Bathroom design and function analysis
Brief reports from two research projects

Bathroom design - the cleaning perspective

The problem behind this research project was the fact that Swedish standard bathrooms were (and most of them still are) difficult to clean, because of the building design. This has consequences not only for the inhabitants but also for the home helpers who assist old and disabled people in their own dwellings.

The most difficult-to-clean spaces in a dwelling are the bathroom and the toilet-room. These spaces also are the most dirtied. In Sweden there often is a toilet in the bathroom.

The aim of the project was to find out what or how much of physical agility a Swedish standard bathroom demands from the person who carries out the cleaning of it. I knew when I started, that the Swedish Building regulations for bathrooms were laid down in the sixties without any regard to the cleaning. So I also wanted to test the Swedish Building Code for bathrooms from the point of view of cleaning. And I wanted to find out criteria for design from the point of view of cleaning.

Some examples of cleaning problems in bathrooms:

The very common, floor-standing toilet offers many cleaning problems. There are many nooks and recesses. Cleaning the toilet at the floor level is done squatting and crawling.

Filth sticks in the joint between the toilet and the floor. Under the foot of a floor-standing toilet filth can be gathered.

At washbasins the filth sticks in the space between the washbasin and the wall, and dirty soapwater runs down the wall. The floor-mounted drainpipe stands in the way for the floor-cleaning.
The Swedish bathtub is a special problem. In Sweden we use free-standing, enamelled steel plate bathtubs, the free sides of which are covered with front-plates to conceal the shape and outer surface of the tub. The long front plate is difficult to take off, and the floor under the bathtub is a trap for dust and rubbish.

I made full scale experiments in a laboratory. My subjects were some persons with different grades of physical agility. Young and flexible test subjects would not have given a useful result, because they would have managed nearly anything. In tests of this kind it is important to choose subjects from a "critical group" for the purpose.

I used an experiment platform. There was a fixed back wall, a heavy but movable side wall and two very light rolling screens. The washbasin was fixed on to the back wall, the bathtub and the toilet were movable. They were not connected to the piping. For dirt on the installations I used children's colours.

I used video, photo, my eyes and questions to the subjects for registration of the tests. Two videocameras were used, they were synchronised and the two tapes were mixed together into one. The figure shows a monitor picture, with views from two directions.

The experiments proved, as was expected, that the Swedish Building Code measures for bathrooms were too small, and better measures were recommended.

The subjects took up four characteristic positions when cleaning the difficult parts near the floor level. These working positions are not good, if we look at them with "ergonomic" eyes. But it is not enough to widen the spaces around the installations. The difficult thing is the scrubbing at the floor level. The installations must be wall mounted, even the pipes, so that the floor area becomes free for cleaning by a long-handled tool. Accordingly, there should not be any dirt-gathering congestions in the floor area. No furniture legs either.

Bathrooms for those who need help and care

Now I am preparing a new bathroom investigation together with two colleagues. It is politically decided in Sweden that everyone - even old people, the disabled and the long-term ill - shall have the right to live in a good dwelling in an ordinary housing area and to get all the help and care needed in their dwellings. We will try to find out how bathrooms should be designed to fit the assistance and care work that has to be done there. There are some guidelines for the design of toilets for disabled and for hospital bathrooms, but we want to find out guidelines for dwellings. The financing of the project is not yet solved.