Learning from Earthquakes

Kobe Eight Months After: Images of the "Interim City"

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On the surface, Kobe City is bustling. Eight months after the Great Hanshin Earthquake of January 17, 1995, the trains are running, traffic is heavy, pedestrians scurry, and the downtown skyline is punctuated with blue and grey screens wrapping major buildings undergoing repair. Construction sounds are constant. But for the residents and officials who live with the daily business of recovery, restoring the broken city has been and continues to be an exhausting and daunting process.

Although Kobe’s earthquake recovery no longer is "news" to the mass media, many of the people in Kobe speak of the continuing sense of crisis, the uncertainty of every day, of the painful memories. Kobe Mayor Kazutoshi Sasayama summed up the feeling:

"Each day is like fighting a battle. We have had a weak life since the earthquake," he said at an International Forum on reconstruction held in September in Kobe. Similar words were expressed by Deputy Mayor Takumi Ogawa who said that he thinks about the earthquake every day. Recalling the scenes of the fire and suffering he said, "I still have great pain in my heart."

These sentiments hold particular significance for me, having been in Kobe immediately after the January earthquake and having experienced firsthand the wearying long-term process of picking up and moving forward following a devastating earthquake (in Santa Cruz and Watsonville after the 1989 Loma Prieta earthquake). Individually and collectively, the community has been traumatized, but with so much to be done there hardly seems time to reflect and heal, only to work.

The eight-month snapshot of Kobe’s recovery reveals both remarkable achievement and substantial unmet need and work to be done. The "interim city" is a patchwork place. Gaps in the urban fabric include both

**Figure 1** - Eight months after the quake, most public spaces, such as this baseball field, hold temporary housing units.

**Figure 2** - Typical temporary housing units consist of stacked box-like structures. Residents share kitchen and bathroom facilities.

the individual vacant spaces in the downtown where major buildings once stood, and entire neighborhoods once burned and now cleared away, looking like large-scale urban renewal projects. More than 20 million tons of rubble have been removed.

Although the shelters were officially closed in August, housing remains a significant problem. Twelve shelters remain with a new moniker, "waiting centers," holding up to 2,000 remaining refugees. Virtually every neighborhood public space (e.g. school yards and parks) is crammed with temporary houses, metal box-like struc-
tures containing eight small units in two stories, surrounded by high fences approximately 18-20 feet high (Figures 1 and 2). The temporary units also afford few amenities: tiny rooms and shared cooking and bathroom facilities. Makeshift shelters are pitched with tents or tarps. In some cases the refugees have used play equipment such as slides and climbing structures as the supporting framework for their shelter. With an estimated 125,000 dwelling units needing to be rebuilt, in a context of limited land and high costs, it is little wonder that the 40,000 temporary units now in place could not absorb the total need. Many people have relocated to other cities.

Some of the schools are in session using temporary classrooms which share the playground space with the makeshift housing.

In the downtown area, pedestrian and vehicle traffic is re-routed through various detours. Traffic through Kobe crawls around the major repair underway on the Hanshin expressway (Figure 3) and other key transportation arteries. Pedestrians are diverted around building and demolition sites (Figure 4) and at various junctures in the sidewalks where underground utilities are still being repaired.

A surprising number of the major downtown buildings are being repaired as opposed to being demolished. The Sancia building at Sonomiya station, which suffered a mid-story collapse, is now repaired and functional as a three story building; the collapsed fourth floor and the fifth through eighth floors were simply removed (Figures 5 and 6). Across the intersection, the huge Sogo department store is partially open in one section, under repair in another section, with a third

Figure 3 - In September 1995, repair work on the Hanshin Expressway was still underway.

Figure 4 - Buildings under repair are typically wrapped in tarp. Pedestrian and vehicular traffic are routed around construction sites.

section completely demolished and under reconstruction (Figure 7). The old City Hall building is also being partially demolished from its collapsed sixth floor upward and will be re-occupied as a smaller five-story building.

Yet amid all the construction cranes, there are buildings which appear to have had virtually no attention since the earthquake (Figure 8). In some cases shards of glass hang precariously from still-unboarded windows with only the barest of protection afforded to pedestrians below in the form of loosely hung netting. (This pattern of higher "acceptable risk" in the Japanese context also was observed during the immediate aftermath of the earthquake when buildings were accessed and in some cases occupied despite being seriously compromised structurally.) Some of the smaller downtown buildings in particular remain in
Figure 5 - Before and after: In January, the fourth floor of the Santica building at Sonnomiya station collapsed in the earthquake.

Figure 6 - In September, the Santica building was back in use. The collapsed fourth floor and the four stories above it were removed, leaving the original first three stories intact and functional.

Figure 7 - Across the intersection from the Santica building, the Sogo department store has partially reopened one section of store while repairs are underway on the adjacent damaged section. Another portion of the huge structure was demolished and is being rebuilt.

Figure 8 - Eight months after the quake, there were still a surprising number of buildings which had received virtually no attention. Complicated multiple ownership, death of the owner, and lack of funding are among the reasons that these buildings stay in limbo.

limbo for a variety of reasons including complicated multiple ownership, death of the owner(s) or lack of funding. The pattern of reconstruction and repair underway is visual evidence confirming the fact that smaller businesses and building owners have fewer resources to undertake repair than the larger companies.

One section of the covered shopping street in Shin-Nagata was completely destroyed. About 70 percent of the merchants have returned, setting up shop in temporary buildings along the now open-air street. Some are doing business in the shadow of a large five-story building that is slated for demolition, living with the ongoing hazard. Another covered shopping street in the Higashinada ward subsists even more marginally, its over-the-street covering structure still standing alone as nearly all of the buildings alongside have disap-
peared. An old man sells vegetables from a small temporary building, watching crews bulldoze yet another building nearby. He and the several other survivors find few shoppers from the heavily damaged and cleared adjacent neighborhood; the critical mass necessary for commercial success is all but destroyed.

In the heavily burned neighborhood areas, the vastness of newly cleared openness contrasts with the previous pattern of densely packed low-rise development. In some areas the narrow lanes, designed to be wide enough for two rickshaws to pass, have been re-established with temporary macadam and the "urban village" pattern is gradually re-emerging. Some of the tiny lots (typically about 20 square meters in size) sprout a smattering of new temporary houses of dwellings under construction. Some of the owners have eschewed wood frames in favor of steel girders (Figure 9), which, rising three and four stories in height on the narrow postage-stamp sized lots, look like miniature caricatures of downtown high-rises.

In a few burned areas, such as the Shin-Nagata district, the City government has prohibited individuals from rebuilding. Officials intend to use the redevelopment process to redefine the lot pattern by widening roads, establishing open space areas and clustering the housing into new shared ownership condominiums. Temporary housing is allowed (Figure 10).

In contrast to the worst areas, the built environment in many neighborhoods remains largely intact although punctuated with vacant demolished lots appearing sporadically like missing teeth. While living patterns are more normalized in these areas, garbage is piled (Figure 11) and public open space is overgrown with weeds, evidencing the ongoing disruption of service in a city stretched thin by recovery.

Minor damage is everywhere: broken curbs, undulating sidewalks, patched and uneven street surfaces. With so many other priorities, it will be a long time before the public works crews will be able to get to the lesser stuff. Ubiquitous blue tarps cover roof holes and wall gaps. Thousands of buildings are occupied with a variety of damage ranging from a few cracks to missing walls (Figure 12). Demolitions continue and piles of rubble remain to be cleared (Figure 13). Construction crews administer repairs to some of the structures.

Scenes like this repeat themselves from neighborhood to neighborhood stretching from the Tarumi, Suma and
Nada wards west of Kobe eastward to Nishinomiya and Ashiya. The damage is inescapable and extensive, afflicting areas and building both large and small.

The non-stop efforts of eight months show remarkable progress, considering the amount of damage and the fact that water, gas and electricity were not completely restored until April. But what remains to be done also seems daunting, not only physically, but with regard to the complications of financing, ownership and logistical coordination. Construction crews are everywhere but are in short supply. Property owners seeking to rebuild face up to a five month wait before workers are available.

A great emphasis has been placed on the recovery of major infrastructure which is vital to economic recovery. All three railroads are back in service, bridges to the port islands have been repaired and the port has been able to resume 64 percent of its prequake container shipment volume by operating seven days a week, twenty-four hours a day.

The recovery planning documents and rhetoric emphasize transformation, not simply restoration. Kobe City’s history as an open port and a gateway to Japan and northern Asia has been used to frame the image for Kobe’s transformative post-recovery future. Envisioned is a cosmopolitan and sophisticated fashion center, technologically advanced, leaping away from prequake economic decline with a goal of becoming a world-class international trade leader, a “mother port.”

Not surprisingly, recovery planning also speaks to an "awareness of both benefits and hazards of nature." An entire chapter of the "Kobe City Restoration Plan" is devoted to creating a "disaster-safe city" through the formation of greenbelts and neighborhood disaster prevention bases which could function as safe havens. Utility tunnels are proposed to facilitate disaster-resistant gas, water, and electricity systems. The plan also emphasizes improvement in emergency response, rescue and restoration operation. A proposal is in the works to establish in Kobe an international research center focusing on disaster and recovery issues.

Missing from the plan, however, is a clear financial and implementation strategy to achieve these comprehensive and ambitious planning goals. Atsushi Shimo-kobe of the Prime Minister’s committee on reconstruction stated in his closing remarks that “the problem here is not what to do, but determining who will implement it and who will take responsibility.” So far, who’s in charge and who pays are evolving concepts.

Based on the amount of recovery progress to date, Kobe has had success in getting the central government to commit substantial capital toward recovery. But the Japanese economy has been reeling of late. As with the Loma Prieta area, which was struck by the 1989 earthquake just as the California economy hit the skids, Kobe could not have encountered a worse economic context for its attempts at recovery. Bank failures due in large part to losses in real estate holdings make the lending climate treacherous, despite a prime lending rate that was 1.625 percent in September.

Moreover (for better or worse), there is no FEMA-like
system in place to set the parameters for long-term financial assistance; thus there is no certainty regarding what can be expected. The success of Kobe’s recovery will hinge to a large degree on the political success the area has in sustaining financial commitments from the central government. Experience has shown that this tends to become increasingly problematic over time as the window of opportunity and interest in the recovering area fades.

For individual small businesses there are more than financial issues. Takashi Yonekura of the Dentsu Corporation (himself a resident of Nishinomiya) said that disputed boundaries arising from ambiguous title and survey data, multiple ownership of residential and small commercial buildings as well as limited government assistance has meant that 20-30 percent of the victims are not in a position to rebuild. In many instances the government is discouraging the reconstruction of small houses, but people cannot afford to build more than what existed before. Financial considerations would be worse but for the high personal savings rate in Japan, which has given many people enough of a financial cushion to recover.

Making a disaster-safe city also runs into predictable opposition in the neighborhoods. Wider streets mean some people must lose their land. People also fear that wider streets will result in cars speeding through their neighborhoods and undermining their daily safety and pedestrian character.

Paradoxically for the goal of disaster resistance, there are no building code standards that apply to the repair of buildings. New construction must meet stringent national code standards, but the decision as to how to repair damage rests with the building owner, architect and engineer. This has the effect of speeding the recovery process in many instances, but leaves open the question of how safe the repaired building will be. On the positive side, architects and engineers in Japan showed a great deal of personal responsibility by working voluntarily following the earthquake to address the structural problems of buildings they had designed, a fact that suggests that safety will be a high priority with them. On the other had, every safety enhancement has a cost, and thus financial pressure will tend to vitiate structural robustness and leave an unevenness of ongoing risk.

And so Kobe marches forward, the interim city beset with the conundrums and challenges of recovery.

Where will the money come from to forge the goals into reality? How will clashing long and short term perspectives play out in land use decisions? What is acceptable risk? How much disaster-resistance will be fundable and politically supportable? Who is in charge? Will a tradition of top-down planning be recast by the post-quake context of a citizenry disillusioned with government performance in disaster and resistant to wholesale makeovers in their neighborhoods? What will be the ongoing evolution of public-private interaction through recovery? Does the business community share the planning goals articulated by the government? Can market forces sustain Kobe City in the interim sufficiently to pursue the transformative vision?

One sustaining image to a westerner observing the ongoing recovery in Kobe is of the immense capacity of the Japanese people to work and work hard. That alone suggests the obstacles will be surmountable and the Kobe recovery could become another confirming anecdote in the American perception of the "Japanese miracle."

Ultimately, the similarities and lessons to be learned now will be shrouded in the fascinating riddle of "cultural context." Surface images can only hint at the underlying complexity. As one veteran observer of Japan told me, "The only way to be certain about anything in Japan is to visit just once."

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Figure 14 - Kobe merchants continue with business not quite as usual as reconstruction takes place around them. Minor problems such as the damaged sidewalks seen here are a low priority for repair.