

“CROSSROAD: Kobe”:  
Development of a gaming-  
type disaster education  
tool

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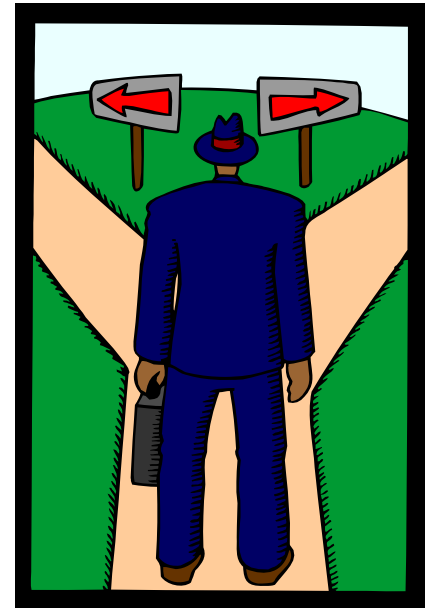
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# Outline

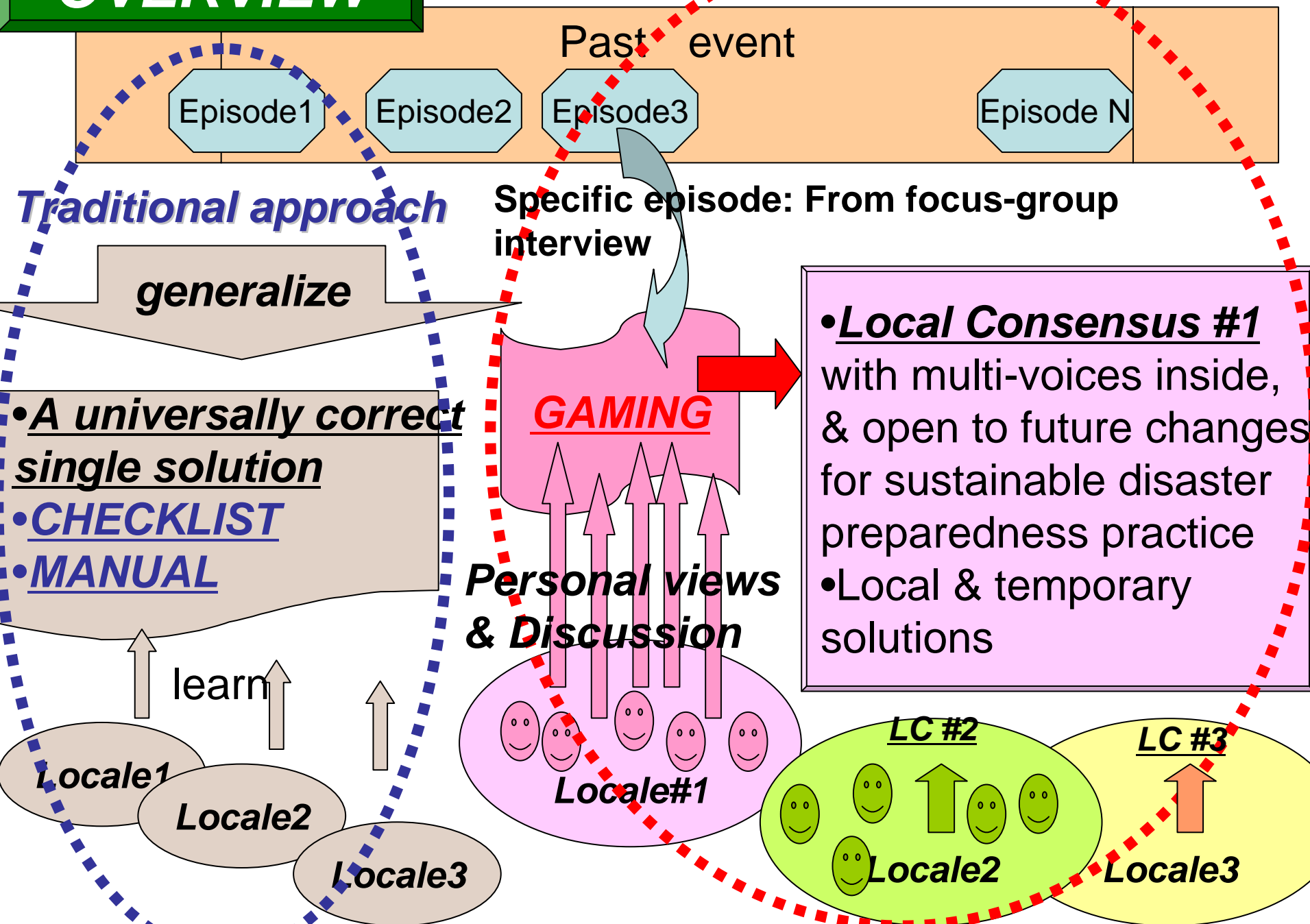
1. OVERVIEW
2. “Crossroad: Kobe”:  
Sample items
3. Background of “Crossroad: Kobe”:  
The 1995 Kobe Earthquake lessons
4. “Crossroad: Kobe”:  
Basic game procedure
5. Application and evaluation
6. Discussion (if time permits):

***Crossroad:  
Which way?***



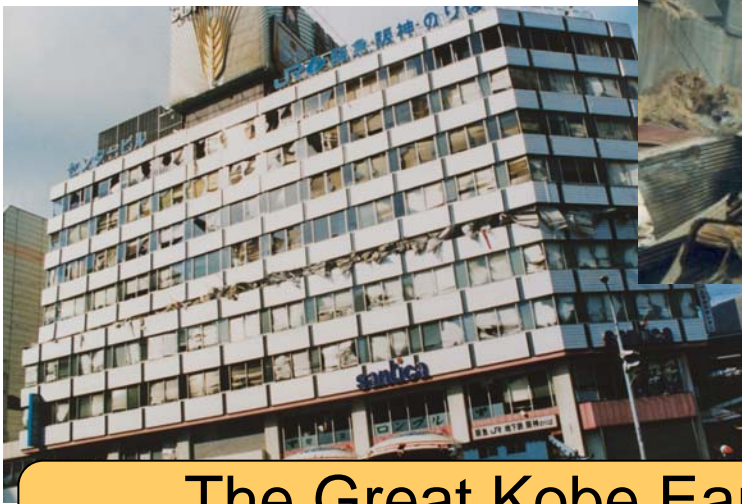
# OVERVIEW

## GAMING approach



## Why gaming?

1. **Choice** --- personal view, decision  
⇒ Active participation
2. **Interaction** --- persuade / persuaded  
⇒ Building consensus  
⇒ Keeping multi-voices
3. **Communication Medium** --- dissemination  
⇒ Active successors: from players to facilitators, and even creators  
⇒ Development of different versions: from Kobe to Tokyo, Kochi, Shizuoka, etc.

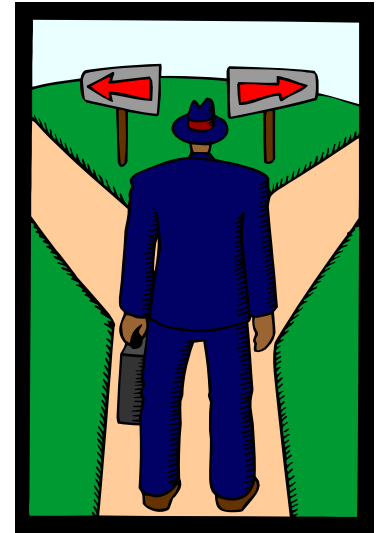


The Great Kobe Earthquake in 1995  
6,400 dead and more than 100,000 injured

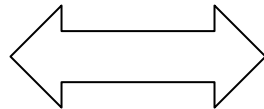
# “Crossroad: Kobe”: Sample Item (1)

---from “Government officers Version”---

- ❑ You are ... city employee who is in charge of temporary housing
- ❑ A month has passed after the earthquake. You have been procuring sites for temporary housing for homeless victims. An additional hundred houses are still necessary. Do you use public schoolyards as sites?



**YES**  
**(to use)**

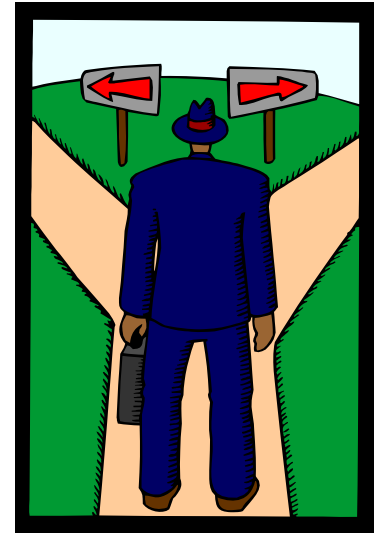


**NO**  
**(not to use)**

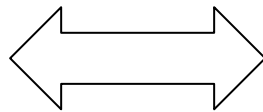
# “Crossroad: Citizens” Sample Item (2)

---from “Residents Version”---

- ❑ You ..... live in a village at the seacoast
- ❑ You know that experts estimate tsunami will hit the village within just 10 minutes after the earthquake. You feel sudden and strong tremor just now. You quickly begin evacuating to a higher elevation, but an elderly woman in the neighborhood comes to mind. She lives alone and you take care of her as a regional community worker. Do you go to see her before you evacuate?



**YES**  
**(To go)**



**NO**  
**(Not to go)**

**You Are...**  
City employee

The city hall has almost totally collapsed. However, maps and documents which are necessary for disaster response are in the collapsed office.

Do you dare to enter the office in the area off-limits?

Yes (To enter)

OR

No (Not to enter)

**You Are...**  
Senior  
Administrative Officer

A lot of non-organized volunteers appear at the city hall. But there is no staff for receiving nor organizing them now.

Do you accept them?

Yes (To accept them)

OR

No (Not to accept them)

【Kobe1030】

【Kobe1029】



“Crossroad; Kobe” :  
for active, participatory,  
and collaborative learning



# Opinion summary by using color note pads

疲れた状態で作業しても、能率が上がらないため。

休憩からその後作業をほいほいほうほう効率的。

能率

Yes問題点  
作業の遅延  
遺族の不满  
世論の批判

作業員を増やす。

体調を悪くして、作業員もさらに少なくなってしまう。休憩は必要なことだと思う。

疲れた状態で競って作業に倒れたら、これより状況が悪化するか

作業員の健康・能率

休む方が能率が上がる。作業員の体も大切。

- 遺体の数
- 作業員の数
- 何時間連続働いたのか

あいまい

災害対応の遅れが  
出ないための

代替書類は無いのか。  
どうしたら危険なのか。

日本では有り得ないかな？

地震は起きない！  
強い建物を作る。  
耐震偽装は許せない！

行くのは危険すぎる！  
死んだら意味がない。

命が大事。

書類のために死にたくない。  
書類がなくて死ぬ人が増える  
と思うから。

危険を承知して  
取りに行く必要は  
無いように思う  
人命の方が大切

命の大切さ

どうして大事？

災害対応のための  
書類があることで  
よって多くの人の命を救  
えるかもだから。

## **Background**

- 35 intensive focus group interviews with three to five interviewees in each group.
- 3 hours interview session recorded by digital video with all participants' permission.
- 30 groups consisted of 125 current or former Kobe City officials, who were dedicated emergency response and/or recovery workers following the earthquake.
- 5 groups of 15 Kobe residents who had survived the disaster.
- A common narrative format when the interviewees talk about their experiences.
- Beginning with an initial phase where they described their experiences as a series of dilemmas that posed critical choices between two conflicting alternatives.
- Followed by the second part, stating that they chose one of them with some hesitation or reservation.

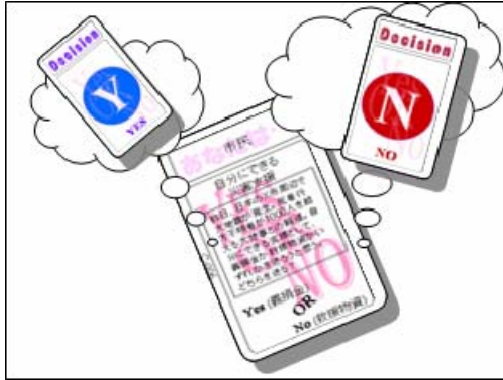
## **Procedure (1/3)**

- The game normally involves five players. If not five, an odd number of players is preferable, since majority-based decisions are needed within each group to get game points.
- The players sit around a table to communicate face-to-face and talk freely in a relaxed setting. Many groups can play simultaneously, as long as the room does not get too noisy.
- The game begins with each player holding exactly the same deck of ten (or, if time permits, twenty) episode cards at hand.
- She or he also has one 'Yes' and one 'No' card. Within a group, any player may be the first to choose to read the first episode card from her/his deck.
- Every episode card has the same format as shown in the sample item.

# Basic procedure of “Crossroad: Kobe”

## Procedure (2/3)

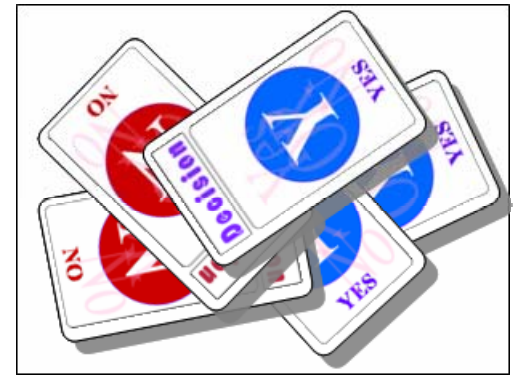
**1 Make your choice**  
— Yes or NO?



**2 Disclose your choice**  
by Yes or No card



**3 Find out group result —**  
Majority or minority?



**4 Get game points**  
based on the results  
--- Majority : 1 normal point  
--- Single Minority: 1 special point

**5 Exchange views ---**  
persuading others and/or  
persuaded by others  
--- Get additional points  
if persuasion successful

**6 Learn basic info**  
and listen to disaster  
veterans' talk  
--- opinion summary  
note

### **Procedure (3/3)**

- Obviously, in “Crossroad: Kobe”, winning the game is not particularly important.
- The real point is to involve the participants more deeply in situations that the people of Kobe actually faced.
- The goal of winning simply helps motivate the players to consider what they should do more deeply - how to rationalize their own choices, and how they might persuade others to change their minds.
- It is also significant that this interactive process encourages players to create their own views & opinions rather than just passively listen to others.

# 高齢者や障害者 災害時どう支援

## 呉で施設職員ら研修

芸予地震から五年を迎えるのを前に、呉市内の社会福祉施設職員や民生児童委員ら約百五十人が二十六日、呉市総合体育館で研修会を開き、高齢者や障害者ら要援護者の災害時の支援について理解を深めた。

呉市社会福祉協議会などの主催。参加者は同協議会職員の協力で、京都大防災研究所が開発した災害時の対応をシミュレーションするカードゲーム「クロスロード」を五人ずつのグループで体験した。



災害時対応研修会  
災害時の対応をシミュレーションするカードゲーム「クロスロード」を体験し、要援護者の災害時支援について理解を深めた。

障害者の家族の立場で、大地震から二十四時間、半壊の自宅より避難所の方が安全だが、多くの中でうまくやれるか心配。避難所に行く？」などの問いに賛否を答え、意見を話し合った。

一昨年、甚大な台風被害を受けた広島小坪地区など

蘭玉

員阪井和  
「住民への  
えたい。  
持ち帰り、  
い」と話



を体験し、要援護者の災害時支援について理解を深めた。

# Opinion summary (sample)

## ◆YES (to use schoolyard)

- Necessary to have new cites closer to original places
- Good to continue to live in established human network and familiar environment
- Lifeline facilities are available at school
- Mentally supported by living with kids in schools
- Only IF part of the yard is still open to school activities
- Only IF due period is clear, e.g., a half year.

## ◆NO (not to use)

- Reopening and normalization of school education is a priority
- Concerns about noise, dust, and heavy car traffic by cite construction
- Free open space is necessary for further emergent evacuation, material yard, and heliport
- Concern about security and hygiene issues
- Concern that residents' strong demand to stay longer might evoke another big trouble



Video Clip (sample):  
Please listen to  
Kobe disaster  
veteran

I understood victims' strong demand to move into a temporary housing as quickly as possible. But, we had very scarce open space, especially in the center of the city, though as many as over 50 thousand people need houses. That's why we chose a large but remote cite at the city suburb, while I recognized that it was tough to adjust to unfamiliar environment for people who had to move away from the place where they had lived for a long time. This was particularly the case for the elderly whose daily lives depended heavily on a preexisting interpersonal relationship and social network there. Thus, although we, as frontline workers, really wanted to use schoolyards, the mayor made a final decision not to use the schoolyards, partly because school reopening was also a pressing task, and partly because he had a major concern that temporary housing might become permanent by a strong appeal from the temporary house residents even after an official time limit (i.e. two years).



Victims' everyday lives and school education living together



Graduation ceremony and  
emergency shelter living together



A large scale temporary housing unit sites at the suburb of Kobe City: Good for early procurement of housing, especially for the homeless elderly, while evoking some critical problems, such as so called “a lonely death,” caused by unnatural living conditions, most of the households in the area are occupied by the seniors who had moved from many different areas. It was very tough for some of the residents to rebuild a new human relationship.

## Application and evaluation (1/5)

- Nationwide use, from disaster training for government officers to voluntary disaster drills planned by local people, as well as for disaster education at children's schools.
- More than 7000 copies published
- more than 200 gaming sessions involving more than 10,000 participants.



### 避難所に3万人食糧は2万食

## あなたなら配る？

### 震災教訓 カード教材

「避難所に3万人、確保できた食糧は2万食。まず、2万食を配る？」。5年間の阪神大震災の際、神戸市職員が難しい判断を迫られた状況を、京都大学防災研究所巨大災害研究センターの矢守克彦助教授がカード教材を作った。写真

#### 京大助教授が作製

「自治体職員の思考トレーニングに活用してほしい」という。教材名は「クロスロード」。これまで神戸市職員らに「被災後に体験したシミュレーション」について聞き、約70の事例をダウンロードのカードにした。最終的には100人のインタビュー

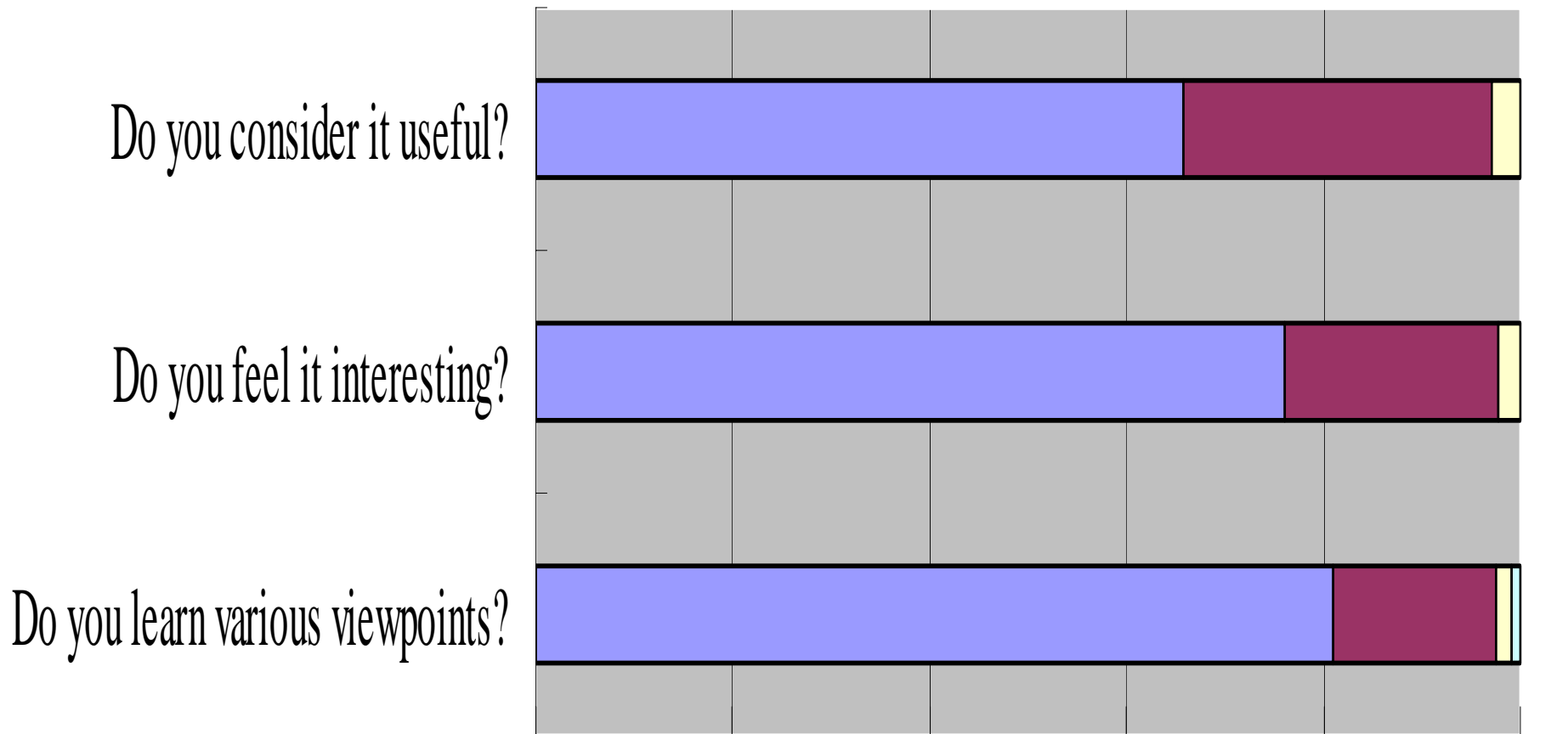
### 「自治体職員 思考訓練を」

「被災後5時間で5000人の被災者が庁舎内に避難。だが市役所は指定避難所ではない。追い出す？ 追い出さない？」。「仮設住宅建設用地が100棟分、不足。公立学校の運動場を使う？ 使わない？」。どれも切実な内容で、絶対的な正解はない。例えば、神戸市役所は数週間わたり避難所になった。同市立学校では運動場を仮設住宅用地にしなかったが、その分、校舎内の避難所の解消は遅れた。

カード作りの文部科学省の「大都市大震災軽減化プロジェクト」の一環。矢守助教授は「神戸市職員が今も『逆らぬ強要がとれたのでは』という悩みを残していることが聞き取りからわかった。その行儀を共有することが、今後の災害での行政職員の判断に生きるだろうと期待する」。

## *Application and evaluation (2/5)*

- Some quantitative data
- Kikkawa & Yamori (2004): the game's effectiveness in an experimental setting with a pre-post design
- participants' opinions toward ten dilemma situations written on the episode cards became more varied after playing a game, rather than polarized into either Yes or No solutions.
- game broadens players' perspectives and pushes them to account for a larger number of factors when considering disaster preparedness and responses.



0%

20%

40%

60%

80%

100%

**Application and  
evaluation (3/5)**

■ Yes
 ■ Relatively Yes
 ■ Relatively No
 ■ No

## **Application and evaluation (4/5)**

- many requests to apply the same method to other region-specific problems and also to different social issues.
- different versions, based on the “Crossroad: Kobe” prototype, for such topics as: typhoon and tsunami disaster reduction in Kochi Prefecture, southern Japan; oil pollution disaster reduction for the Japanese Coast Guard; school security measures; and infectious disease control.
- All of these new versions of “Crossroad” were created through joint efforts between the author and those who first played “Crossroad: Kobe” and noticed its broad applicability.

## **Application and evaluation (5/5)**

- ability to transform initially passive users into more active collaborators.
- some disaster management workers at Kochi Prefecture have become so familiar with “Crossroad: Kobe” that they can facilitate the gaming, although they began as ordinary users.
- Now, they are even teaching facilitation skills to lower level officials in municipal government as well as disaster response leaders in local communities.

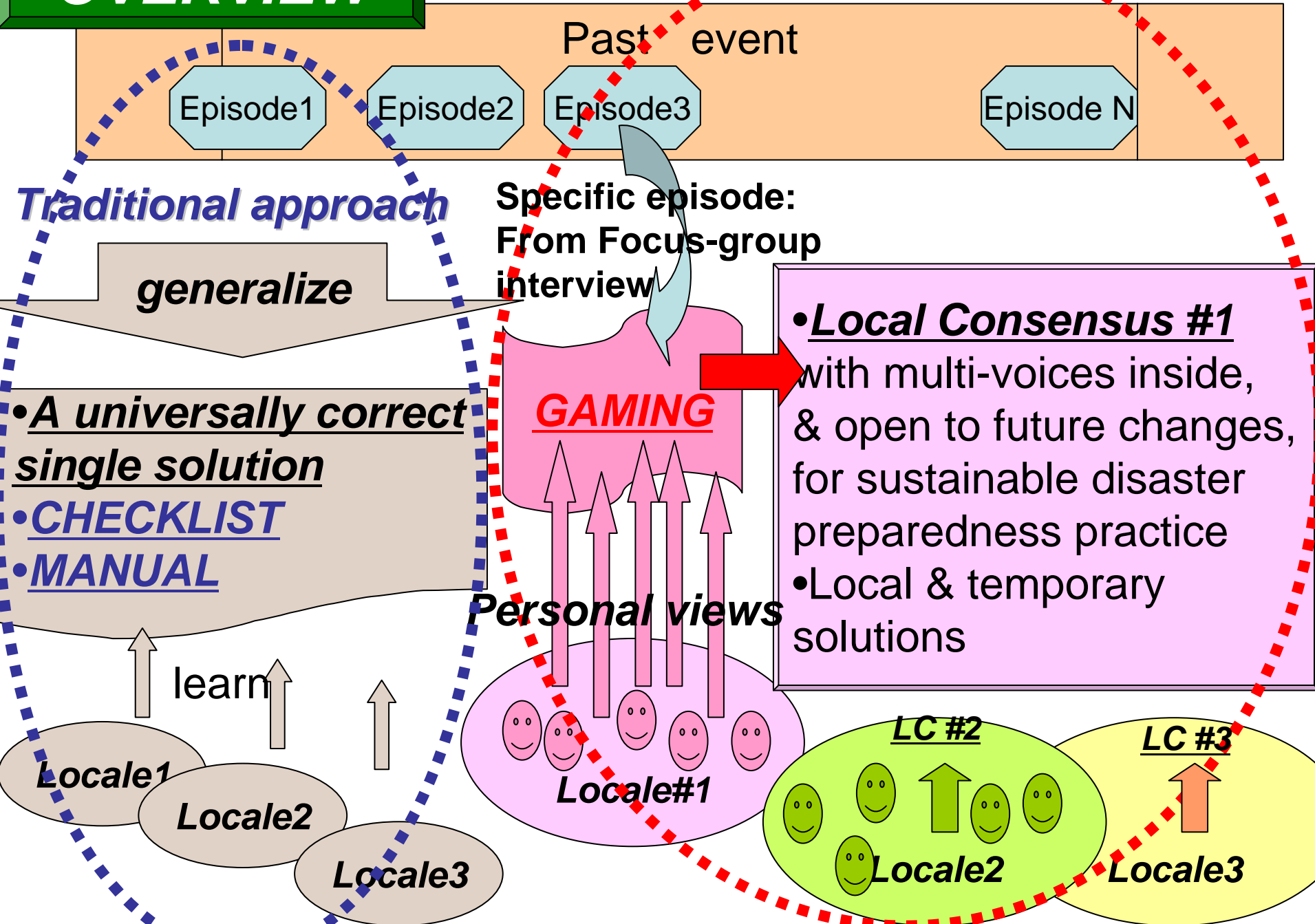
## Why gaming?

1. **Choice** --- personal view, decision  
⇒ Active participation
2. **Interaction** --- persuade / persuaded  
⇒ Building consensus  
⇒ Keeping multi-voices
3. **Communication Medium** --- dissemination  
⇒ Active successors: from players to facilitators, and even creators  
⇒ Development of different versions: from Kobe to Tokyo, Kochi, Shizuoka, etc.

Thank you very much

# OVERVIEW

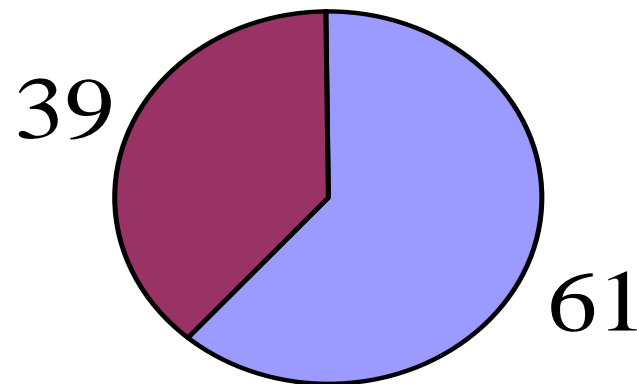
## GAMING approach



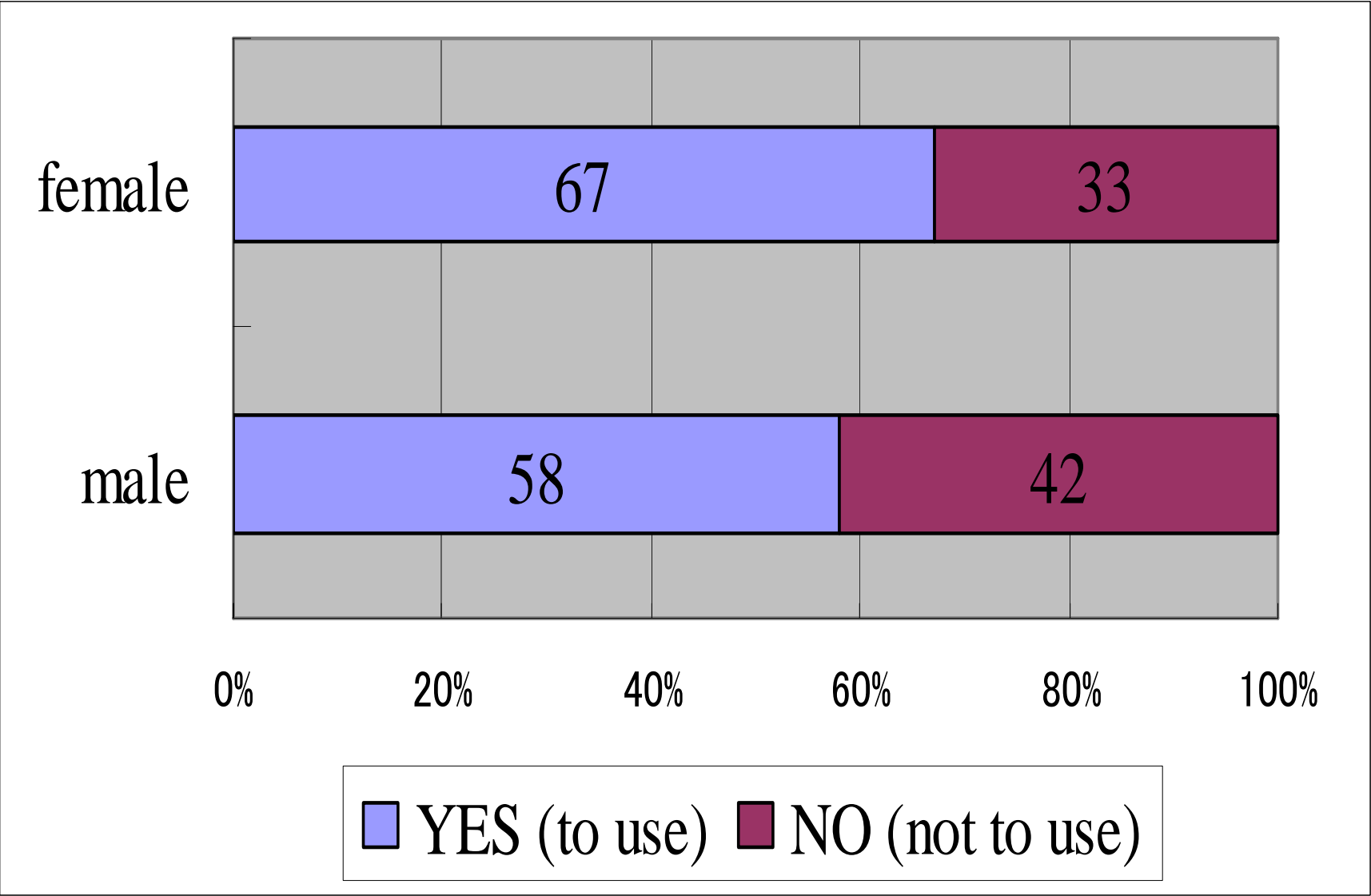


# Questionnaire Version of “Crossroad: Kobe”

Preliminary data collection & analyses are going on for questionnaire version of “Crossroad: Kobe” with n=250. The survey includes 30 selected items from “Crossroad” and some other demographic items.



■ YES (to use)  
■ NO (not to use)



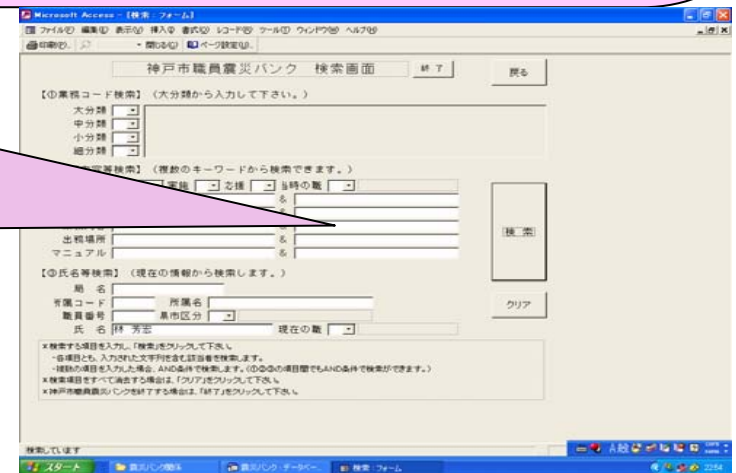


■ YES (to use) ■ NO (not to use)

## Background (1/6)

Preliminary to creating “Crossroad: Kobe”, we conducted 35 intensive focus group interviews with three to five interviewees in each group. Each interview lasted about three hours and was recorded by digital video with all participants’ permission. Interview groups were divided into two types: 30 groups consisted of 125 current or former Kobe City officials, who were dedicated emergency response and/or recovery workers following the earthquake. The rest were comprised of 5 groups of 15 Kobe residents who had survived the disaster.

A source of interviewees:  
A database of Kobe City  
employees who experienced  
disaster management at the  
Great Hanshin Earthquake



## **Background (2/6)**

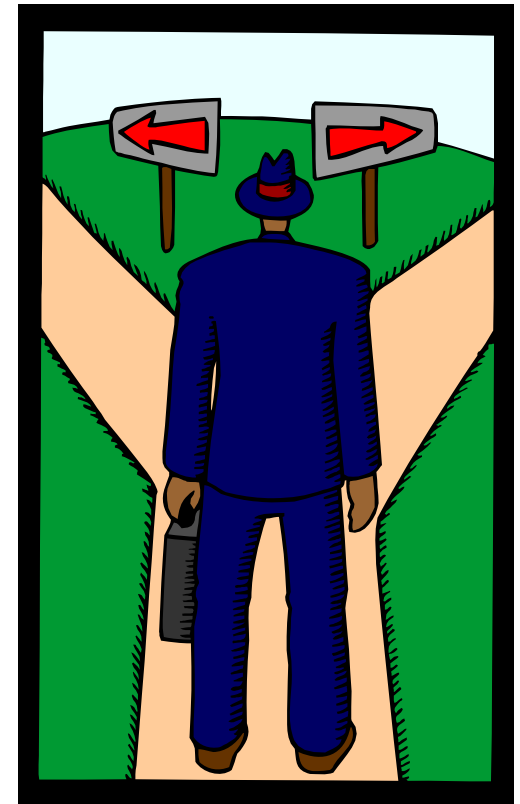
Interviewees were encouraged to talk freely and frankly about what they experienced, although each of the city workers' interview sessions focused on a single, main topic such as: search and rescue operations, emergency food supplies, temporary house construction, mental care for victims, life-line facilities reconstruction, and town reconstruction planning, etc. Groups of survivors spoke of family losses, physical and economic damages, and the disaster's aftermath (see Yamori (2005) for details). As a result, we obtained about 120 hours of DV recordings and more than 5000 pages of transcribed text in A4 format.



Digital video tapes  
& Transcriptions

## Background (3/6)

During our analysis of the text, we discovered a common format that people used to narrate their own experiences of surviving the earthquake and its aftermath, either as local government workers or as disaster victims. The format begins with an initial phase where they described their experiences as a series of dilemmas that posed critical choices between two conflicting alternatives. Then secondly, they stated that they chose one of them with some hesitation or reservation. A typical narration is as follows,



## **Background (4/6)**

*“Finally, we decided not to build temporary housing in schoolyards in the damaged areas, but to construct them on tracts of vacant land in unaffected areas owned by Kobe City, regardless of the relocated victims’ original neighborhood. We were criticized severely for this decision, by both survivors and mass media. They claimed that the relocation sites were so remote from the victims’ original residences that it was difficult for them to reconstruct their lives. They lost their socio-economic ties with their old neighborhoods, including relationships with close friends, relatives, and even their workplaces. Some insisted that our relocation of local people further weakened an already severely damaged community. (continue)*

## **Background (5/6)**

*I don't wish to deny such claims. I understand their views to some extent. But please think about school education, for example. It is also true that many citizens urged us to re-open the schools, as soon as possible. However, current laws would have permitted temporary housing to remain in place for up to two years. Personally, I was afraid that some of the evacuees would not be pleased to relocate again, once they had settled comfortably in a new house in a schoolyard. That's why I agreed with the idea of not using schoolyards for temporary housing sites, despite knowing that I might be criticized for that."*

## **Background (6/6)**

We then turned such narratives into short episodes, as shown in a sample item, to facilitate their use in an interactive game. Each episode consisted of three parts: the first part depicted the particular role to be played while facing the dilemma, the second was the main body, which described the dilemma, while the third part focused on the 'Yes' and 'No' decisions. The sample item is from the 20 episodes in the gaming kit.

【Kobe1026】

You are transferring patients to other hospitals. A TV cameraman is taking pictures of them. You can not endure the picture-taking.

Do you allow the pictures?

Yes (To allow them)

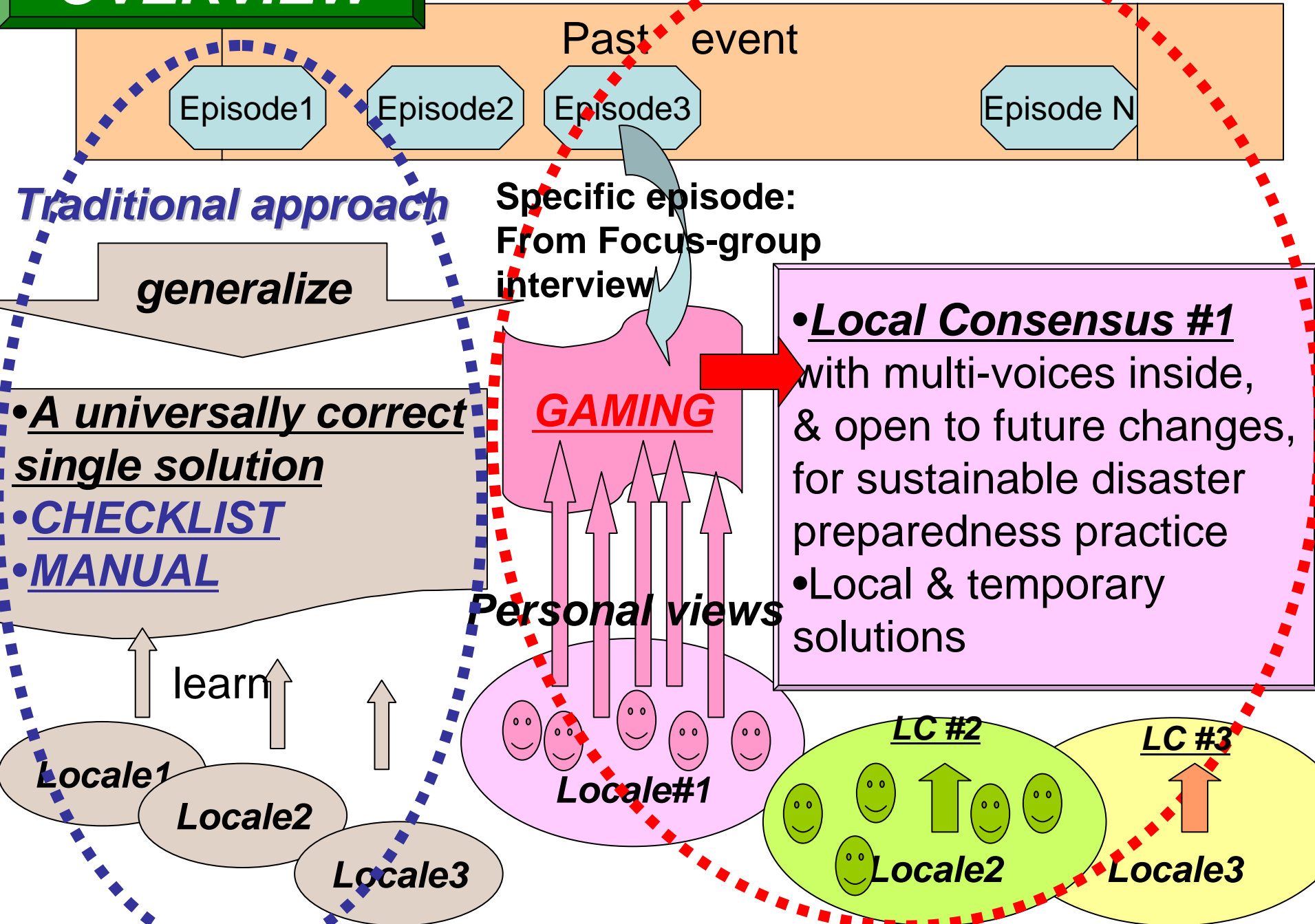
OR

No (To stop them)

Another sample item

# OVERVIEW

## GAMING approach



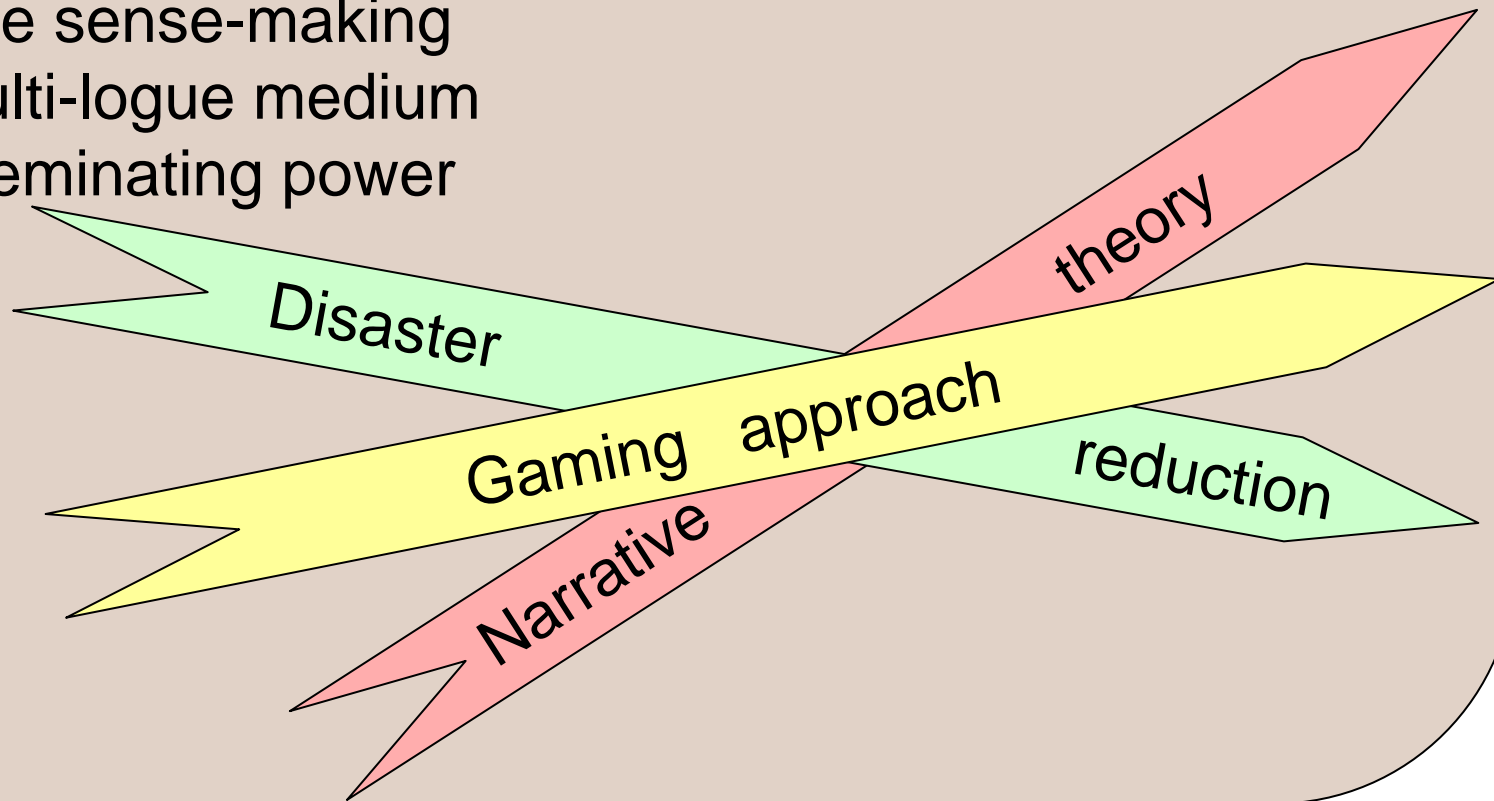
## **Discussion**

To extend our metaphor, “Crossroad: Kobe” was born at the crossroads between three different domains: narrative theory, gaming approach, and disaster reduction practice. When I view the tool from these three angles, three notable features come to mind, which I will discuss these points to close this presentation.

3.1 Active sense-making

3.2 A multi-logue medium

3.3 Disseminating power



### **3.1 Active sense-making (1/4)**

First, I would stress that “Crossroad: Kobe” induces participants’ active “sense-making” (Weick, 1995). The game looks like just “decision-making” support material, since it deals with either-or situations. However, it is actually more than that. It is important to note that the game procedure requires a group discussion period after all the individual decisions are disclosed, while allowing only a very short time period, usually less than one minute, for the initial decisions.

### **3.1 Active sense-making (2/4)**

Thus, the game's emphasis is not on better decision-making, but on encouraging participants to make sense of their decisions via narration, no matter whether they choose "Yes" or "No." Thus, pre-analysis of the conditions for better decision-making is not a priority. Post-narration of the decision is the major focus. Active sense-making of a personal decision, especially in the form of narratives directed to other participants, makes people consider situations more fully.

### **3.1 Active sense-making (3/4)**

It is also significant that the episode cards leave many details unspecified. For example, in the sample episode, how much damage has occurred? How many people are evacuating? Which season are we in? Are aftershocks possible, etc.? --- All of these issues remain open. The decision to provide few specifics required considerable deliberation, but was taken to leave the door open for game players to assess their situations freely and actively. If details had been supplied, as with most conventional disaster education tools, learners would have a much easier time making decisions. However, they would remain in a passive information processing mode without having to dig deeper for relevant information on their own. It is better to have learners make sense of deliberately ambiguous situations by personally adding their own details.

### 3.1 Active sense-making (4/4)

This feature of “Crossroad: Kobe” also may be regarded as an extension of what Bruner points out, regarding the general nature of a narrative text. He stated:

*It is this “relative indeterminacy of a text” that “allows a spectrum of actualizations.” And so, “literary texts initiate ‘performances’ of meaning rather than actually formulating meanings themselves.” (Bruner, 1986,p.25)*

Gaming accelerates a narrative’s power of “performance of meaning.” Narratives help players make sense of and deal with a series of difficult events and choices, which they might indeed face in a future disaster.

### **3.2 A multi-logue medium (1/4)**

The second notable aspect of “Crossroad: Kobe” is its ability to encompass multiple meanings. The game not only elicits personal and unique narratives from each of the participants, it also serves as a medium in which these, sometimes competing and conflicting personal narratives, live together. The personal narratives evoked by this game result from differences in sense-making involving difficult circumstances. On the other hand, a group consensus sometimes emerges with a single interpretation of the situation and agreement on a particular solution, which accompanies a new and unified group narrative.

### **3.2 A multi-logue medium (2/4)**

Such consensus is preferred for practical problem-solving. However, in “Crossroad: Kobe” this is not a must, since a core feature of gaming lies in the capacity to realize a “multi-logue” (Duke, 1974). When viewed as a communication medium, gaming shows more potential to admit different perspectives on the problem at hand than do other types of media, such as mathematical language or computer simulation models. In this regard, “Crossroad: Kobe” never forces players to conform to a uniform solution; rather, it encourages them to face and respect diverse opinions. Such a direction is explicit in the special (golden Zabuton) points to encourage minority opinions.

### **3.2 A multi-logue medium (3/4)**

This aspect of gaming reaches the very heart of the narrative approach when compared with a logico-scientific approach. Bruner defined the “multi perspective” of narratives as:

*beholding the world not univocally but simultaneously through a set of prisms, each of which catches some part of it (Bruner, 1986, p.26)*

### **3.2 A multi-logue medium (4/4)**

It is clear that Bruner's idea of "multi-perspective" stands parallel to Duke's, one of the gaming experts, concept of "multi-logue." Multi-narratives, reflecting multi-sense making by multi-participants with multi-perspectives, all coexist within "Crossroad: Kobe," sometimes with some amount of contradiction and conflict. However, the heterogeneity, preserved as a multi-logue within this game, retains the potential for finding a new solution in the future. This contrasts sharply with conventional disaster education tools, such as response manuals and action flowcharts, which assume univocal solutions, i.e., a single, correct way to deal with a disaster.

### **3.3 Disseminating power (1/3)**

The final advantage of “Crossroad: Kobe” is its disseminating power. In application section, I noted the following two facts to verify this point: the development of different versions of “Crossroad: Kobe,” and the appearance of active successors. This is partly because “Crossroad: Kobe” is quite simple, both in its gaming procedure and the format of its narrative content, and partly because it is open to personal, positional, and regional modifications. Thus, those who once used it as players can easily assume the role of game creator or facilitator next time. Those who were once learners can turn promptly into coaches.

### **3.3 Disseminating power (2/3)**

This characteristic of “Crossroad: Kobe” is all the more important in planning for prospectively long term disaster events, those with recurrence periods exceeding 100 years, such as major earthquakes and volcanic eruptions. For such disasters, since the next one may not occur during our lifetimes, building a community-based learning system is more significant than simply developing the knowledge and skills of individuals. Conducting temporary, short-term, and unidirectional learning is insufficient, while creating a participative and lasting “community of practice” (Lave and Wenger, 1991) becomes vital.

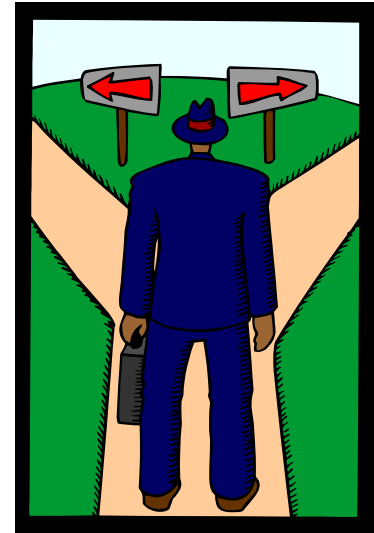
### **3.3 Disseminating power (3/3)**

Here, this gaming strong point synchronizes again with the narrative approach. Narrative communities, with an appreciative audience (Winslade & Monk, 1999) created by “Crossroad: Kobe,” can serve as key living media through which collaborative learning for disaster mitigation may transfer to the next generation. Kobe narratives, transformed into “Crossroad: Kobe,” not only preserve the lessons from the Kobe Earthquake, but also exert powerful “generativity” (McAdams & Aubin, 1998) to create new narratives to counter the next major disaster that may occur far away during a different era.

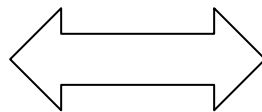
Thank you very much

# “Crossroad: Citizens” Sample Item

- ❑ You ..... live in a village at the seacoast
- ❑ You know that experts estimate tsunami will hit the village within just 10 minutes after the earthquake. You feel sudden and strong tremor just now. You quickly begin evacuating to a higher elevation, but an elderly woman in the neighborhood comes to mind. She lives alone and you take care of her as a regional community worker. Do you go to see her before you evacuate?



**YES**  
**(To go)**

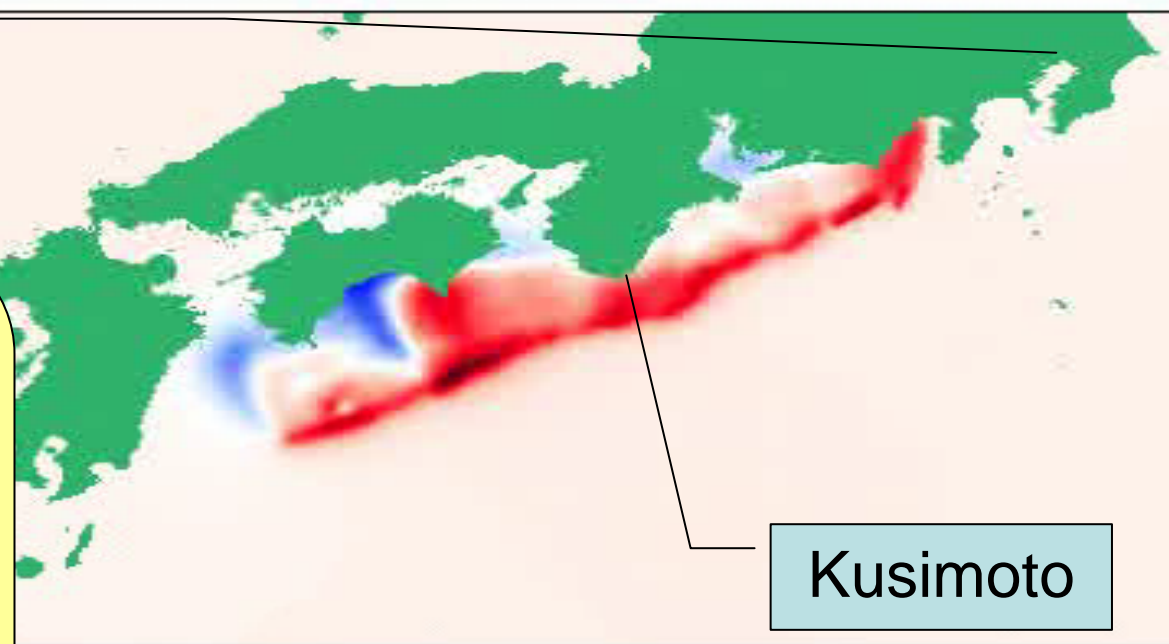


**NO**  
**(Not to go)**

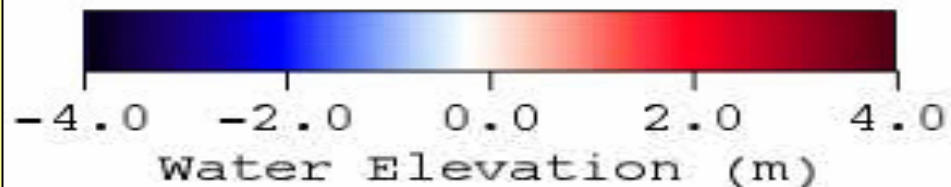
# Tsunami estimation by prospective earthquake

Tokyo

It is estimated that Japan will be hit by a huge trough-type earthquake, like what caused Indian Ocean Tsunami, near future. Some cities & towns, such as Kushimoto, might be hit by tsunami within just 10 minutes just like the Crossroad item.

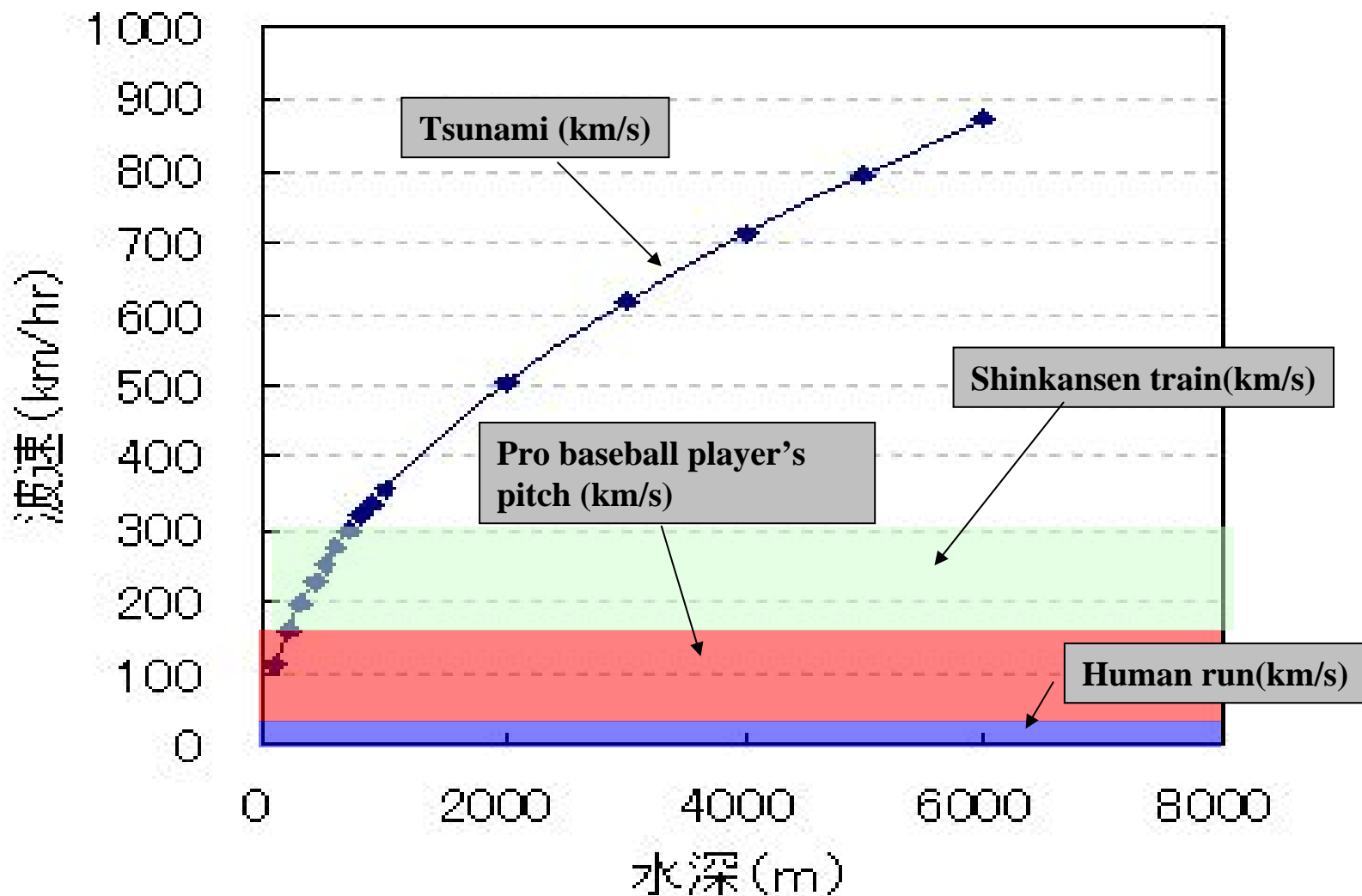


0:00:00



Copyright: Disaster Prevention  
Research Institute, Kyoto Univ.

# Relationship between tsunami velocity & sea depth



# Tsunami wave going up the river...



Tsunami wave caused by the Tokachi-oki earthquake in 2003 went inland up to 11 kilometers from the mouth of the river

# CrossNote

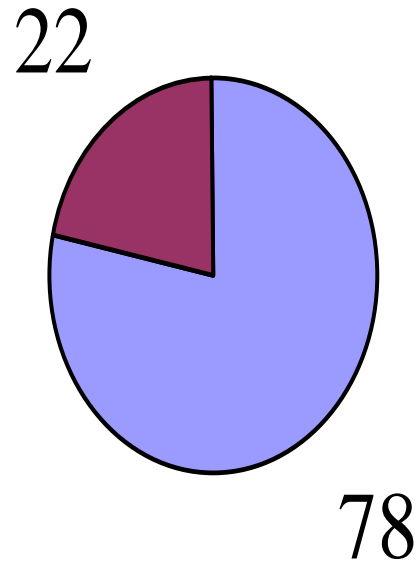
## ◆YES (to go)

- Following my conscience
- Hard to leave her considering everyday friendship
- Quite natural to help each other by neighbors
- Only IF her house is located on the way
- Only IF she is surely at home now

## ◆NO (not to go)

- In case of tsunami evacuation, securing one's own life is a priority
- I wish I could but 10 minutes is not just enough to take care of others
- Better to leave the woman to people living next door neighbors
- The woman might not be at home
- Difficult to take her if the woman's house collapsed

# Questionnaire Version of “Crossroad: Kobe”



■ YES (to go) ■ NO (not to go)

female

87

13

male

71

29

0%

20%

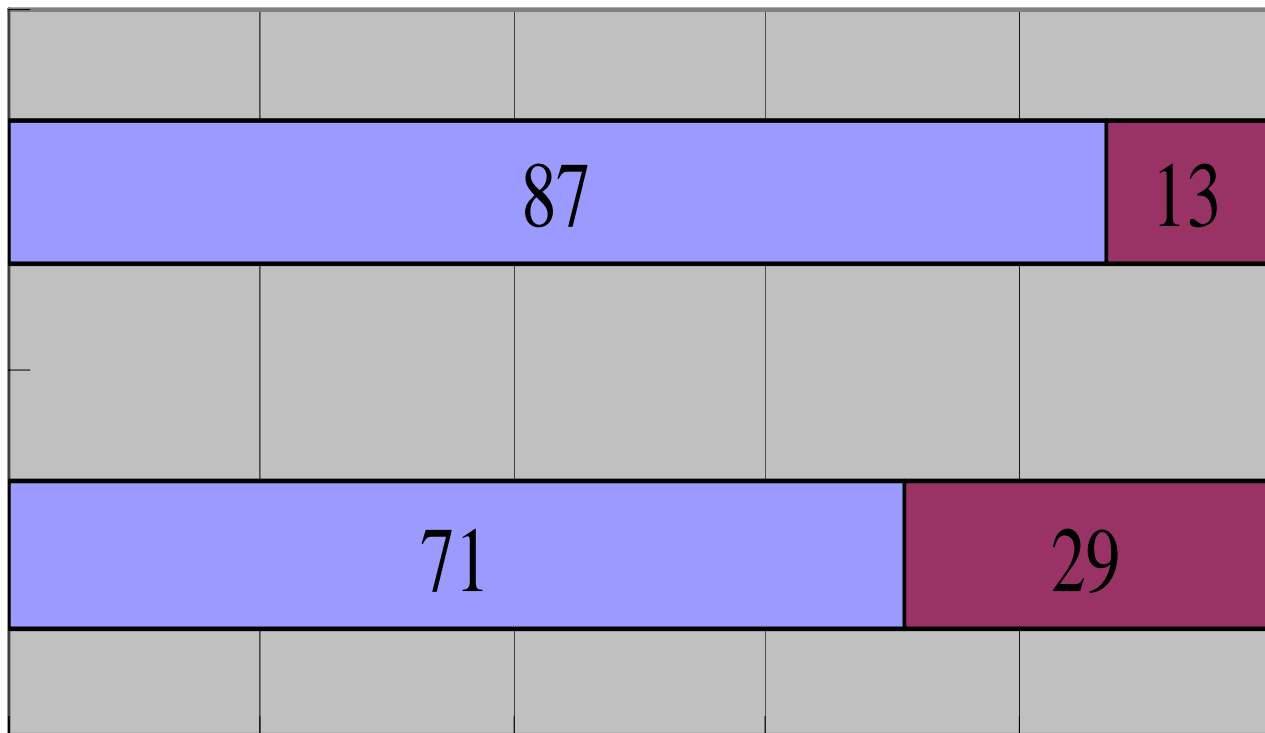
40%

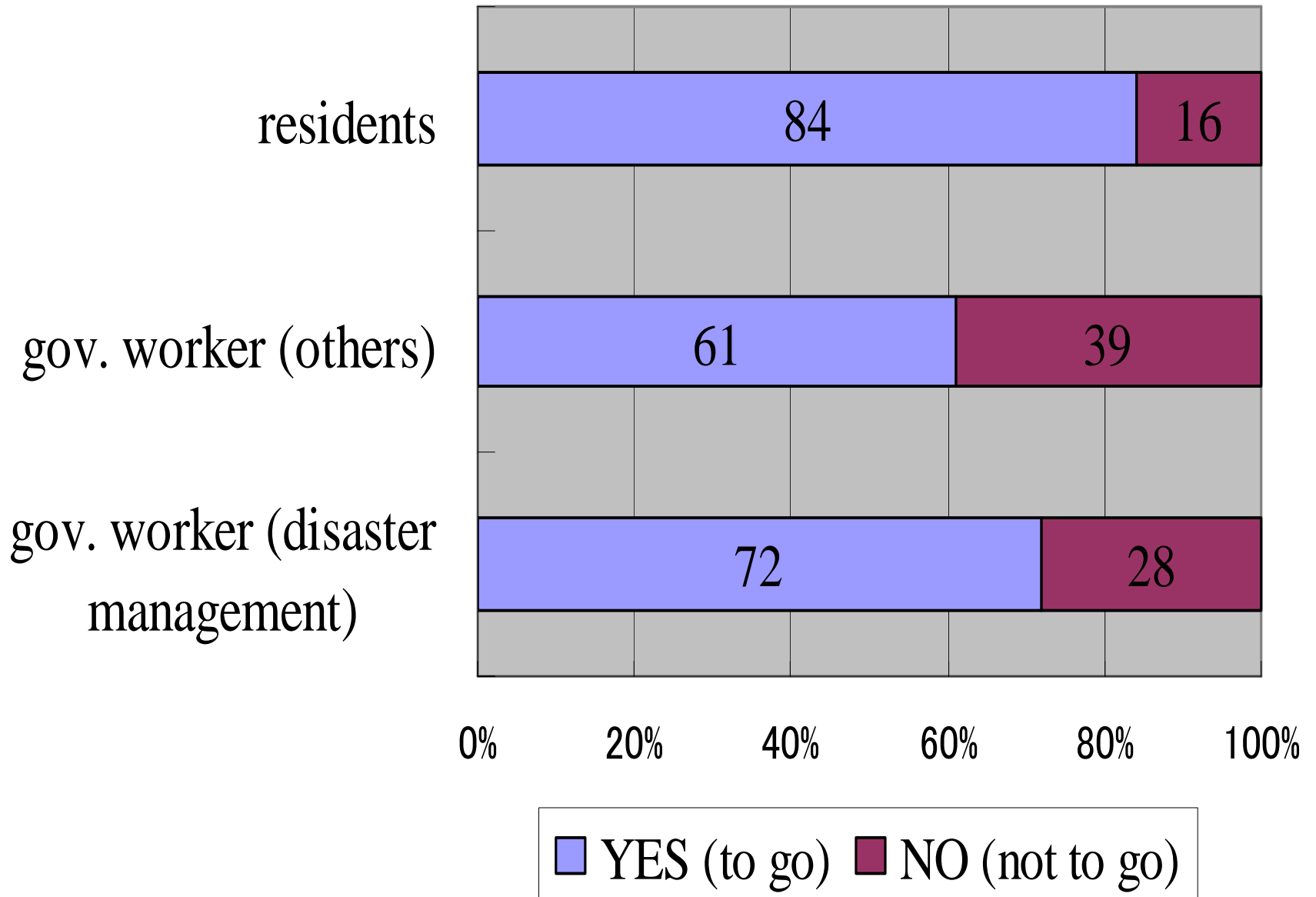
60%

80%

100%

■ YES (to go) ■ NO (not to go)





## “Toward better solution” (from Crossroad guidebook)

●It is really a tough question to answer. It is a fundamental principle that a quick evacuation without waiting for further information is a No.1 priority when you feel earthquake near the seacoast.

●But, data suggest people are unlikely to make quick evacuation. In the case of the 2004 earthquake at the off shore of the Kii Peninsula, although more than 140 thousand are encouraged to evacuate by the local government, only 6% of them did so.

●We need to help each other to evacuate within a community, if time permits, especially those who have difficulty in moving, such as babies, elderly, and handicapped, need special help,

●For a quick action, it is necessary to know in advance who needs help, where they live, and who can help them.

- We also need to know basic knowledge: How big tsunami is expected? How much time we have before tsunami comes? Where and by what route should we evacuate?
- How do you cope with a different conditions, for example, if you have 60 minutes before tsunami comes.
- What can you do to make this dilemmatic choice less serious by preparedness measures? --- To share everyday routine is one thing, while to know (mobile) telephone number is another. Both are useful to know whether or not the woman is at home, It is also good to help her to make the house quake-proof to avoid the bad situation that she is trapped under the collapsed house before tsunami comes.
- Aid materials should be prepared in the community, such as a bug shovel, a portable jack, and a cart.



## “Narrative” vs. “Logico-scientific” or “paradigmatic” modes of thought

The “narrative mode of thought,” proposed by J. S. Bruner (1986), has galvanized research in many fields, from developmental and clinical psychology to sociology, social welfare, management, and even medical science. The narrative mode stands in sharp contrast to “Logico-scientific or paradigmatic modes of thought” and, though their objectives vary widely, sets of research studies in each of the above fields now display some common features based on the narrative approach. Their cumulative impact supports the claim that a fundamental epistemological and methodological shift, called “narrative turn,” has occurred almost simultaneously across multiple research domains.

## 1.1 From disaster prevention to disaster preparedness

Disaster damage reduction is yet another research area that stands to gain considerably from this “narrative turn.” We see two major drivers for such potential. First, efforts toward disaster reduction may shift the principal concern from disaster prevention or mitigation models, led exclusively by disaster experts, to a more inclusive approach to disaster preparedness or disaster response that involves many more stakeholders, such as local citizens, local government staff, and volunteer aid workers. The former model approached disaster reduction largely as a battle between selected authorities and Mother Nature’s destructive power. The “logico- scientific or paradigmatic mode of thought” fits well with such a model, one that expects disaster experts to describe, predict, and control natural phenomena, while ordinary people are taught to simply follow protocols designed by the “experts.”

However, such a paradigmatic, top-down approach may now be less than optimal, particularly for developed nations. One reason is that, as more hardware-based counter-measures are deployed to mitigate the more common hazards, the marginal utility of those measures tends to diminish. It then becomes more critical to minimize the remaining risks and to deal with differing views on their reduction by implementing location-specific, uniquely regional and culture-bound measures. Thus, at this stage, disaster damage reduction should focus much more on personal, positional, regional, and cultural differences than on universal features common to all locales. Contemporary approaches to disaster reduction need to become more concerned with human-to-human relations, such as conflict resolution and consensus building among people, rather than human-to-nature relations. Disaster reduction also needs more active participation by the various stakeholders than in the past.

The “narrative mode” is more suitable for these purposes than the “logico-scientific mode” that has dominated this field thus far. In a modern “individualized” society (Beck, 1986), we are all required to create our own life stories as well as play the leading role. Life stories or narratives are defined in the form of statements by which we order and make sense of a series of events, with a special emphasis on specific details and unique experiences. This contrasts sharply with “theories” produced by logico-scientific or paradigmatic modes of thought, by which we may strive to accomplish the same ends, but with a special interest in identifying general mechanisms or universal laws. Though worthwhile, the latter emphasis tends to devalue significant local factors and variations, often retained only through individual experience.

Thus, what we need now is to help local people produce their own disaster reduction-related narratives, by which they can organize their own ways to survive and manage disasters. Such narratives may not be as universally applicable as theories, but they may be more useful when viewed in terms of personal, positional, and regional specificities. For disaster reduction within a specific location at a specific point of time, the narrative mode might help us much more than theory.

Yet, a blindly bottom-up approach would also be ineffective. It is not sufficient just to generate personal disaster reduction narratives, without any effort to compare, reach compromises, and combine potentially conflicting narratives. We also need narrative-related tools, devices, and procedures that will allow us to blend competing narratives skillfully into a new, common, base narrative, and to promote collaborative practices led by a base narrative. The process of collaboration should include not only disaster experts, but also local residents, local government officials, and volunteer aid workers.

This is one of the main reasons I introduced gaming activity to this study and combined it with a conventional narrative approach. As Duke (1974) stressed, gaming is a very effective context for realizing what he refers to as “multi-logues.” That is, a variety of narrative interactions, such as persuasion and negotiation, occur quite naturally among game players. Thus, a game setting affords the opportunity to air multiple narratives among participants. We will return to the significance of gaming activity later in the discussion section.

## 1.2 Generativity

The second reason that disaster reduction calls for the development of a narrative approach is that natural disasters tend to be localized in space and time. They only impact limited sectors of our global society immediately and directly, no matter how overwhelming the disaster might be. Thus, most people outside a disaster-stricken area remain largely unaffected and devoid of experience. Moreover, disasters are, almost by definition, rare events, even if they occasionally recur. This is especially true of major catastrophes, such as earthquakes, tsunamis, and volcanic eruptions. The recurrence time for such major natural events is typically longer than an individual life span, sometimes exceeding 100 or even 1000 years. Thus, most of us will live out our lives without ever dealing with such events directly.

However, this means that we need effective ways to retain and impart the lessons learned from disasters over wide expanses of time and space. The valuable life lessons learned by those who have experienced disasters directly may not span the long periods of stability between catastrophes, if we lack effective means and media by which to convey and relate those lessons beyond their original domain and to the next generation. When social and cultural backgrounds differ widely between where the lessons were learned and different locales where such lessons may still apply, theories are sometimes less effective than narratives. Moreover, when it is necessary to rethink and add new ideas to these lessons, narratives are more powerful than theories, since they are more adaptable across time and space. In other words, narratives are promising and effective means by which we can guarantee what McAdams & Aubin (1998) call the “generativity” of disaster lessons.

This is one reason that I claim that a gaming approach can be combined productively with the narrative mode. Gaming is characterized by Duke (1974) as “future’s language.” Game players can co-construct their future reality by co-narrating it. As I mentioned earlier, gaming interactions lead participants to engage naturally in narrative activities, in the form of persuasions and negotiations, in order to pursue a better future. Thus, participants can not only exchange narratives that view the past and analyze the present, but that also plan for and construct the future. In other words, a game setting promotes the generative as well as descriptive functions of narrative. We will return to this point again when we discuss “Crossroad: Kobe,” a disaster reduction game.