

## **APPENDIX 1: AN EXPERT DESIGNER AT WORK**

My colleague Henri Christiaans and I studied individual designers working on a design task. The subjects were asked to think aloud so that their thought patterns could be captured and analyzed (this particular study was reported on in Dorst and Dijkhuis 1995; Dorst 1997). This particular series of protocol studies was performed with twelve experienced designers; the design challenge was to develop a new trash system for the passenger carriages of a new Dutch train. All the information needed to design a solution (e.g., background of the project, stakeholders involved, dimensions of the train, user research on the existing trains, etc.) was provided on information cards that the designers could request. The designers had 2.5 hours to tackle this design challenge. In this appendix we enter this protocol after an hour, during which the expert designer has been going through the information and discussing his own experiences with trash on the train and some comparable situations (trash collection in aircraft). Then suddenly, the designer jumps to an idea that might structure the problem situation for him.

(time: 60 min.) Just had a flash ... Would it be good to make separate bins? ... Because we have several different types of litter ... We've got the dry litter ... I would say paper bins ... Because lots of newspapers and magazines are left in trains ... I can imagine that you make a bin in which you can put newspapers and magazines, that kind of stuff ... That bin should be made in such a way that you can't put coffee cups and other stuff in there ... That's a problem ... Because people are bored ... That happens in trains ... They tend to start trying things that weren't supposed to happen ...

(time: 61 min.) But it would be a nice ... Well, there's a number of things crossing my mind now ... First, there's the railways ... The railways provide a mode of transport that is environmentally friendly ... That is still being used as an argument in favor ... And it would be a nice marketing ploy to expand that idea into litter collection ... With litter, I mean ... That the litter collection in trains could help that identity ... The environmentally friendly railways ... Then there would be in trains, where a lot of paper