areas of the downtown which are not connected should be studied. Is the reported economic growth experienced by the skywalk district truly growth, or is it redistribution at the expense of other districts? A much clearer understanding of the long-term effects on streetlife created by the development of second-level downtowns must also be obtained.

It should be noted here that the limitations to the survey conducted for this study include the exclusive focus on

skywalk users and the absence of survey results for seasons other than winter. Moreover, the results of this study are suggestive but obviously unrepresentative. This study did not survey both skywalk users and sidewalk users to identify reasons for not-use. More studies examining larger numbers of people including sidewalk users are clearly required. Such studies should use more systematically structured on-site observation. They should also use a more comprehensive set of observable environmental indicators such as counts of blocked transparency and a finer assessment of pedestrian traffic counts including flows of different times of day and night.

Because of the limits of measurement, it is not known exactly what portion of the total downtown or city population actually uses the skywalks. Future studies should incorporate inclusive use-measurement techniques which allow determination of total daily use and usage patterns of sidewalks as well as skywalks. Moreover, such studies should incorporate time-lapse photography, which is probably the best technique at present, for collection of usage and behavioral patterns. Reasons for further studies spring from questions not fully answered by this study. What share should the general public expect in a public/private partnership? Who are the general public that should be served? Who are accountible for pulbic life in a city? Are they the public officials or the city planners, or both?

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APPENDIX: SUMMARY OF SURVEY RESULTS

		Strongly Disagree	Mostly Disagree	Undecided	Mostly Agree	Strongly Agree
1.	I would more likely use a skywalk rather than a sidewalk on a street.	0	10	11	6	59
2.	I am sure exactly when this skywalk is open and closed.	30	27	29	41	13
3.	I am satisfied with the skywalk system's operating hours.	4	4	32	60	40
4.	There is need for a more direct link to street level.	12	25	38	33	32
5.	I have experienced being lost or disoriented on these skywalks.	49	38	13	25	15
6.	Skywalks send signals to people with low or moderate incomes that they are less than welcome.	62	36	23	10	9
7.	This skywalk is privately controlled.	31	21	59	20	9
8.	In some way, I feel restriction in my behavior on this skywalk.	42	44	17	26	11

9. What is the most significant reason you use the skywalks?

7	Safety: crime, accident
51	Convenience: linkage to working place, parking garage, etc.
51	Comfort: climate control
5	Variety: entertainment, shopping, etc.
26	Others: Specify _____

10. Please check one box describing your current trip.

Origin	Destination				
	Work	Home	Shop	Eat	Others
Work	34	11	11	9	6
Home	10	0	16	0	4
Shop	4	0	1	2	1
Eat	5	3	1	2	1
Others	6	1	3	0	9

11. Do you work in a building linked to the skywalk system?

73	Yes
67	No

12. Where do you live?

21	Downtown Des Moines
80	Des Moines Metropolitan area
33	Iowa, but outside of Des Moines
6	Outside of Iowa

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