

Home for Living: An adaptive model for life out of the wheelchair

Robyne Kassen; Pedestrian Studio, New York, NY

REPORT

The wheelchair-dependent population is not at the forefront of architectural attention. Design for this group tends to be standard, based on ADA requirements, and not responsive to wheelchair users' typically strong upper bodies and heavier, immobilized torsos. This project works to propose a design within domestic space that engages these bodies in specific but variable ways, both physical and social. Such intervention may be a crucial component of a proactive approach to health and healing, one that is physically integrated within daily life and habitation.

Bodies adapt to particular place through both physical and psychological memory. Muscles that move in response to boundaries met become stronger and larger; those that cannot move weaken, atrophy and risk infection. Wheelchair use demands repetitive movements that shape the upper body, in particular: the neck, shoulders, back, arms, and chest are sculpted, strained and often overworked during urban daily life. Yet architectural design has tended to respond more to the wheelchair than to the body that uses it. In contrast, this project worked to design new spaces that are responsive to the range and types of movement available to individual's dependant on a wheelchair.

We began with an analysis based on the tracing of the wheelchair occupant's movements both in and out of the wheelchair. Within a studio environment of ten cameras mounted in the round, we mapped the physical necessities (architectural program needs and medical requirements), designing to afford the client more bodily "life" beyond the wheelchair, strengthening and stretching muscles by challenging them in specific ways. It is important for people with SCI (Spinal Cord Injury) to move as much as possible, as the single leading cause of death within this group is pneumonia, a complication that is more likely when bodies are immobilized.

Background

The project was built on interactive studies with two individuals with SCI, Murray Siple and Ethan Ruby. These men suffered different injuries and now deal with varying degrees of limited range of motion. Murray has a C6-7 injury, which gives him essentially shoulder-shrugging movement and limited dexterity with his hands. He is an extremely motivated individual, an ex-pro snowboarder, and at present a committed and active documentary filmmaker. Murray's filmmaking work keeps him very busy, and thus his participation in the project was limited to email exchange, and two trips by the designers to Vancouver to meet him in his home environment.

Ethan Ruby lives in New York City, and has worked with us physically through movement studies, in the motion capture lab. Ethan's break is a much lower one, a T6 injury, near his lower spine. Ethan suffers from loss of control over his abdominal muscles, he has no "spacticity". Through exercises with Sarah Gluck, a pilates and yoga instructor, he learned how to become aware of his breathing, thus stretching his mid section as his diaphragm pumped.

Introduction

The physical experience of being at home, as practised through familiar lines of sight and occupation of space, is radically different for someone bound to a wheelchair. The first step in this research was to establish, through interviewing, how the home environment differed for those in a wheelchair, in both experience and occupation, movements of habit. Our research focussed on the liminal space between the subjective experience of the individual living in the wheelchair (their demands of daily life, inhabitation) and the medical concerns and aims of the doctors and therapists working to help them with healing and preventative health. In addition to individuals living in wheelchairs, we interviewed physical therapists, occupational therapists, psychologists, rehabilitation doctors, personal trainers, yoga and pilates teachers, designers, and builders. Information from the healthcare and exercise professionals was used to create additional questions and topics for interviews with those living with SCI. This initial step, along with the narratives of the individuals in the wheelchairs, drove the intent and practice of the process of design described below.

Design Process

Phase I

Our conversations with Murray or Ethan are thus the basis for the new home environment that we create jointly. The initial conversations build the foundation for their physical narrative. I asked them questions such as: What can you do in terms of body movement? What types of activities do you enjoy in and out of your home, and how do you do them? Have you ever injured yourself with these activities? What do you dream of doing? Working together with our yoga and pilates expert, Sarah Gluck, we developed a choreography of movement based on twin narratives of desire and their daily habits, in concern for practical movement issues, such as risk of infection from abrasions. The intent was to strengthen them for a particular activity, to repair damage done by an activity, and to engage parts of their body they do not use at present. The next step was to document that movement, the individual moving alone, or with Gluck as an aide to achieve the movement, by breaking it down at the motion capture lab, describing each exercise in a series of short (60 second) movements. We have then a physical document of movements needed to strengthen individuals for their daily activities to prevent and heal muscle tear and injury. These movements worked to strengthen them to activate patterns they are not currently able to do because their daily life is so focussed on the repetitive movements demanded by the wheelchair. From there, we begin to work with one exercise, dissecting it to re-compose it, and to build the negative space of the movement. The negative space is the surface or armature needed to support or stretch the movement. The result is an amorphous shape, sculpted around the movements that will help them achieve their goals.

Phase II

The next phase is one of editing that space. An amorphous space is of no use to busy individuals who have limited time to spend in free-form exercises at home. It is important, rather, to embed these opportunities for movement within their necessary daily patterns of movement and occupation. Through discussion with Ethan and Murray, we attempt to map the program of their home or the experiences they would like to make easier, such as visiting with friends, reading, easy access to movie and TV-watching, ease of cleaning and other activities. We then take this form generated from collected moments of the motion capture studies and refine the design of the original form in order to accommodate for the individual's program of desire and activity. Our investigations raise questions such as: Should the intervention recess into the floor in order to be concealed when their guests are visiting? Is there a need for additional spaces integrated for their guests' use? We then shift the space to allow for ease of occupation. Maybe just one fragment of an exercise is achieved, integrated into their travels down the hall. For instance, if they want to go quickly from one space to the next, a padded hand-hold or elbow hook might be integrated into the hallway for swinging along as they pass in their wheelchair.

REMOVEABLE BAR,
SCREWS INTO PLACE

VACUUM FORMED
SURFACE TO BE PADDED
WITH LEATHER FINISH,
TO PROTECT FROM
ABRASIONS THAT LEAD
TO INFECTION

LEATHER UPHOLSTERED,
PADDED SURFACE FOR
EASE OF MOVEMENT
AND SUPPORT

