

(page.16-17)

**An Expanding Field, an Evolving Method  
– Design for Our U.S. Projects –**

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In February, 1984 – my fifth year as a Kinki Sharyo employee – I crossed the Pacific Ocean for the first time in my life, and arrived at the JFK Airport in New York. In my first presentation in the U.S. in connection with our Boston project, I faltered and faltered due to my poor command of English, but managed to finish it. In more than 20 years since then, I was involved in design work for five more U.S. projects – Dallas, New Jersey, Santa Clara, Phoenix and Seattle. Each of these projects is memorable for me.

Aside from episodes about individual projects, I experienced a really great change in work circumstances in these years – from hand drawing to CAD, to material preparation with 3DCAD. Also, the scope of design work has expanded greatly regarding its contents. Formerly, objects of design comprised only aesthetic ones; that is, drawings and models, and nothing else. Recently, however, the scope of design has expanded to include so-called soft engineering – e.g. review of the functions of cab and other parts, and work using mock-ups.

Design Suited to a City

In designing LRVs, it is essential to harmonize vehicles with the scenery of surrounding areas, so that they become an icon representing the image of a city. Our 6 LRVs have images totally different from project to project, to suit each city they are designed for. In some projects (Boston, Dallas and Phoenix), the customer gave us some hints at a desirable image prior to design work.

In Boston, the customer wanted a classical design that suited the long history of the City. On the contrary, Dallas authorities wanted a futuristic image. In the case of design for New Jersey, designers and customer representatives started a marathon discussion after a presentation in the morning. In the evening, the vice-president of the authorities came to join the discussion. When we presented our model, she just said, “Pretty! – It’s OK,” and this remark settled the matter. In this project, a black-and-white pattern was used as corporate colors specified by the authorities. Observing this pattern during the manufacture of vehicles, my boss chided me, “This design is too dull – it reminds me a police car. Wasn’t there any way to improve things?” However, when I actually saw our vehicles running in the place they had been destined for, I found them to be a perfect match with the streets. This experience taught me how wrong it was to judge matters based only on a Japanese point of view. Though the development projects in Phoenix and Seattle were carried out at about the same time, the images used for them

were very different. It is interesting that while image creation is essentially based e.g. on CI from authorities and the color scheme for existing buses and commuters, resulting images can be totally different.



So far, it seems that the design for our vehicles is welcomed by users in all projects. To achieve this result, one must go through many discussions with authorities, and acquaint himself with the atmosphere of the destination through firsthand experience.

In a project, designers discussed interior design with the manager of construction-related affairs in a heated atmosphere. Both parties wouldn’t back out from their position, and eventually decided to settle the matter by presenting their respective ideas to a meeting of top managers of the authorities for a final decision. As a result, Kinki Sharyo’s idea was adopted by an overwhelming majority vote at the meeting. This helped enhance our credibility in our subsequent design proposals.

Once adopted, the design has been re-adopted at repeats more than 10 years after the adoption. This fact indicates that our vehicles have been accepted by citizens as an embodiment of their city’s image; and that the authorities are making efforts to keep the vehicles a city brand. Lucky is a designer who receives such recognition.

Review Using a Full-size Model

In the U.S., we often deliver vehicles for new line(s). In such a case, we cannot use data on existing vehicles for reflection on the design of new ones. Review using a full-size model is indispensable to prevent the occurrence of any problems with a new vehicle design. Especially, the

cab is the most important part in terms of safety, and review using a model cannot be dispensed with even in case there are no relevant requirements in customer specifications, to ensure safety in subsequent operation; though we may need to conduct only a simple review. A thorough review at this stage (regarding such factors as the human body size and a difference in approach to operation) is a sure way to reduce errors and need for re-engineering.

The mock-up bound for Seattle was first assembled in Japan for internal design review, then disassembled and sent to the U.S. where it was reassembled by the authorities for evaluation.



### ADA and Universal Design

Universal design has become an important design feature in recent projects, though it seldom came into focus in earlier ones. The greatest reason for the popularity of Kinki Sharyo's LRVs in the U.S. is the good performance of its 70% low-floor vehicles that matches local practices while friendly to the handicapped. This performance must be based on compliance with an act called ADA.

ADA (Americans with Disabilities Act) came into effect on July 26, 1990. This act adheres to a principle that no one should be discriminated by reason of his/her disability, and includes detailed provisions regarding ground facilities and trains. In addition to meeting these provisions of the already 18 year-old act, we recently have to make even more careful considerations to allow everyone to use train services more easily. Universal design stands for these considerations. In our Phoenix project, Professor Patricia Moore at Arizona State University participated in vehicle development to provide us guidance on universal design for various vehicle parts.

### The Future of LRV in the U.S.

We do not think that demand for LRVs will die down in the U.S., in view of such factors as environmental problems and high oil prices. Rather, demand will grow for safer and more functional LRVs that can meet citizen needs more satisfactorily. In such circumstances, the role design has to play will become even more important than at present. Namely, a vehicle design needs to be not only beautiful, but sufficiently considerate of requirements related to universal design and functionality. I believe that the culture of Kinki Sharyo, involving the close cooperation of designers and engineers to solve various problems, will be appreciated, as it is now, in the U.S. market.