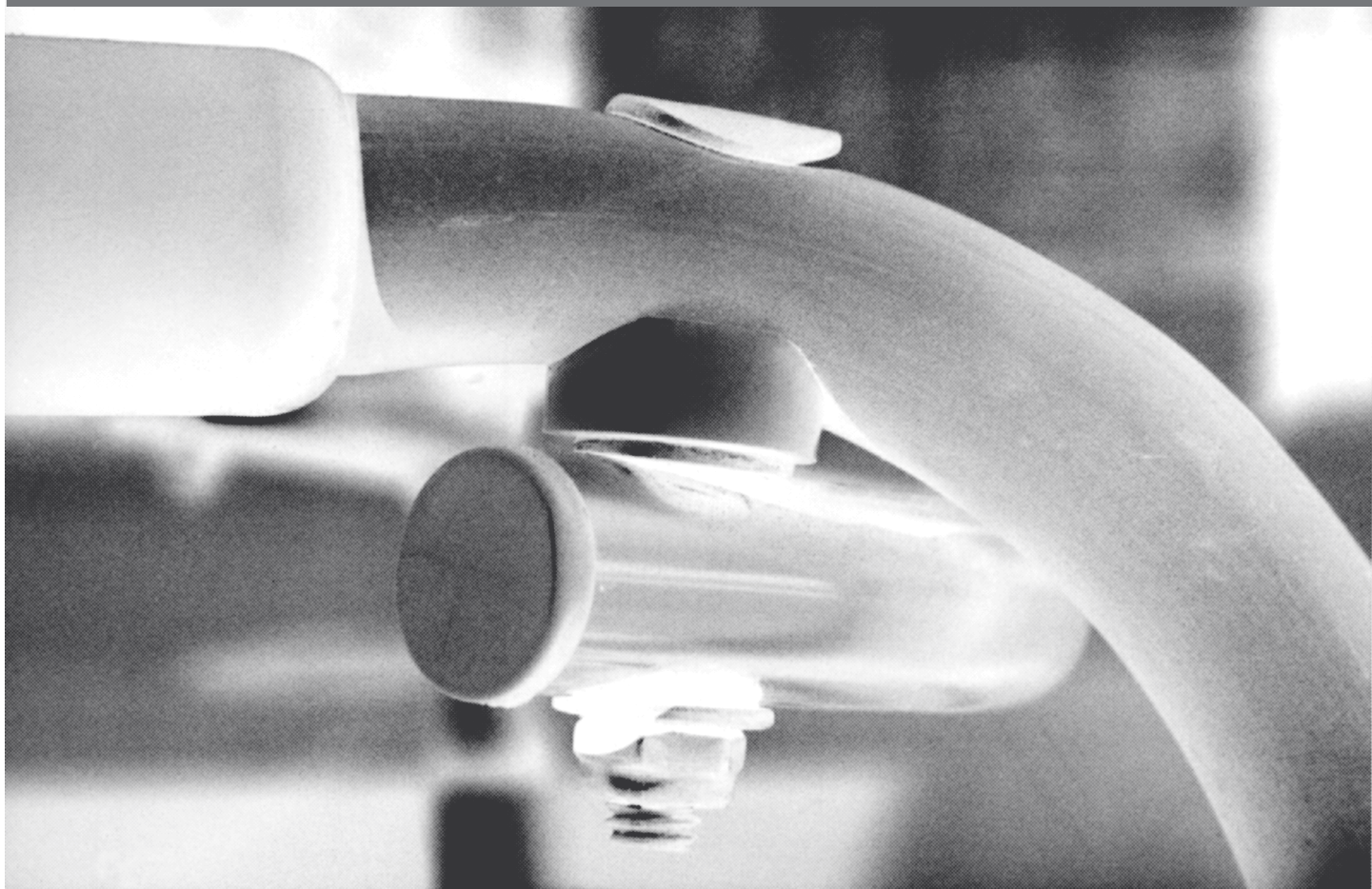


Mobility with Dignity:
a re-formation of the standard walker

Tanya Blasko



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Tanya Blasko

Abstract

As the population ages, the need for intelligent solutions to mobility concerns increases. Many existing products succeed in targeting the functional aspects of use but fail to address critical psychological and aesthetic elements in the design process. This thesis asks the question: can a walking device address concerns of dignity, beauty, and functionality?

Mobility with Dignity:
a re-formation of the standard walker

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This thesis is submitted to the faculty of Virginia Polytechnic Institute and State University in partial fulfillment of the requirements for the degree of Master of Science in Architecture with a concentration in Industrial Design.

Ed Dorsa, committee chair

Ellen Braaten, committee member

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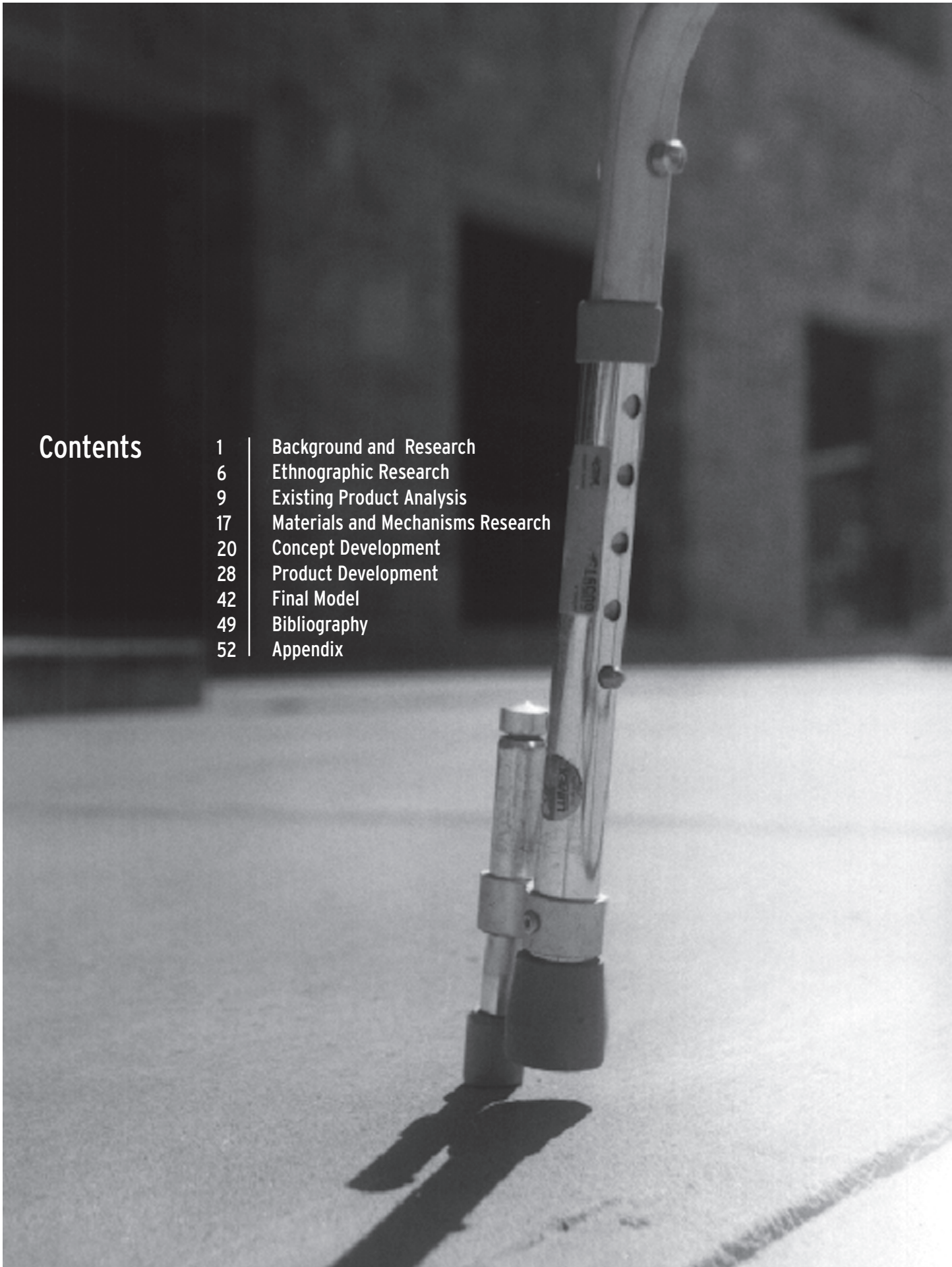
Robert Reuter, committee member

Blacksburg, VA November 7, 2002

This thesis is dedicated to the support and guidance of my family, friends, and committee members.

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SCHMITZ

NEUROPHYSIOLOGY
ASSESSMENT AND TREATMENT

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Background and Research

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19th Century Design 1975-2000

NK
1404

Lost and found: critical voices in new British design

The
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Council

BIKHAUSER



As the world population ages, the need for intelligent solutions to mobility concerns increases. Currently, there exists a noticeable lack of collaboration between engineers and industrial designers during product development. This is evidenced by the overwhelming amount of visually sterile and emotionally off-putting assistive devices for the elderly and differently abled.

Many existing products succeed in targeting the functional aspects of use but they fail to address critical social elements in the design process. However retailers such as Target, have blurred the line between the specialty store and retail chain by employing architects and fashion designers to redesign everyday products, thus raising the bar on product design for the mass consumer. Consumers today are more design savvy than ever. They are exposed to a wide variety of choice in purchasing even the most mundane of items. This is not the case with assistive devices.

It is time for assistive products to follow current design trends. By the year 2030, the over 65 population in the United States will double to 66 million people. Designers and engineers must begin to work together to execute quality products that address the psychological and social stigmas surrounding many existing products. Through thoughtful choices in textures, materials, colors, and form, product design must begin to include assistive criteria.

ERGO/GERO Human Factors Science: Statistics on Aging in the United States:

Currently, 13% of the population is over the age of 65.
In 30 years, the 65+ population will double to 66 million people.
Over age 85 is the fastest growing segment of the population.

Source: Ergo/GERO Human Factors Science, <http://www.ergogero.com/pages/agingeye.html>, Copyright© 1998-2001.

Administration on Aging: Profile of Older Americans as of 2000

The population of persons over 65 numbered 34.5 million in 1999, representing 12% of the U.S. population, or nearly one in every eight Americans.

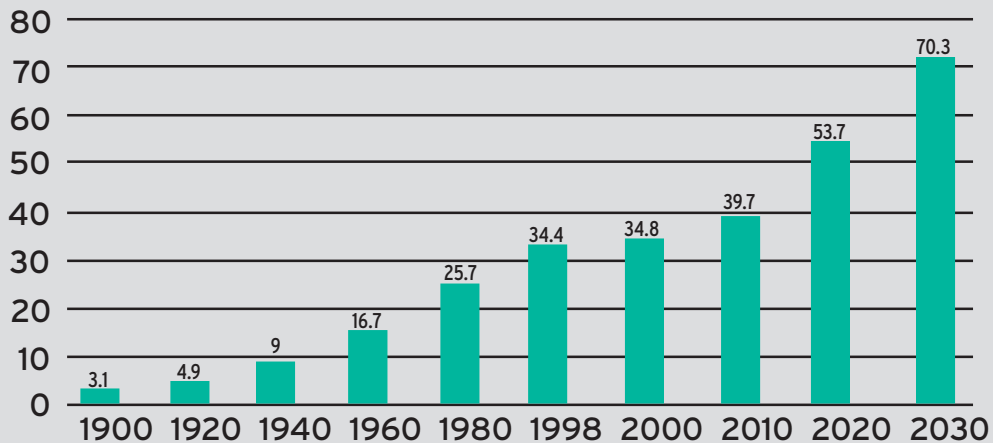
Since 1900, the percentage of Americans 65+ has more than tripled (4.1% in 1900 to 12.7% in 1999), and the number has increased eleven times (from 3.1 million to 34.5 million).

The older population itself is getting older. In 1999, the 65-74 age group (18.2 million) was eight times larger than in 1900, The 75-84 group (12.1 million) was 16 times larger and the 85+ group (4.2 million) was 34 times larger.

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Source: A Profile of Older Americans: 2000, Administration on Aging, <http://www.aoa.gov/aoa/stats/profile/default.htm>

**Figure One: Number of Persons 65+
1900-2000 (numbers in millions)**



The coming generation of elders is more affluent and active than previous generations, making them a very attractive market to well-known companies such as Ford, Tupperware, and Whirlpool.

Baby boomers' real median household income is 35 to 53 percent higher than that of their parents. Reaching out to these

aging customers has become a science in itself among marketing professionals.

By the year 2020, the entire baby boom generation will be over 55. As the AARP(American Association of Retired Persons) points out, these 75 million aging baby boomers, and their children as they age, are likely to be very

different customers from their parents and grandparents:

“...products that offer youthfulness without denigrating aging will do well. These customers are not like their parents - they don't feel that older is ugly”.

J.L. Mueller www.homeearthlink.net, 15 October, 2002.

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Connie Hallquist, CEO of Gold Violin, believes the aging of baby boomers and their parents likely will have the same effect on the senior marketplace that the children of boomers had on the children's market.

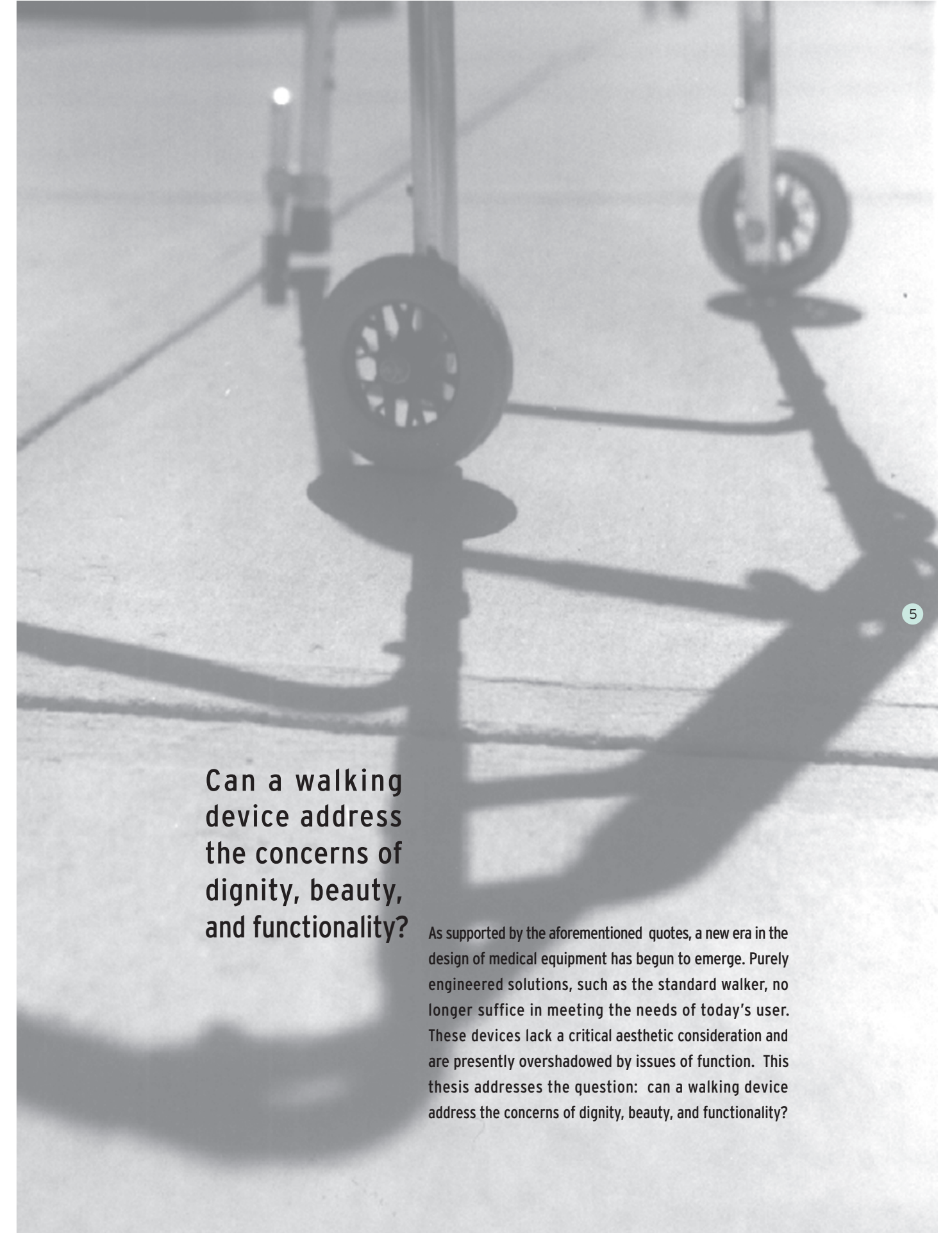
“Baby boomers are one of the most demanding generations commercially,” said Hallquist.

“When they had children, look at all the advances in style and new technology that came along in strollers,

toys, and things like baby monitors. As we begin to get older and care for our aging parents, there's going to be that same demand. We come from a group that wants style and quality.

They're going to have a lot of disposable income. I think it will start a revolution.”

www.marketingbeat.com. 19, September, 2001.



Can a walking device address the concerns of dignity, beauty, and functionality?

As supported by the aforementioned quotes, a new era in the design of medical equipment has begun to emerge. Purely engineered solutions, such as the standard walker, no longer suffice in meeting the needs of today's user. These devices lack a critical aesthetic consideration and are presently overshadowed by issues of function. This thesis addresses the question: can a walking device address the concerns of dignity, beauty, and functionality?



**ETHNOGRAPHIC
RESEARCH**

Deborah: The walker provides a good base of support (BOS) and provides the most stability of the assistive walking devices, namely, walkers, cane and crutches. Initially, the physical therapist introduces the patient to a walker, either rolling or four point, depending on ability and /or injury. The patient is taught to place the walker within an arm's reach in front of his body before taking a step. He then steps forward on the involved, or injured leg or, if no injury is involved, the weaker leg. The patient is cautioned not to step too close to the front of the walker as doing so risks injury or falling. The patient is then instructed to follow through with the uninvolved or stronger leg. With enough practice, he should develop a smooth and natural gait. Some patients progress to the use of a hemi-walker, which is used with one hand, much like a cane, on the stronger side of his body. Users consist mainly of stroke patients who have gained stability over time. The walker is measured individually by a patient's physical therapist or doctor. The height of the walker generally reaches the greater trochanter, the upper part of the femur; it is at this point that the handle meets the wrist. A 20 to 30 degree of flexion at the elbow is standard.

Interviewer: There are so many different varieties of walkers available. How does a therapist or doctor decide what type of walker a patient needs?

Deborah: Mainly, it depends on the patient's endurance level. For instance, if the patient is strong enough, the caregiver will recommend a standard four point walker. This is a walker with four fixed feet. The patient is instructed to lift and place the walker according to the gait pattern appropriate for their needs. If the patient has a cardiopulmonary disorder, the user does not need to expend energy lifting the walker during his gait sequence. Instead, he rolls the walker forward as he steps.

Interviewer: Are you saying that the four point is more stable than the rolling walker?

Deborah: It depends on the situation. A four point is best for outside. However, especially in the case of gravel, it is crucial that all four points are placed on the outdoor surface evenly and grounded before the user takes each step. If the user is accustomed to using a rolling walker, I would recommend a wheel with tread for outdoor use as well as hand brakes, which require a certain degree of dexterity. I would caution against the use of wheels on both the front and back tires as I feel it is too unstable. Rolling walkers are especially great for the person who needs just a little bit of assistance. I like the ones with the stopper extension that acts as a braking device-when the user presses on the handle the foot becomes engaged and acts as a brake.

Interviewer: Would it be advantageous, in your opinion, for a patient to have a standard four point walker with an optional wheel attachment?

Deborah: Maybe, for instance, if the person were pretty ambulatory for the most part, but tended to tire out at times. Usually, one or the other would be sufficient. Generally, we try to build the patient's comfort level with one or the other to get them trained with one style of lift and gait.

Karrie: Patients get used to their usual routine. For instance, if the person is used to a four point, when we give them a rolling one, most of the time they still pick it up and move it as if it had no wheels. There is also the risk of falling. If the patient is not used to the wheels, it does present a risk. At this point during our talk, Karrie had me test drive a wheeled walker. Our conversation led to a discussion of annoyances with the standard wheeled walker:

Karrie: These walkers are.... Here you try it. Tell me what you think.....

Interviewer: (I take a few practice steps with the walker, simulating a proper gait) Oooh, I don't like that noise, it's awful, it's disconcerting. It's loud.

Karrie: Anything else?

Interviewer: Yes, it's vibrating when I try to move it. It's jarring. The rubber stoppers on the back legs are vibrating on the floor with each movement of the walker.

Interviewer: What kinds of modifications are there?

Deborah: Most of them are covered by Medicare. To compensate, many users place tennis balls over the rubber feet of the walker to reduce vibration and noise as they encounter particular surfaces and/or attach home-made fabric pouches to transport small items.

Karrie: I sometimes add weights to the walker. The weights give the patient something more substantial to push. This way he can feel where he is going. It's like the feeling when you have your hand on a wall.

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Interview Summary

Part One: Results of Person to Person Interviews with Physical Therapists:

Location: Heritage Hall Nursing Home, Blacksburg, VA
Description: Long Term Care Facility
Participants: Karrie Vogel, Physical Therapy Assistant
Deborah Pizzi, Physical Therapy Assistant

General Information

There are two types of walkers:

rolling(wheels) and four point(no wheels).

A physician will prescribe a rolling walker for patients who fatigue easily and need extra assistance. A fourpoint is more stable as it has no ability to roll. Wheels increase the risk of falling. Most patients will use one type consistently.

Common Modifications

Walker accessories, such as baskets and gliders for feet, although desirable, are not covered by Medicare. To compensate, many users place tennis balls over the rubber feet of the walker to reduce vibration and noise as they encounter particular surfaces and/or attach home-made fabric pouches to transport small items.

Physical therapists often add weights to walkers to give users more confidence and control over their movements.

Features

Collapsibility of the walker is a desired feature for ambulatory patients as they enjoy the potential for storage and portability. This feature could be dangerous for patients with limited dexterity or dementia.

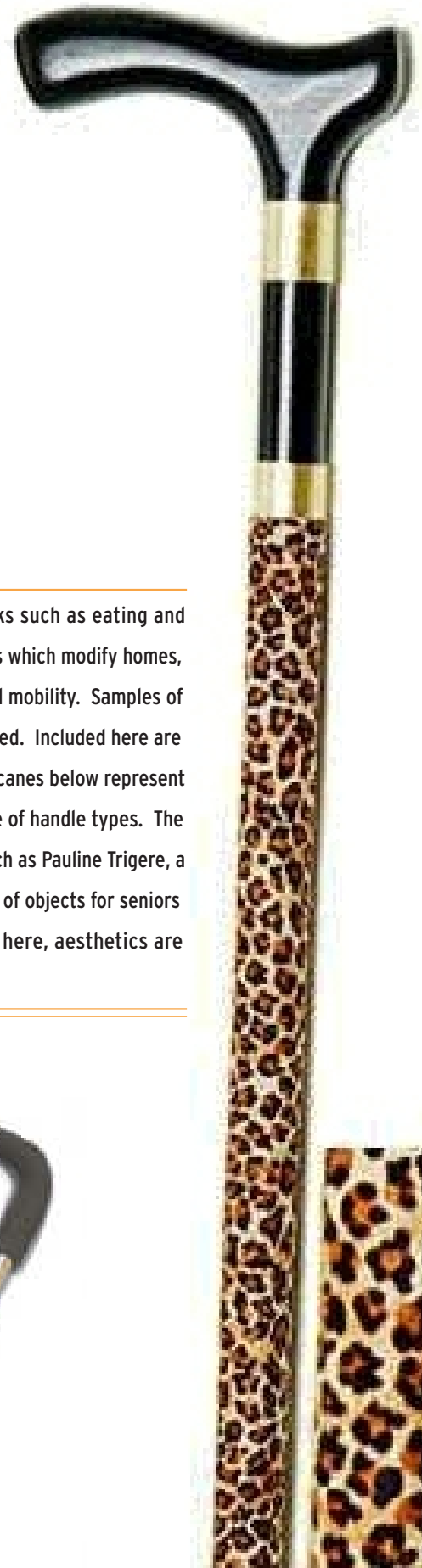
Style

The psychological implications of the physical appearance of a walker are significant. To quote one therapist, "no one wants to look like an old lady with a walker". Improvement in form, material, and color should be considered.

See Appendix for complete transcript of interview.



existing product analysis



Assistive products are of varying scale, from items to assist with everyday tasks such as eating and dressing (commonly referred to as adl's or assistive devices for daily living) to items which modify homes, providing access for the differently abled. The subject of this thesis is walking and mobility. Samples of mobility devices ranging from canes to shopping carts to walkers have been selected. Included here are canes ranging in quality and price based on choices in materials. The selection of canes below represent the standard cane constructed of extruded anodized aluminum tubing with a range of handle types. The leopard print cane and the red walking stick show a recent attempt by designers such as Pauline Trigere, a nonagenarian herself, that begin to address issues of style and dignity in the design of objects for seniors and the mobility impaired. As one can see in the range of products depicted here, aesthetics are beginning to factor into the design and construction of selected assistive devices.

