Reconstructing Kobe

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Reconstructing Kobe
The Geography of Crisis and Opportunity

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Cover illustrations: *Top left:* Collapse of the Hanshin Expressway. *Top middle:* Destruction in the vicinity of JR Rōkko-michi Station. *Top right:* Broken apartment building. All courtesy of the City of Kobe. *Bottom:* Twilight view of Kobe, taken near Shin-Kobe Station from Rokkō Mountains, Kobe, Hyogo, Japan. *Source:* Courtesy of Laitr Keows. http://creativecommons.org.

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Preface

> Strange and mysterious things, though, aren't they – earthquakes? We take it for granted that the earth beneath our feet is solid and stationary. We even talk about people being "down to earth" or having their feet firmly planted on the ground. But suddenly one day we see that isn't true. The earth, the boulders, that are supposed to be solid, all of a sudden turn as mushy as liquid.
>
> — Haruki Murakami, *After the Quake*

> On the one hand, a devastated landscape presents planners with that rare and coveted commodity: a blank map, ripe for development. On the other hand, it is not so blank after all. It comes with pre-existing property boundaries, competing interests, and the memories of survivors.
>
> — Olshansky, "Planning for Disasters"

I have long wanted to tell the story of Kobe's reconstruction following the Great Hanshin Earthquake, an episode that led to the loss of more than 6,000 lives and that destroyed more than 200,000 homes. (The city of Kobe and the Hanshin region of Japan are shown in Figure 0.1.) My initial essays on the city's reconstruction were published soon after the earthquake as Edgington (1998) and Edgington, Hutton, and Leaf (1999). When the disaster struck early in the morning of January 17, 1995, I was living with my family in Kyoto, a city just outside the Hanshin disaster zone at the northeastern extremity of the damaged area. The apartment we resided in "shook and rattled." Soon after, it was announced on the radio that Kyoto had experienced a level 6 quake (later upgraded to magnitude 7) and that the epicentre was Awaji Island, close to Kobe. Telephone lines to the disaster-stricken area had been cut, and it was only later that news reports began to provide details

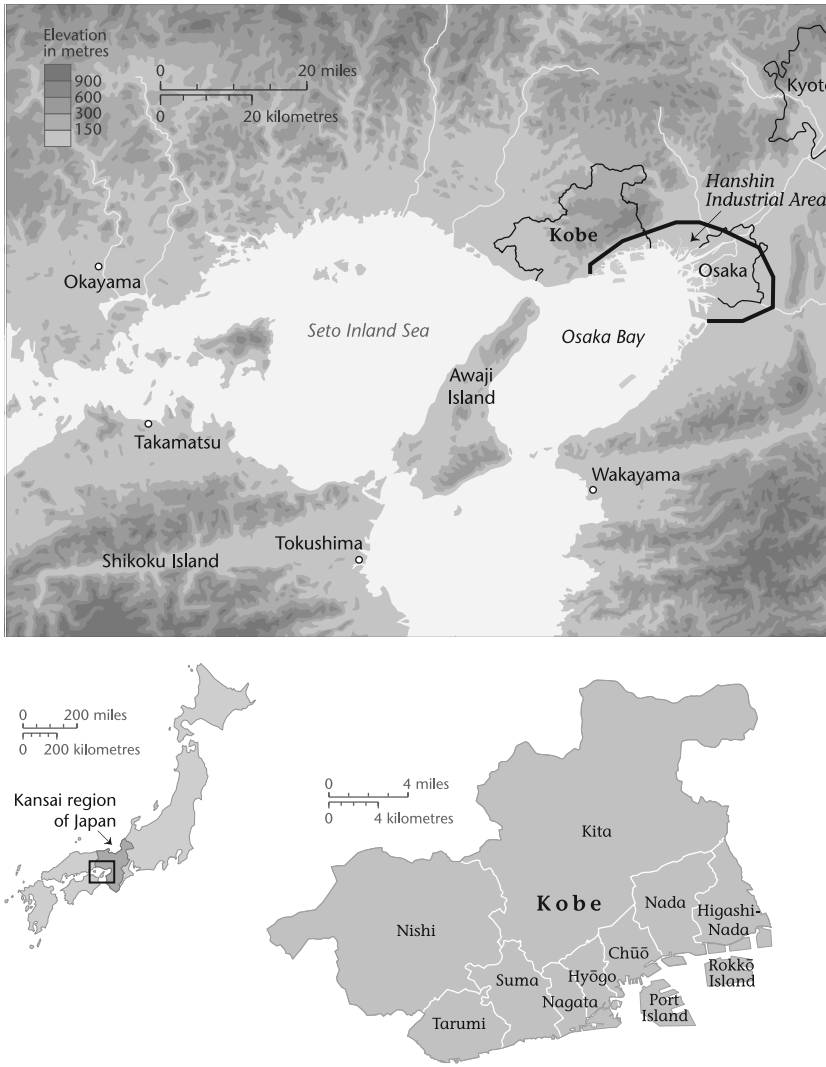

Figure 0.1 Map indicating the Hanshin region of Japan and the wards/districts of Kobe city. *Source*: Material contained in Fujimori (1980)

of the destruction. On that day the earth around Kobe without doubt turned "as mushy as liquid."

A full decade later I found myself again residing with my family in Kyoto, on a sabbatical from the University of British Columbia. January 2005 marked the tenth-year commemoration of the Hanshin earthquake, and during that month a major UN conference took place in Kobe to discuss this and other

disasters. As it happened, these commemoration events were overshadowed by a tsunami of appalling consequences in Southeast Asia, which had struck on Boxing Day 2004, just a few weeks earlier. Then in late August 2005, Hurricane Katrina devastated New Orleans and the entire Mississippi Gulf Coast, with great loss of life and damage to property. In 2008 disasters were again very much in the news: a devastating cyclone, Nargis, struck Myanmar, and a powerful earthquake shook Shichuan in southwest China. Images of all these catastrophes reaffirmed my belief that the reconstruction of Japan's Hanshin region needed to be examined thoroughly and systematically. For that endeavour, the tenth anniversary of the Hanshin earthquake provided an appropriate perspective. I wanted to find out what reconstruction had been able to achieve.

Today in Kobe, modern office buildings and residential condominiums dot the commercial and suburban neighbourhoods that were destroyed by the temblor. By January 2005 it was impossible for first-time visitors to imagine the pile of rubble that much of the city had become on the morning of the quake. Ten years after the disaster, population levels in the Hanshin region had recovered to pre-quake levels and tourists from across Japan were flocking to Kobe to view its attractions, such as the Nankin-machi Chinatown district (see Figure 0.2). But underneath the glittering exterior and official pronouncements that all was well and back to normal, the city and the region faced a difficult future. Kobe could be proud of its physical reconstruction, but a host of problems continued. For instance, many survivors still required social welfare services at a time when the city was all but bankrupt.

Numerous investigations of the Great Hanshin-Awaji Earthquake (alternatively, the Kobe earthquake) have reported on building damage, seismic intensity, and the immediate recovery efforts. My own research examines aspects of long-term rebuilding – in particular, the redevelopment of stricken neighbourhoods and the restoration of the local economy. Disasters such as the Kobe earthquake typically receive considerable media attention at the time they occur, but what happens to the area and the people involved in the months and years that follow? How do they rebuild their communities and regain their livelihoods, if they ever do?

Long-term changes and impacts often go unrecorded owing to the extended research required. This study is based on field investigations conducted in Kobe between 1995 and 2005 and on interviews I undertook with Kobe's planners, economists, consultants, academics, and national government officials. It focuses on issues related to land use changes, urban governance, and economic recovery that the 1995 earthquake brought to the fore. I explore the twin themes of "crisis" and "opportunity" in order to bring to light the Kobe city planners' objectives after the quake and the steps taken to prepare and then implement a ten-year reconstruction plan. I employ a framework derived from the literature on disasters in order to understand

Figure 0.2 Kobe's Nankin-machi Chinatown district, 2005. *Source:* Photograph by D.W. Edgington

the influence of previous circumstances in Kobe, the geography of the earthquake's impact, aspects of government actions, and community responses.

Not all aspects of recovery in Kobe could be studied, so there is little in this research relating to health and medical issues or to the role of the thousands of volunteers who came to that city after the disaster to help both with immediate aid and with long-term recovery. Note also that this study is limited to the effects of reconstruction on neighbourhoods and the city as a whole, not individuals. The pain and suffering experienced by the disaster victims is not reflected in this book. No real attempt is made in these pages to record the misery that was heaped on the senior citizens of Kobe, many of whom were among the most vulnerable and who continue to be harmed by the catastrophe. Nonetheless, my study of Kobe's recovery from the earthquake up to early 2005 focuses on the major events during that period, especially the ones that touch on the role of governments and their relationship with local residents. It reveals the essential difficulty of reconstruction planning following disasters, as suggested by the general literature on this subject. Such problems arise largely because the long-term recovery of cities has little to do with the provision of immediate post-disaster rescue and

relief. In particular, speed is important when recovering victims; proper planning when rebuilding the city is even more crucial. For instance, putting up temporary housing for victims of a disaster may be relatively fast and easy, whereas rebuilding a vibrant community is not. As Olshansky (2002) notes in the quote recorded earlier, rebuilding after disasters presents planners with both great opportunities and difficult challenges. So it was in Kobe.

In this study I argue that the earthquake and the ensuing fires that devastated parts of Kobe provided opportunities to rebuild districts that city planners had been unable to touch before, and to secure funds from the national government for novel infrastructure projects. The Kobe city and Hyōgo prefecture governments issued long-term plans to rejuvenate the Hanshin region – plans that were referred to collectively as the "Phoenix Plan," an ambitious series of projects designed to vault Kobe ahead of its competitors. These schemes provided an opportunity for high-profile urban development. Yet they were challenged – at least initially – by the citizenry, who were still traumatized by the earthquake and still grieving their losses and who felt vulnerable and disempowered in the ensuing period. Thus Kobe's planners had to win back the community's trust through an extensive local consultation process – known in Japan as *machizukuri*.

My research indicates that the city's capacity to rebuild its stricken neighbourhoods was, from the beginning, strongly in doubt, in part because of certain aspects of Japan's particular approach to urban redevelopment. The analysis shows also that reconstruction outcomes and rates of recovery were highly differentiated within Kobe. Hence there is a need to understand the various "geographies" of this disaster and its aftermath. In the years following the quake, key "symbolic infrastructure" projects (such as memorial museums and a new airport) formed a key part of the city's rebuilding, and most of these projects were fully completed and operational by the end of the ten-year reconstruction period. Yet it is unclear just how well connected they were to the long-term improvement of the local economy, either in design or execution.

Overall, this study identifies many of the problems that Kobe faced during its reconstruction while pointing to cultural features specific to the Japanese model. It is often said that all disasters by definition are local. Even so, I believe that other Japanese cities – and, more generally, disaster-prone areas in other countries around the world – can learn many lessons from the Kobe earthquake and the reconstruction planning that ensued. Those lessons are covered in this book's final chapter. Above all else, a study of the Great Hanshin-Awaji Earthquake suggests many parallels between Kobe on the one hand and Vancouver and the BC Lower Mainland on the other. For instance, Vancouver and Kobe are both port cities of around 1.5 million people, and both lie on (or close to) a major seismic fault. Both have large

areas subject to liquefaction (land subsidence after earthquakes), and both have a mix of old and new construction. For that reason I hope Kobe's experience will help inform disaster preparation in my own community. Above all, the lessons from Kobe suggest that recovery from a major disaster is a very long-term process and that reconstruction of the city after an earthquake needs to be considered and planned for even before an earthquake strikes. This aspect should be carefully thought about. It is not enough to plan an immediate response to a catastrophe.

Four technical notes. First, the Japanese currency (the yen) gyrated strongly during 1995, appreciating initially from ¥99.77 to the US$ in January 1995 to ¥83.69 in March, and then falling back to ¥105.75 by the end of the year. Accordingly, comparative US$ values of costs of damage and reconstruction at the time of the earthquake can only be approximate. Second, Japanese names appear in the Japanese order – family name first – except when works published in Western languages are being cited, at which time they appear in the English order. Third, Japanese words appear with macrons in this book in keeping with customary Romanization practice except in such cases as Japanese names attached to English publications, or words that commonly appear in English writing without macrons – Tokyo, Kyoto, Kobe, and so on. Fourth, the data in this study were the most current at the time of writing – late 2006.

Out of crisis comes opportunity.

— Ancient proverb

Figure 0.3 The top part of the Chinese ideogram shown here for "Crisis" is the symbol for "Danger," and the bottom symbol represents "Opportunity." *Source:* Hadamitzky and Spahn (1981)

The Chinese ideogram for "crisis" is composed of two separate characters: one means danger and the other means opportunity. The proper translation is that a crisis is a dangerous opportunity. When confronted with a crisis you need to recognize both the danger and the opportunity. Often the danger is more readily seen and the opportunity can be well hidden. Be sure to look for the opportunity as well as the danger.

— Interview with local planners in Kobe city, summer 1995

I firmly believe that if we can get over the current difficulties through close cooperation between our fellow citizens, businesses, and the city government, and successfully promote the "Urban Resort Development Project," Kobe will be born again like a Phoenix, and as a city that people can be proud of, and a city truly loved by all people around the world.

— Sasayama Kazutoshi, mayor of Kobe, Introduction to the Kobe Reconstruction Plan, June 30, 1995

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Abbreviations

FEMA	Federal Emergency Management Agency (USA)
HAT	Kobe "Happy Active Town" (Kobe Eastern Town Development)
HERI	Hyōgo Economic Research Institute
HERO	Hanshin-Awaji Economic Revitalization Organization
IT	information technology
KIMEC	Kobe international multimedia and entertainment city
METI	Ministry of the Economy, Trade, and Industry
MITI	Ministry of International Trade and Industry
NGO	non-government organization
NIRO	New Industry Research Organization
NPOs	not-for-profit organizations
OCHA	UN Office for the Coordination of Humanitarian Affairs
RIKEN	*Rikagaku Kenkyūsho* (generally translated as Institute of Physical and Chemical Research)
SDF	Self-Defense Forces
SDPJ	Socialist Democratic Party of Japan
SME	small- and medium-sized enterprises
WHO	World Health Organization

Glossary of Japanese Terms

bunka jūtaku	Japanese wooden tenement housing
chakuji	absent landlords
chahuya	absent tenants
chihō jidai	age of the local
chōme	section of a neighbourhood
dai yonji Kōbe-shi keikaku zentei shū	Kobe's Fourth Master Plan
doken kokka	state as builder
ekimae	area immediately around a local railway station
fukkō	reconstruction
fukkō keikaku	reconstruction plan
fukkō kikin	reconstruction fund
fukkyū	recovery
fukoku kyōhei	wealthy nation, strong army
fureai	community
gaman	endure
genbu-ritsu	amount (or ratio) of an individual plot reduced in a land readjustment project to provide public infrastructure
Hanshin-Awaji Dai-shinsai	the Great Hanshin-Awaji Earthquake Disaster
Heisei-Shichinen Hyōgo-ken-Nanbu jishin	the 1995 Southern Hyōgo Prefecture Earthquake
hisai gaichi fukkō tokubetsu shochi hō	Devastated Urban Areas Reconstruction Special Measures Law

hisaisha saiken shien hō	Socio-Economic Rehabilitation Aid for Victims Law
hisai shigaichi fukkō tokubetsu shochi-hō	Special Measures for Recovery of Disaster Areas Law
hojokin	private relief funds
jūten fukkō chiiki	Intensive Restoration Zones
jūten fukkō kuiki	Priority Reconstruction Zones
hiroba	open plaza
iki iki	let's live
kabushiki gaisha Kōbe	"Kobe Inc."
kaigan-sen	Kobe's coast line subway
kajiba dorobō	thief at a fire
kanchi	land substitution (in a land readjustment project)
kemikaru shūzu	chemical shoes
kenchiku ga seigen sareru kuiki	areas where construction is restricted
kenchiku kijun hō	Building Standards Law, 1970
Kōbe-shi shinsai fukkō kinkyū seibi jōrei	Kobe Earthquake Disaster Reconstruction Emergency Ordinance
kodokushi	solitary death, or death in isolation
kokoro no	(lit.) of the heart
Kōnanyamate eki	Kōnanyamate station
kukakuseiri	land readjustment
kyōyūken/kyōchō tatekae	community house
machizukuri	city building
machizukuri kyōgikai	local planning association
machizukuri kyōgikai to no renkei ni yoru jūtaku oyobi jūkankyō no seibi	housing environment improvement in cooperation with the "machizukuri" council
mimaikin	condolence money
mochuchin	older-style multifamily rental house with shared facilities
nagaya	traditional single-family row house (wooden)
risai shōmei	victim identity certificate of damage after a large-scale natural disaster
saikaihatsu	urban redevelopment project

sake	Japanese rice wine
seirei shitei toshi	designated cities
shindo	Japanese scale for measuring earthquakes
shinkansen	rapid ("bullet") train
shinsai fukkō jūtaku seibi kinkyū san kanen keikaku shinsai fukkō kinkyū seibi jōrei	three-year emergency housing plan Kobe city redevelopment ordinance
shinsai fukkō kuiki	Earthquake Disaster Reconstruction Promotion Area
shinsai fukkō sokushin kuiki	Earthquake Disaster Promotion Region
shōtengai	traditional arcade shopping centre
shikata ga nai	it can't be helped
shitamachi	older inner-city areas
sōgō keikaku	comprehensive local government plan
tatami	straw mats
toshi yori	seniors
toshikeikaku	town planning
toshikeikaku hō	City Planning Law
tsubo to keimyaku	spots and linkages (in oriental medicine)
yakuza	criminal gangs

Reconstructing Kobe

1
Introduction

> The objective of promoting the recovery and reconstruction of a disaster-stricken area is to aid victims to return to normal life, restore facilities with the intention of preventing disasters in the future and implementing fundamental development plans that focus on safety in the community. In view of the decline in social activities in a community following a disaster, recovery and reconstruction measures are conducted as swiftly and as smoothly as possible.
>
> — Government of Japan, *Disaster Management in Japan*

On January 17, 1995, at 5:46 a.m., a powerful earthquake lasting for almost one minute and with the strength of 7.2 on the Richter scale[1] shook the Hanshin region of western Japan. Centred close to Kobe, a bustling port city some 430 km (250 miles) southwest of Tokyo, this was the first major quake of any magnitude to strike a Japanese urban area during the post-Second World War period. Its epicentre was 14 km below the surface of Awaji Island, in Hyōgo prefecture about 25 km from central Kobe (see Figure 1.1). The Hanshin-Awaji Great Earthquake (hereafter the Hanshin earthquake)[2] caused immense damage to one of Japan's busiest trade ports, bringing down "earthquake-proof" elevated expressways and high-rise buildings, collapsing subway tunnels, buckling train tracks and bridges, destroying houses and commercial structures, and causing fires in many places (see Figure 1.2).

Within minutes, parts of the city were overwhelmed with flames and debris (Figures 1.3 and 1.4). Hospitals damaged by the earthquake and understaffed for such a disaster were overwhelmed. Police and firefighters were themselves affected by the quake, with many unable to report to their stations. Those who did were inundated with desperate calls for help. Firestorms rushed through the narrow streets of Kobe's older neighbourhoods, engulfing wooden houses as fires were fed by propane gas, household furnishings, and

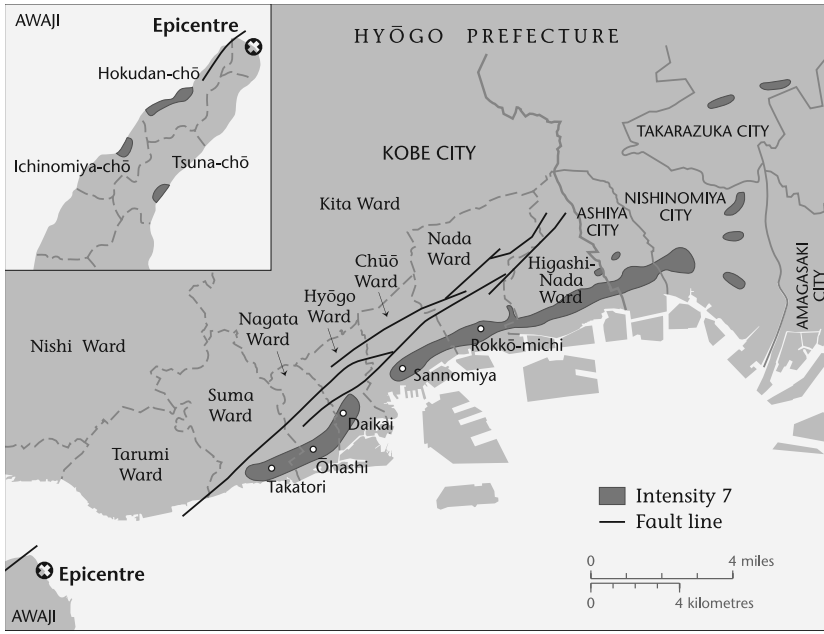

Figure 1.1 The Kobe environs, showing the epicentre of the Hanshin earthquake and areas in Hyōgo prefecture and Awaji Island that registered 7 on the Japan Meteorological Agency seismic intensity scale. *Source:* Taniguchi (1995a)

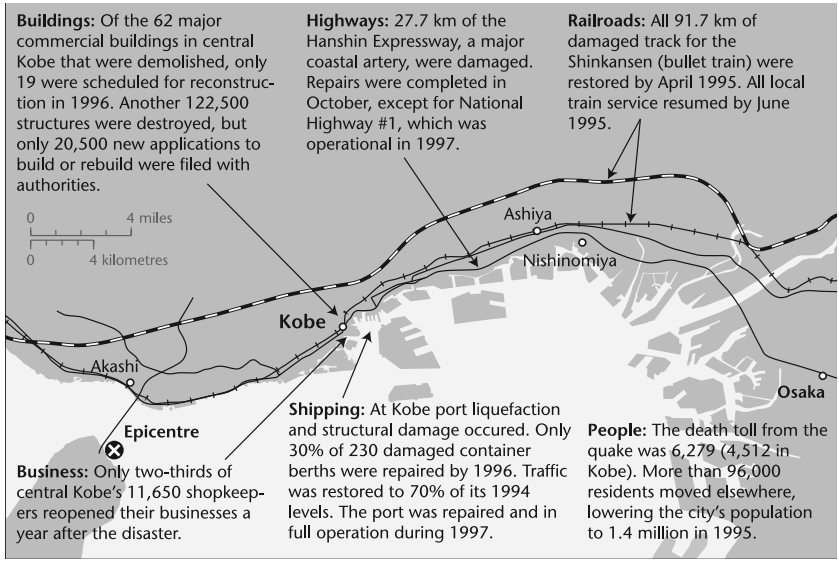

Figure 1.2 Devastation in Kobe and its environs. *Source:* UNCRD (1995) and fieldwork

Figure 1.3 Fires in Kobe. *Source:* Photograph courtesy of the City of Kobe

Figure 1.4 Extent of the conflagrations in Kobe's Nagata and Suma wards.
Source: Nagano (1995)

chemicals stored in small factory buildings. Residents took flight only to find their way obstructed by the conflagration, collapsed buildings, and rubble. The noise of the fires muffled the yells of many elderly victims trapped in fallen houses, for whom there was no escape. Fire crews were beside themselves as broken water pipes reduced the pressure in their hoses. Roads were blocked with the frantic movement of vehicles, which often prevented rescue attempts by police. Those who survived the quake and the flames often discovered that many of the official refuges had been destroyed, leaving them to roam the streets looking for lost family members or for relief. Makeshift shelters were set up in car parks and on any available open space.

Tokyo and the rest of the world became absorbed by the scenes of destruction as helicopters and small planes relayed initial pictures of the fires and building damage. For the rest of the first day, dark smoke covered much of the stricken area; as night fell, bands of flames shot into the sky. The death toll rose hourly until, by midnight, casualties were reported at 1,590 dead and 1,017 missing.

By the end of the first few days, the quake had killed over 6,000 people (over 4,500 in Kobe city alone) and injured around 40,000. Most of the people killed had been crushed within collapsed timber houses. Another 390,000 people had lost their homes. The three hundred or so fires that

followed the quake had destroyed around 100 hectares and severely damaged a further 400 hectares (see Table 1.1). The photos in Figure 1.5 indicate in part the extent of the destruction.

Survivors of the quake suffered great difficulties in the following days and weeks because city "lifelines" and utilities were broken over a wide area. The

Table 1.1

Overall damage sustained in the Hanshin earthquake (Kobe and surrounding areas)

Type of damage	Number damaged
Victims	
Total fatalities	6,279
Fatalities in Kobe	4,512
Missing	2
Injured:	41,527
Serious	1,819
Minor	25,029
Examined	14,679
Evacuees	
Peak number of shelters operating in Kobe (January 26, 1995)	599
Persons using shelters in Kobe (peak, January 24, 1995)	236,899
Residential housing units damaged	
Total destruction	100,282
Partial destruction	294,158
Total	394,440
Other buildings damaged and fires	
Public buildings	549
Other buildings	3,126
Fires (incidents)	294
Traffic Networks	
Roads and highways (damaged sites)	9,413
• The Hanshin Expressway 3 (Kobe route and Route 5, Wangan route) collapsed onto the road below	
• Railways were damaged in many places	
• Access to Port Island and Rokkō Island was interrupted	
• Almost all port container berths and wharves were inoperable	
Utilities	
Electric power	citywide failure
Phones	25% failure
Water	close to citywide failure
Industrial water	close to citywide failure
Solid waste	all facilities inoperable

Source: Data provided by the Fire Defense Agency (reported in Taniguchi, 1995b) and data derived from City of Kobe (2005a)

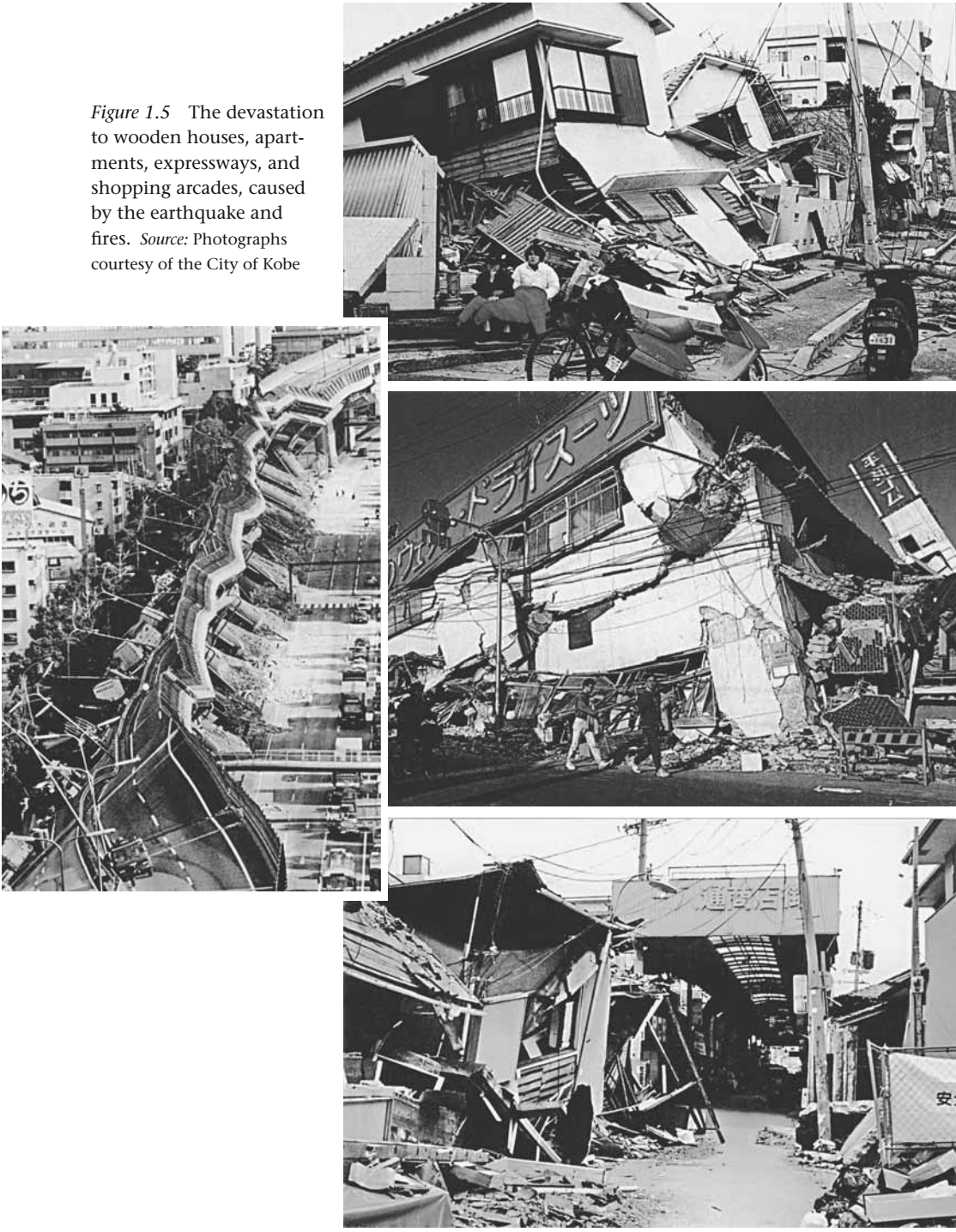

Figure 1.5 The devastation to wooden houses, apartments, expressways, and shopping arcades, caused by the earthquake and fires. *Source:* Photographs courtesy of the City of Kobe

national government stated that 1.3 million people in the Hanshin region were without water, 845,000 households were without gas, 2.6 million households were without electricity, 193,000 households were without a telephone, and major public transport systems, roads, highways, and hospitals and clinics were out of use (City of Kobe 2005a).

The physical damage to wooden houses and buildings as a result of the earthquake was the worst in Japanese history except for the Great Kantō Earthquake of 1923. The total number of damaged houses and other structures reached about 400,000: of these, 100,209 were completely destroyed, 107,074 partially collapsed, 183,436 were partially damaged, and 5,864 burned down in the Hanshin district (Taniguchi 1995b). Those districts hardest hit were Kobe's Higashi-Nada ward, where over 60,000 were made homeless, and Nagata ward, with over 35,000 homeless (see Table 1.2). About 15 percent of the city's building stock was lost to the quake. An even higher percentage was lost in the central districts, including 82,000 houses, mainly older wooden ones ("Kobe House" 1995; "About" 1995).

Figure 1.6 indicates the overall pattern of deaths and damage in the Hanshin region. It shows that damage to buildings and loss of life occurred across a wide area beyond Kobe, including the northern portion of Awaji Island, other coastal cities of Hyōgo prefecture, and the western part of Osaka prefecture bordering Osaka Bay. Nonetheless, the city of Kobe clearly bore the burden of major damage. One of the most distinctive dimensions of the Kobe catastrophe was the large number of seniors who perished (see Figure 1.7). Over 50 percent of those who died were older than 60, and nearly 60 percent of them were female. Official reports attributed the large number of deaths among the elderly to the greater number of younger people living in the city's outer suburbs, which were less affected by the quake; to the fact that many elderly people lived alone in the quake-stricken districts, especially women; and to the large number of houses in these areas that had been built before or immediately after the Second World War and that were of poor quality. Figures 1.8 and 1.9 extend these findings by indicating the loss of housing by city ward and by age of building. The overall pattern shows that Nagata ward in the older inner suburbs of Kobe suffered the greatest loss of housing and that roughly 50 percent of houses built before 1965 were lost to the quake.

Beyond casualties and destroyed buildings, the Hanshin earthquake had a significant economic impact. At the time of the quake, the economy of Kobe was already struggling (Uchida 1995); hence the Hanshin earthquake precipitated an economic catastrophe. The devastation caused by the earthquake seriously disrupted personal livelihoods and crippled key industries in the region. This was especially so in Kobe, where building damage was the worst. Here, the destruction of public and private property was estimated at nearly half the normal yearly economic output of this expansive industrial

Table 1.2

Distribution of earthquake victims and damage to structures by ward, City of Kobe

	Inner city wards						Suburban wards			
	West side			East side						
	Hyōgo	Nagata	Suma	Higashi-Nada	Nada	Chūō	Tarumi	Nishi	Kita	Kobe total
Dead	555	919	401	1,471	933	244	25	11	12	4,571
Evacuees (Peak)										
Shelters	96	79	69	120	74	90	41	16	29	599
Overnight	26,300	35,347	21,067	60,700	35,000	35,172	6,926	1,777	2,348	222,127
Daytime	26,300	55,641	21,728	65,859	40,394	39,090	4,747	1,787	2,360	236,899
Collapsed houses										
Fully	9,533	15,521	7,696	13,667	2,757	6,344	1,176	436	271	67,421
Half	8,109	8,282	5,608	5,538	5,675	6,641	8,890	3,262	3,140	55,145
Burned houses										
Fully	940	4,759	407	327	465	65	1	0	1	6,965
Partially	15	13	9	15	13	9	2	0	0	80
Half	46	61	20	19	94	22	5	1	2	270

Notes: For city ward boundaries, see Figure 1.1. Earthquake victims as of December 26, 1995; fully and partially collapsed figures as of November 20, 1995; fully, half, and partly burned figures as of January 2, 1996. Fully collapsed = Houses whose damage to supporting structures (walls, pillars, beams, roofs, stairs) amounts to more than 50 percent of the current value of the house. Half collapsed = Houses whose damage to supporting structures (walls, pillars, beams, roofs, stairs) amounts to between 20 and 50 percent of the current value of the house. Because the figures are all taken from the respective peak times of each ward, the ward figures may not add up to the city total. For the geographic boundaries of each ward, see Figure 1.1.

Source: City of Kobe (2005a)

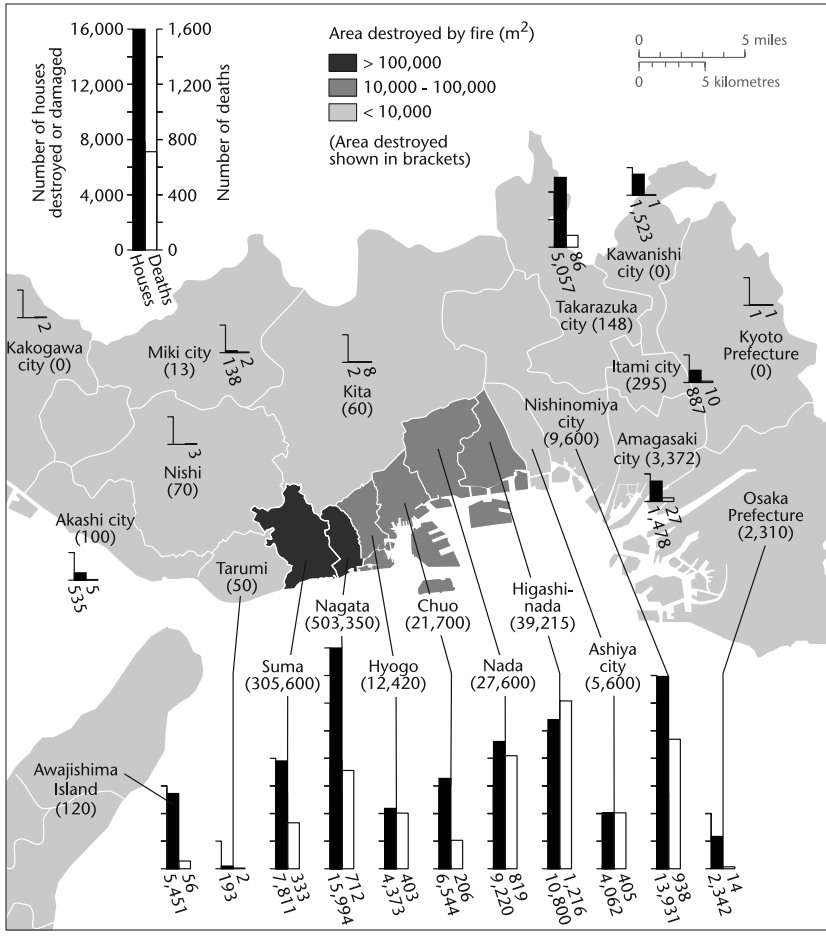

Figure 1.6 Patterns of deaths and damage in the Hanshin region.
Source: Data provided by the City of Kobe

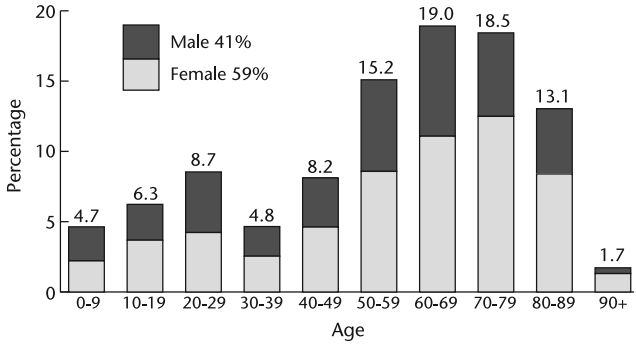

Figure 1.7 Breakdown of deaths by gender and age.
Source: Data provided by the City of Kobe

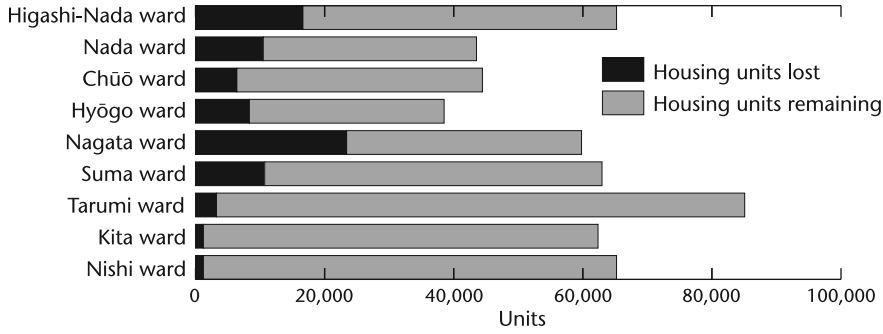

Figure 1.8 The loss of housing in Kobe by ward.
Source: City of Kobe (2005b)

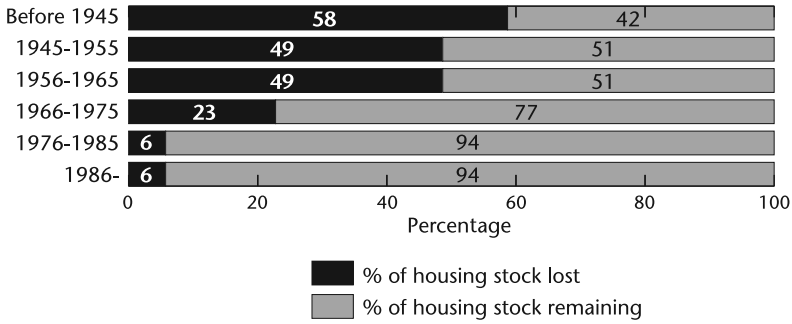

Figure 1.9 The loss of housing in Kobe by period of building.
Source: City of Kobe (2005b)

region (Walsh 1996). Few businesses or private households held earthquake insurance. Indeed, most losses were uninsured: only 3 percent of property in the Kobe area was covered by earthquake indemnity, compared to 16 percent in Tokyo. This meant that those damages that could be fully recovered by insurance payments amounted to only one-tenth of the total. Individuals (for the most part) bore the cost of reconstructing homes and small businesses. In the end, the final cost of the damage was estimated at around ¥9.9 trillion (US$99.3 billion at the early-1995 exchange rate), at that time equal to nearly 1 percent of the asset value of total private and public infrastructure in Japan (see Table 1.3). This was clearly a staggering amount, equivalent to the Hyōgo prefectural budget for roughly six years (Shiozaki, Nishikawa, and Deguchi 2005). Indeed, the damage caused by the quake was beyond the capability of any local government to bear. As a consequence, restoration of the destroyed buildings and facilities presented a formidable challenge.[3]

This book examines aspects of the reconstruction of Kobe in the ten years following the Hanshin earthquake and provides a chronicle of government

Table 1.3

Cost estimate in billon yen for repair of the damage by the Hanshin earthquake in Hyōgo prefecture

Type of damage	Cost estimate (¥ billion)
Buildings (housing, buildings)	5,800.0
Railways	343.9
Expressways	550.0
Public works (including streets and parks)	278.4
Harbor facilities	1,000.0
Reclaimed land	6.4
Educational facilities	341.7
Agriculture, fisheries, and forestry facilities (including markets and fishing ports)	118.1
Medical health and welfare facilities	173.3
Waste and sanitation facilities	4.4
Water supply	54.1
Gas and electricity	420.0
Communications and broadcasting	120.2
Machinery and equipment	630.0
Public facilities (e.g., government offices)	75.1
Total	¥9,915.6 billion (¥9.9 trillion)

Source: Ogawa and Nagano (1995)

responses to the challenges of rebuilding a major Japanese city. This was the largest reconstruction effort through urban planning projects in the nation's history. To understand the complexity of such a large development, I examined land use changes, governance issues, and economic recovery. This study focuses on the geography of the crisis and the opportunities that were created for local-government planners to rebuild older neighbourhoods and to revitalize the city. Key questions raised in the research are: To what degree did the reconstruction period provide an occasion to mitigate a hazardous situation and make general improvements in urban form? And was the reconstruction achieved uniformly, or were there uneven outcomes?

I argue that Kobe's city planners took bold openings presented by the disaster to significantly upgrade stricken localities and to apply for national government resources for infrastructure. However, planning processes and outcomes were complex, often controversial, and geographically uneven. The analysis suggests that these results were due mainly to four factors: pre-earthquake conditions in Kobe; the geographic dimensions of the disaster;

Japan's top-down, inflexible planning machinery; and adverse reactions from the local community.

The Japanese government, based in Tokyo, took a strong role in the early reconstruction of the city, especially in providing the national-level funding that was necessary for the prompt rebuilding of damaged infrastructure. However, the Kobe city and Hyōgo prefecture governments were the local agencies directly responsible for managing the region's recovery on a day-to-day basis. Besides coping with the immediate crisis, the city and prefecture announced substantial urban-renewal programs soon after the quake, publishing comprehensive reconstruction plans in the summer of 1995. These plans incorporated long-term goals and basic principles for restoration and rebuilding as well as a very long list of reconstruction projects submitted to the national government for funding. Considering the magnitude of the damage sustained, the city and prefecture governments judged that the region would take a long time to recover fully and that reconstruction plans and projects could only be completed over a ten-year period. The tenth anniversary of this major disaster in early 2005 was therefore an appropriate time to evaluate the reconstruction of Kobe. It served as an expedient point to examine the plans and policies of various government agencies and to draw some conclusions about the successes and the pitfalls experienced.

It is worth emphasizing at the outset that post-disaster reconstruction of any city is a long-term exercise. Consequently, any assessment of this process requires ongoing evaluation. Many studies have focused on the seismic and engineering aspects of the Hanshin earthquake and on the initial recovery period; few have analyzed the longer-term reconstruction of Kobe.[4] Indeed, within the vast literature on disasters and disaster management, there is only occasional consideration of issues involved in the long-term redevelopment of urban areas affected by a major earthquake. And there are even fewer studies of recovery from disasters in cultures outside an Anglo-American context (see Chang 2001). My own objective has been to record the overall reconstruction planning process followed in Kobe, with a focus on particular case studies. These relate to the rebuilding of particular neighbourhoods and to the city's economic revival. The empirical material assembled during my field investigations in Kobe is placed in a framework that draws from both the general literature on post-disaster reconstruction planning and more specialized material on Japanese urban development and urban policy.

To examine the major changes in Kobe during the ten-year period following the quake, I collected information through personal interviews with city and prefecture bureaucrats, community leaders, and local planners. I also made site visits, analyzed official documents, and reviewed Japanese newspapers. One of the key research approaches in this study involved identifying the factors that informed the ideas and openings that were taken in Kobe's reconstruction plans, then ascertaining those aspects which caused

difficulties and placed constraints on their implementation. To address these issues I examined Kobe's planning and development before the quake, the various choices presented to city planners by the crisis, and also the geographical outcomes of the disaster. In this study I pay particular attention to the relationships that developed after the event between local planners and the Japanese national government, as well as relations between city administrators and local citizens.

My first visit to the stricken area was just two weeks after the earthquake in January 1995. Thereafter I visited Kobe many times; this enabled me to observe how the rebuilding of the city was proceeding and provided insights into the problems and opportunities facing city planners. The material in later chapters reflects both their achievements and their disappointments. No one would claim that the course of reconstruction after the quake has been entirely smooth or that it has succeeded entirely. At the end of ten years, physical reconstruction was virtually complete except for certain neighbourhoods in the poorer western districts of Kobe. But even today, economic and social recovery are ongoing.

In general, I contend that Kobe city was caught between taking advantage of new development opportunities suddenly offered by the disaster, and the constraints imposed by a fairly rigid Japanese urban planning model. These factors shaped how quickly the city could rebuild, whether the planners could improve the city's safety, what other improvements could be carried out, and what (if anything) could be done for the most disadvantaged communities in Kobe.

Traditionally, Japanese urban planning has emphasized a rather standardized method for rebuilding. This is because of the regulations imposed by national legislation. Also, large-scale recovery projects have been tied to the national government's budgetary requirements. These factors dominated the reconstruction process in Kobe. The Japanese planning system has the advantage of certainty, as in most cases it guarantees funding for infrastructure repair and replacement. Major *dis*advantages are its lack of flexibility and its lack of autonomy for local governments. Local urban planners eager to improve Kobe after the quake found themselves in collision with a rigid approach to post-disaster redevelopment at the national level that contributed to the frustrations experienced by residents and small business owners, who felt especially vulnerable and disempowered. To win the trust of citizens, Kobe's administrators had to establish community consultation through *machizukuri* (local planning) committees; in the process they changed the traditional planning process used in Japan. The study indicates that despite some early setbacks, most of the large-scale projects initiated through the ten-year reconstruction plans had been implemented and completed by early 2005. Yet, despite this achievement, the city's administration continued to face criticism. This was due to the costs involved for many new schemes

(especially the outlays involved for a new city airport), the underfunding of welfare services for earthquake survivors and small businesses, and the issue of long-term municipal debt.

My interpretation of Kobe's reconstruction planning suggests that it has hinged on two concepts: "geography of crisis," and "geography of opportunity." The "geography of crisis" allegory illustrates how spatial relationships are often responsible for particular social and economic stresses following a major disaster. In Kobe, a distinct "geography of crisis" produced sharply uneven outcomes in terms of both damage location and victim location. These distinct spatial and social outcomes generated a number of tensions during the reconstruction, initially in terms of where to locate temporary shelters for the homeless, then later in terms of public housing provision and private-sector investment. The stresses resulting from these patterns added to the anger of local residents against planning and reconstruction activities taken by the city's administration. The inherent geographical unevenness of the crisis also led to the breakup of many communities in Kobe.

The second metaphor, "geography of opportunity," refers to the tendency for city planners to take advantage of disasters when they are rebuilding. In Kobe, opportunities were taken to redevelop the older, inner parts of the city. Opportunities were also taken during the recovery to build new economic infrastructure so as to gain a comparative advantage over other cities in Japan. In this regard the reaction of public officials in Kobe can be seen as similar to that of officials elsewhere, who almost always speak of rebuilding to "make the city better than ever" (Haas, Kates, and Bowden 1977, xv).

To illustrate just how the geographies of crisis and opportunity transpired in Kobe, I consider the post-disaster reconstruction in some detail through two types of case studies. The first involves local neighbourhood renewal in the Shin-Nagata and Moriminami districts of the city. The second focuses on economic recovery and area-wide "mega-projects" supported by the city administration and the former mayor of Kobe, Sasayama Kazutoshi (elected from 1989 to 2001). The differences in scale of these case studies reveal the effectiveness (or otherwise) of Japanese planning systems in the face of a major disaster and the challenges of rebuilding one of the nation's most important ports and a prominent urban area.

Structure of the Book

The analysis commences in Chapter 2 with a review of the literature relating to the reconstruction of cities after earthquakes and major disasters. This reveals a distinctly Japanese approach to city planning and development. On the one hand, the more general Western literature suggests that reconstruction after a major disaster is a complex and multifaceted issue – one that requires close collaboration at all levels of government and that calls

for the private sector's involvement as well as that of civil society (i.e., local citizens and businesses). By contrast, the review of Japanese urban planning identifies a distinctly idiosyncratic approach – one that is driven by national legislation and bureaucratic intervention. My research indicates that the Japanese model played an important part in shaping Kobe's post-earthquake outcomes and long-term rehabilitation. Chapter 3 examines Kobe in the years before the earthquake struck and its distinctive characteristics. It also scrutinizes aspects of the earthquake's impact, the damage sustained, and the city's recovery and reconstruction phases. The chapter indicates how a distinctive "geography of crisis" emerged following the 1995 temblor. In Chapter 4, I consider the strategies for rebuilding Kobe taken by the national and local governments during the initial post-quake period. This chapter points to the opportunities seized by local planners in the immediate aftermath of the quake, as well as to some unforeseen outcomes. Chapter 5 deals with the citizens' protests against plans for redeveloping stricken neighbourhoods and how these were addressed by local governments. It also considers the major components of the "Phoenix Plan" for long-term reconstruction. Chapters 6 and 7 examine how the rebuilding of the city evolved in the subsequent ten years, the emergence of conflicts and problems, and how these were (partly) resolved. Case studies are given at the local neighbourhood level in the Shin-Nagata and Moriminami districts of Kobe (Chapter 6) and at the city level in megaprojects that were built in part as symbols of the post-disaster reconstruction (Chapter 7). Chapter 8 concludes the monograph by commenting on the lessons that can be drawn from the Kobe experience for other Japanese cities, and also for many other disaster-prone regions of the world. In particular, it explains why other Japanese cities should start planning for post-earthquake disaster reconstruction ahead of time. A chronology of the major events that took place during the ten-year reconstruction period is given in Appendix A. A list of post-disaster government actions at the national and local levels is set out in Appendices B and C.

2
Earthquakes and Urban Reconstruction

> Disaster recovery is ordered, knowable and predictable.
>
> Immediately after a disaster, public officials almost always speak of rebuilding "to make this city better than ever." But if this is to happen, how does it develop?
>
> — J.E. Haas, R.W. Kates, and M.J. Bowden, eds., *Reconstruction Following Disaster*

2.1 The Problem of Post-Disaster Reconstruction

Contributions by geographers, planners, and other social scientists have drawn attention to the important social and economic implications of disasters such as earthquakes.[1] One common approach has been to divide individual and community responses to disasters and their consequences into different phases (Carr 1932, Barton 1969). Many scholars identify four crucial dimensions – disaster mitigation, disaster preparedness, disaster response, and post-disaster recovery (Petak 1985; Raphael 1986; Waugh and Hy 1990; Lindell and Perry 1992; Smith 1996; Hewitt 1997; Federal Emergency Management Agency 2000; Tierney, Lindell, and Perry 2001). In terms of these four categories, the post-disaster recovery stage – especially the reconstruction of cities damaged by earthquakes – has received less attention than other stages, such as immediate relief efforts and responses to the disaster event itself (see reviews of the literature by Drabek 1986; Geipel 1991; Comerio 1998; Godschalk et al. 1999; Chang 2001; and Olshansky 2005). Nonetheless, a number of general themes in the reconstruction phase can be noted.

Models and Approaches to Post-Disaster Reconstruction

Over thirty years ago, Haas and colleagues (1977, xv) described recovery as "ordered, knowable and predictable." This was in the context of a major study of several post-disaster reconstruction cases, ranging from San Francisco after the 1906 earthquake to Rapid City, South Dakota, after its 1972 flood.

As part of the same project, Kates and Pijawka (1977) conceptualized the post-disaster recovery stage as having four distinct but overlapping periods: an emergency period, a restoration period, a replacement reconstruction period, and finally a developmental reconstruction period (see Figure 2.1). According to this representation, the "emergency period" lasted for several days, and during this time actions such as search and rescue took precedence. Next, the "restoration period," which might last many weeks, was characterized by repairs to utilities – such as water, electricity, and gas mains – and by the "patching up" of damaged commercial, industrial, and residential structures. Following this, the "replacement reconstruction" period, lasting several months, was one in which the long-term replacement of factories and homes occurred and when the economy and population of the stricken area attempted to recover to pre-disaster levels. The final "developmental restoration" period saw improvement over and above the pre-disaster situation; this often included projects to memorialize or commemorate the disaster. Completion of reconstruction works might take years, but for Kates and Pijawka (ibid., 13) the recovery period ended when the urban population had returned to its former level and when losses in jobs, housing, and services had been rectified. Figure 2.1 indicates that the complete process can take up to ten years (around five hundred weeks), that each of the first

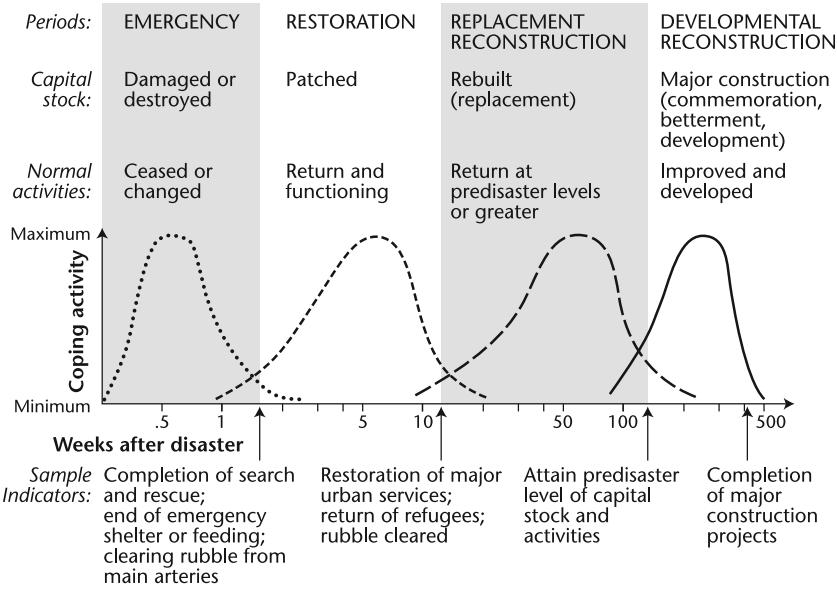

Figure 2.1 Post-disaster reconstruction according to Kates and Pijawka (1977).
Source: Kates and Pijawka (1977)

three periods lasts about ten times longer than the previous one, and that the development reconstruction period is half again as long as the period of replacement reconstruction.

Such a scheme suggests that there is a clear pattern to the reconstruction process, which is assumed to proceed in a linear and relatively orderly fashion to the apparently inevitable conclusion: community recovery. Other researchers, however, have determined that the process is likely to be much more complex. For instance, both Hogg (1980) and Neal (1997) found that the four phases, if they can be distinguished at all, occur almost concurrently.

Whatever the chronological details of reconstruction, during this time planners will often try to use the opportunity provided by the disaster to replan and improve the physical structure of the stricken area. This process, which accords with the fourth stage of Kates and Pijawka's model ("developmental reconstruction"), reflects the need to upgrade the region's resistance to future disasters. For example, in the case of cities and earthquakes, local authorities will often identify and then purchase hazard-prone lands and remove them from residential or commercial zoning, as well as introduce new building regulations (Smith 1996). Indeed, the literature on hazards research offers a number of case studies suggesting that disasters provide opportunities for unforeseen and beneficial development as well as economic improvement (see Friesma et al. 1979; Dudasik 1982; Cuny 1983; Ellson, Milliman, and Roberts 1984; Rubin 1985, 1991). Geipel (1982, 16) observes that rare events such as major earthquakes provide a significant opportunity to propose ways to soften the impact of future disasters. He notes that disasters often allow "planning to proceed from a new starting point, more freely than under former impediments," but he adds that planners do not have an unlimited time in which to develop grand schemes for the wholescale redesign of the city or region at hand. Moreover, he warns that "planners are obsessed usually with grandiose rebuilding plans, but the citizens' thinking already includes such a plan unconsciously: the plan of the city as it was before destruction" (ibid., 180; see also Olshansky 2002). By way of illustration, after the destruction of Darwin, Australia, by Cyclone Tracy in 1974, many urban planners advocated relocating this harbour city to a safer inland location. However, owing to adverse political reaction and a quicker than expected return by many evacuees, such an option was never implemented (McKay 2004).

Without a doubt, the results of post-disaster recovery and reconstruction are likely to have a profound impact on any city and region, and opportunities for upgrading a stricken city and its infrastructure may indeed arise. Indeed, the opportunities grasped in Kobe after the 1995 earthquake constitute a central element of this book. That said, Darwin's experience and countless others remind us that new opportunities for redevelopment are rarely exploited in full. Why? Because technical solutions to improving

urban infrastructure and local neighbourhoods flounder as a result of unforeseen socio-economic complexities. These unforeseen problems have not been well covered in previous linear models of reconstruction such as those proposed by Haas, Kates, and Bowden. Supporting this viewpoint, Mileti (1999, 220-30) reasons that post-disaster reconstruction should be seen not as a solely physical restoration, but essentially as a social process that "encompasses decision-making about restoration and reconstruction activities." He goes on to argue that there has also been a tendency to equate the long-term social and economic recovery of cities and their various communities with reconstruction, which involves primarily the restoration and replacement of the shattered built environment.

Hayashi (2003) extends this approach, noting that community recovery following a disaster has three interdependent components – physical, economic, and social. In other words, the impact on a city of a major earthquake is far greater than the observable costs of repairing damaged roads and other infrastructure. He notes that social and economic issues such as housing, employment, health, and general community well-being are all significantly affected by an earthquake. Thus the amount of financial aid strongly influences the recovery process, as does the way in which that aid is allocated among the survivors. Similarly, Quarantelli (1989) focuses on the distribution of resources after a disaster. He argues that the earlier work of Haas and others failed to adequately grasp the complexities and conflicts inherent in the recovery process. Reconstruction and recovery are not necessarily "ordered, knowable, and predictable." Often, both involve political, cultural, and social disagreements over recovery plans and priorities. He contends that uncoordinated planning at the local level can severely inhibit the pace of reconstruction, especially after earthquakes, which have wide-scale regional impacts. Indeed, it seems that the earlier research has underemphasized the extent to which recovery may be experienced differently by various sectors and communities in society. Very often these differences have a strong geographical component (see Bolin 1994).

Since the early work on models of reconstruction, a wide range of approaches has been taken to the study of post-disaster periods. For example, regarding the "9/11" terrorist attack in New York, reports have focused on how cities can recover – if at all – after a major calamity (Ockman 2002; Rozario 2005; Vale and Campenella 2005). For the most part, responses to major disasters have confirmed the perennial resilience of cities in the face of drastic events. For instance, there is little sign that earthquakes have ever led to the wholesale abandonment of damaged towns and cities. Communities seem well able to survive physical devastation, and survivors tend to rebuild in the same location after the wreckage has been cleared (Alexander 1993; Mileti 1999). However, reconstruction does involve change, and impacted communities are never quite the same as they were before. The city

appears different, and the underlying spatial structure and economy have likely altered (Massard-Guilbaud 2002).

All told, though many critics disagree with some parts of it, the "stages" model set out by Haas and colleagues is useful as a starting point for understanding the dynamics of community recovery. The four stages of post-disaster reconstruction illustrated by Figure 2.1 will be referred to again in later chapters of this book.[2]

Factors Influencing Reconstruction

Governments should be fully prepared to speed up community recovery and rebuilding should large-scale damage and destruction take place. But which factors are to be considered important in shaping post-disaster reconstruction? Research findings on natural disasters have highlighted a number of dimensions that may influence the speed and quality of a city's rebuilding. Some of these – including the magnitude of the event and the scope of damage – are clearly specific to the disaster itself. Others – including the physical geography and layout of settlements, political and planning milieux, the economic resources for financial recovery, and the varying vulnerability within the communities affected – are related to prior conditions in the area. Other factors influencing reconstruction depend on the quality of leadership and government decision making. In sum, the literature suggests that post-disaster recovery is a complex process and that it cannot be clear in advance how each dimension will affect the reconstruction process or its outcomes.

To unravel these complexities in the Kobe case study, I applied a four-part framework (see Figure 2.2). I contend that the quality and success of post-disaster planning and reconstruction depend on several organizational and social factors as well as physical ones. These factors are (a) the pre-existing situation in the disaster area, including its economic and population structure, (b) aspects of the disaster itself, including its geographical impact and outcomes, (c) efforts made by governments and other agencies to facilitate rehabilitation, and (d) local community attitudes toward planning and proposed improvements. This schema draws from the literature, especially the seminal work of Kates and Pijawka (1977, 1), who identified the following as important: (a) the extent of the damage, (b) the availability of resources for recovery, (c) prevailing pre-disaster trends, and (d) leadership, planning, and organization for reconstruction. All of these aspects were important in Kobe, but as I will argue later, the influence of geography and the role played by local communities were central to understanding the reconstruction effort and result.

How, then, can the issues listed in Figure 2.2 inform a study of Kobe's post-disaster reconstruction? First, post-disaster economic and social challenges are inseparable from the physical and socio-economic conditions that existed just prior to the disaster, including the prevailing urban planning

1. The pre-existing situation in the disaster area
- -physical geography and settlement patterns
- -political and planning milieu
- -economic and population structure and trends
- -unevenness of vulnerability in the community

2. Characteristics of the disaster
- -intensity
- -geographical outcomes

3. Efforts made by governments and non-state organizations to facilitate recovery
- -reconstruction budgets
- -role of governments
- -role of NGOs
- -intergovernmental relations
- -land use and building regulations

4. Local community attitudes and relationship with governments
- -involvement of business groups and citizens
- -impact upon property rights
- -leadership in the community
- -individual volunteers

Figure 2.2 A framework for understanding the dynamics of post-disaster reconstruction planning.

system (factor 1 in Figure 2.2). While the physical patterns of settlements – such as the area of built-up land below a flood line, and housing built atop an earthquake fault line – may seem obvious factors shaping reconstruction efforts, a number of studies have also drawn attention to the importance of the region's population and economic profile, as well as to underlying economic and social trends. Thus Alexander (1993) notes that disasters may hasten changes in a city or region that are already occurring as a result of wider forces at play, such as economic decline and demographic change. Conversely, for "cities on the rise" such as Chicago before the Great Fire of 1871 and San Francisco before the earthquake and fires of 1906, the post-disaster rebuilding may actually spur growth and economic expansion (Miller 2002). Other studies have drawn attention to disaster-prone regions that have vulnerable populations, including the aged, the disabled, the poor, and the otherwise marginalized (e.g., by ethnicity). Invariably, these at-risk communities are affected more than the general population during post-disaster recovery, usually in adverse ways (Blaikie et al. 1994; Hewitt 1997; Tierney, Lindell, and Perry 2001). In his study of the 1976 earthquake at Fruili, Italy, Geipel (1982, 166) remarked that disasters are not necessarily "the great equalizers," for certain groups are more likely than others to be disadvantaged by a widespread tragedy such as an earthquake: "Socio-economic groups will be determined after disaster as they were before, with the rich

still rich and the poor still poor" (ibid., quoting Kates 1977; see also Kamel and Loukaitou-Sideris 2004). More recently, the recovery of New Orleans after Hurricane Katrina in 2005 has been challenged by that city's racial disparity (Birch and Watcher 2006). Recovery after the Hanshin earthquake in Kobe was especially difficult because local governments had to cope with the region's large number of elderly citizens, many of whom had been left homeless by the disaster.

Second, among the more specific factors contributing to reconstruction, the intensity and geographic patterns of damage both shape and complicate post-disaster reconstruction (factor 2 in Figure 2.2). A priori conditions, combined with the particular characteristics of the disaster itself, often lead to a stark unevenness in the geography of damage to communities, and consequently to a "patchy" recovery. How, then, are priorities to be set for resource allocation during the reconstruction period (Prater and Wu 2002; Schwab et al. 1998; Tierney, Lindell, and Perry 2001)? Rossi, Wright, and Weber-Burdin (1982) remind us that treacherous political questions are often involved in post-disaster reconstruction – for instance, where exactly should governments place resources for rebuilding? Conflict during reconstruction is even more likely to arise where serious damage has been sustained and the risk of further vulnerability to future disasters is uneven (Bolin and Stanford 1998). In Kobe, the earthquake's strongest impact was along a relatively thin "damage strip"; the result was especially severe destruction to certain inner suburbs in the west of the city, the ones with narrow streets and wooden houses. (The city government would allocate special budgets for their reconstruction.)

Third, government bodies and not-for-profit organizations (NPOs) play a critical role in the post-disaster period and influence the recovery rate as well as the success of reconstruction efforts (factor 3 in Figure 2.2). Governments usually take the initiative in repairing and rebuilding broken infrastructure and important public buildings. Strongly influencing how smoothly reconstruction proceeds are factors such as: the availability of financial and other resources, the quality of government administration (and of insurance programs), and technical matters such as rebuilding plans, land use rezoning, and building regulations (Haas, Kates, and Bowden 1977; Rubin, Saperstein, and Barbee 1985). Most individuals and small businesses are unable to rebuild and recover without substantial funding. Where insurance payments are insufficient compared to the damage sustained, the financing of private-sector renewal often involves increased local public expenditures for items such as debris removal as well as state assistance for rebuilding homes and livelihoods. NPOs have also been important in helping individuals and communities recover after disaster (Anderson and Woodwrow 1989; Samal et al., 2005; Ozerdem and Jacoby 2006). Yet another common theme in post-disaster recovery is the need for governments to provide symbolic milestones

to boost morale as rebuilding gets under way. Sometimes key symbolic moments take place to address this need, such as the holding of world expositions, as in Chicago in 1893 and San Francisco in 1915 (Vale 2006).

There are also important questions relating to the powers of local authorities, usually city governments (Drabek and Hoetmer 1991; Pelling 2003). For Kates and Pijawka (1977, 20) a critical factor was the degree to which governments and other agencies were able to reduce uncertainty in damaged communities. Local decision makers must make strategic choices during the response and early-recovery phases that will shape both immediate and long-range reconstruction. For instance, how can rebuilding be controlled? Should the city's infrastructure be improved by new building and land development codes? In Kobe, these questions proved to be an important test of Japanese planning methods in the post-quake situation.

The quality of the relationship between national and local governments is relevant as well. Significant shifts in interactions between organizations inevitably occur as governments move from an "emergency and recovery mode" to long-term reconstruction activities, especially since the reconstruction phase often calls for new rules and demands a new set of networks to oversee coordination (Gillespie et al. 1993; Gillespie and Colignon 1993). Inherent structural issues involving interorganizational and intergovernmental coordination in times of crisis and the aftermath of disaster add to the complexity of recovery. Of course, the precise circumstances of these relationships will vary from country to country (Alexander 1993). In the United States, for instance, resources for disaster relief typically have come through FEMA (the Federal Emergency Management Agency). Yet Stratton (1989, 159) highlighted the important role of other levels of government in the United States, arguing that "states and local governments actually are not mere 'workhorses' or administrative arms of the federal government but creative and powerful in the implementation of disaster policy" (see also May 1985; May and Williams 1986). By contrast, intergovernmental relations in Japan have by tradition been more centralized – a feature that strongly affected reconstruction outcomes in Kobe.

A fourth and final dimension of the framework for understanding post-disaster reconstruction in Kobe involves the response of the local community and its relationship with governments (factor 4 in Figure 2.2). For instance, in the aftermath of a disaster some local politicians and business groups may wish to extract a competitive advantage over their rivals in other cities and regions through "fast deals" with senior political leaders and central or federal funding agencies (Gepiel 1982, 1991). In this vein, Godschalk and colleagues (1999) noted that much of the official development and redevelopment in Miami in the wake of Hurricane Andrew (1992) had little to do with hazard mitigation per se; it seemed instead to have been conducted with an eye to the economic development of that stricken region. Other

American studies have examined the impact of disasters on economic planning. Cochrane (1997) has suggested that the economies of Miami following Hurricane Andrew, and of Los Angeles following the 1994 Northridge earthquake, were helped by their respective disasters. Whether or not reconstruction stimulated economic growth and restructuring in Kobe is a central question addressed in the present study.

Other important elements include the nature of citizen involvement, the impact on rebuilding plans on property rights, and the role of individual volunteers and local leaders (Olshansky 2005). Social scientists have often pointed out that if rebuilding is to succeed, the public's role must be recognized (Berke, Kartez, and Wenger 1993; Mileti 1999). Too often, government agencies have tended to deal with business sectors rather than citizens and as a result have failed to support local voluntary groups or to recognize their importance as part of community rebuilding. Rossi, Wright, and Weber-Burdin (1982) have noted that the various post-disaster options for reconstructing cities and other damaged areas are often in conflict with legitimate community values, such as the desire of residents to return to their original homes and business locations are soon as possible (see also Oliver-Smith 1991). As with most other post-disaster decisions, the scale and speed with which urban development can recommence reflects the influence of two conflicting needs: to return to normal, and to prevent a fresh disaster (Foster 1980). Indeed, the relationship between those in power and the community is a delicate issue, and this was certainly the case in Kobe.

Local governments' responses are often built on standardized programs and may not adequately reflect the needs of particular communities and interests. Moreover, the recovery period tends to be marked by conflict and disillusionment. How local leaders and officials handle these is an important factor in restoration and reconstruction. Pre-disaster political and interest-group rivalries can re-emerge, and old issues can be reactivated (Tierney 1989). Geipel (1982) states that there are likely to be local citizens who are dissatisfied with the rehabilitation process, and that such dissatifaction is likely to stem from issues such as lack of participation and engagement with the bureaucracy and its reconstruction policies. In particular, the relocation of disaster victims to temporary accommodation when their homes have collapsed or burned, or washed away, can be a very complicated process. For example, when people must be relocated they will typically request settings, structures, and interactions that are consistent with their social traditions (Shaw and Goda 2004). Olshansky (2005) notes that one of the most important issues to emerge since the early study by Haas and colleagues (1977) has been the importance of citizen participation and also of two-way communication during reconstruction. In the wake of a disaster, participation may hamper decision making, but it also offers advantages, such as improved capacity to adapt reconstruction programs to local conditions. The matter

of citizen participation in Kobe's rebuilding will be dealt with later through in-depth case studies.

In sum, reconstruction after any disaster is a complicated and multidimensional process, and there is no easy resolution to any of the dilemmas touched on above. Awotona (1997, xix-xx) notes that "rebuilding the built environment is the end product of a long chain of interactions, including sociocultural, economic, technological, environmental and administrative aspects." Much of the literature highlights the need to pre-plan urban reconstruction long before disaster strikes. I shall return to this issue at the end of this book. Still, though strong consensus exists on general principles, many aspects of effective planning for post-disaster recovery continue to be poorly understood. Moreover, the complexity of reconstruction is amplified by the urgency and confusion of the situation, by the need to mobilize huge amounts of resources (human and material), and by the many intricate political dimensions relating to aid, physical rebuilding, and economic relief. On top of all this, every reconstruction process is in many ways unique to location, time, and context, which in turn suggests that very specific cultural dimensions must be considered when post-disaster reconstruction plans and outcomes are being assessed. For Kobe, the reconstruction period must be examined in the context of Japanese planning and disaster-recovery practices. Accordingly, this chapter continues with an overview of Japanese attitudes to earthquake disasters and of Japanese approaches to urban reconstruction following a catastrophe. It will be seen how both reflect the particular characteristics of Japan's environment, society, and administrative culture, as well as its distinctive models of urban planning and development.

2.2 Japanese Planning and Administrative Practice

Japan faces certain underlying conditions that are crucial to understanding its vulnerability to urban disasters as well as its idiosyncratic approach to reconstructing cities after catastrophe strikes. First, its location on the "Pacific Rim of Fire" makes it especially susceptible to earthquakes (Case 2004). This is further compounded by high densities of population and economic activity in urban areas. In Japanese cities there is little open space or redundancy in land uses (Mather, Karan, and Iijima 1998). The downtown areas of Japanese cities are characterized by a mixture of uses, with housing packed together with commercial and industrial activities in "densely inhabited districts."[3] Perhaps it is no surprise, then, that the island nation has a long history of disaster recovery and reconstruction planning. Japan has on many occasions had to rebuild its cities quickly after fires, earthquakes, and wars (Hein 2005).

Furthermore, Japan has traditionally relied on an individual-based or market-led recovery model, one that is inherently conservative when it comes to public assistance for urban reconstruction after disasters. In this