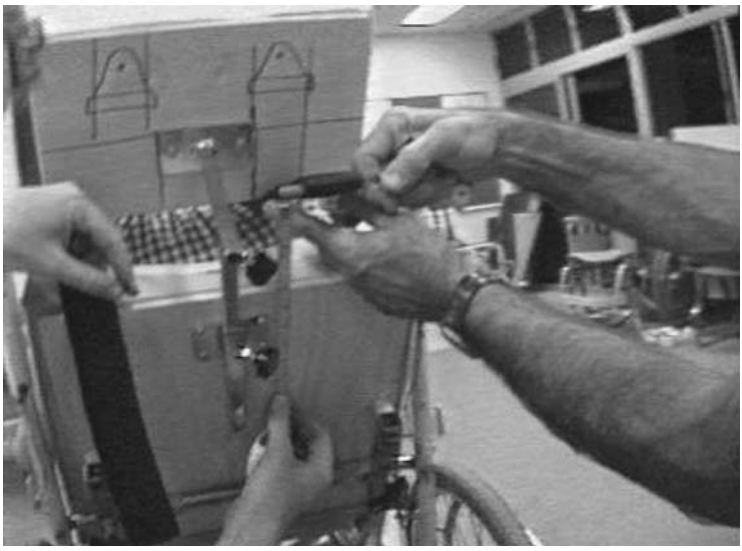

Figure 6.4 Rehabilitation engineer and technician discussing options for attaching a shoulder strap. (The technician has made a loop in the strap and placed his pen through the loop to represent a stainless steel rod.).

experiential knowledge and considered opinion. Observation of many designing episodes where it was evident that there was a close association of artefacts at hand with an idea or sequence of ideas proposed by team members, provided evidence of the roles of artefacts in aiding the design process. These were: (1) to initiate discussion and discovery; (2) to stimulate the generation of new ideas; (3) to verify information and understanding, and (4) to develop and propose ideas. Combining artefact and action enabled team members to impromptu prototype. The rapid application of artefacts such as things at hand provided immediate feedback to team members. Demonstrating the relationships of components, exploring the viability of design options, the preliminary planning of manufacture, illustrating to a client and care-givers what a final product would look like and its working, were the benefits of impromptu prototyping. The high usage of artefacts in rehabilitation engineering work is an indication that artefacts add value, probably because they assist participants to increase the complexity of data communication through creating visual reference points to underpin oral descriptions. Harrison and Minneman (1996) made similar observations and stated that objects were often introduced into conversations for the express purpose of illustrating a particular quality that could not be addressed directly solely by talk or talk plus illustrating with sketches.

A little recognized value of artefacts and the artefacting environment is the reminder value of an important artefact. Whittaker and O'Conaill (1997) called this "context-holding value." In some videotapes of REC practice there was regular revisiting of unsolved problems. It was possible that the sight of the client or the continued presence of an item of hardware had "context-holding value" for the team, acting as conscious reminders of difficult things to be done.

An artefact as an inanimate physical object may have no inherent meaning in the context of a design scenario. In these cases it is only when a person does something with the artefact that it acquires meaning. In many cases this meaning will be enhanced by what the user of the artefact says as it is put to use.

Triggers to action

Harrison and Minneman (1996) suggested the triggers to interaction with objects they observed in a small design team: to seek information, to control the dynamics of a conversation, to change topics, to confirm or recalibrate imaginary objects. The main triggers to action with objects operating for people working at REC that were observed in the videotapes were:

1. as props to illustrate or demonstrate something that seemed too complex to deliver solely by talk;
2. where an idea was being tested; and
3. as a means to plan a strategy or a way forward through a problem.

Words, deictics, action

Pronouns like "it, this, that" and adverbs like "here, there, up" were commonly used words in the talk. The majority of these events contained a high incidence of "locating/indicating" actions, providing a reference for the talk's focus. Harrison and Minneman (1996) also noticed the designer's frequent use of the vague terms "here," "this," and "there," and the pointing, holding and making of shapes with fingers and hands that occurred in concert with talk. Tatar (1991) commented that: "the success of a deictic reference depends on the shared knowledge about the position of the object."

In this study it was evident that team members preferred to incorporate imprecise vocabulary in their speech rather than select words with precise meaning (nouns). Our thesis is that team members engage in artefacting because the combination of talk, action, and artefacts provides more detailed (highly specific) design information to other participants than would be contained in a purely oral presentation. Artefacting reduces the complexity and sophistication of oral discourse that would be needed to impart the same design information. The talk-types that produce highly specific information – namely, "Design proposals" and "Dimension/location" – occur in events that are predominantly Talk & Action events. Team members utilize all action-types as they talk; however, Table 6.9 provides evidence that certain groups – for example, "Constructing", "Locating/indicating", "Examining" – accompany highly specific talk. Interestingly, "Gesturing" is widely practised across all talk-types. Gesturing may be used as a social modifier and to attract and maintain attention. It is obvious that, for successful communication to occur when pronoun- and adverb-intensive talk is used in design conversations, speakers' accompanying actions need to be seen clearly by the listeners.