Simplify ååll

Domus Academy
Master Course in Design 2005
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Project Leader _ Mario Trimarchi
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This document has been prepared as the Dissertation Document by Jennifer Flume for the Master Course in Design 2005 according to the general brief SIMPLIFY by the company sponsor SUNSTAR with specific reference to the brief of the project leader Mario Trimarchi. The dissertation includes a digital presentation, a project trailer and a complete body of research and sketches presented in the submitted sketchbook. This document references only passages of the conducted research. For a complete view, please see the sketchbook.

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**Prodotti per l'igiene orale e dei capelli
rivolti a persone che hanno disabilità.**

SEMPLIFICARE 単純化 simplify

...Siamo tutti disabili, spegnendo la luce. ...Potremmo essere tutti handicappati se avessimo a disposizione solo una mano per usare dentifricio o spazzolino.
...Non saremmo tutti più felici se la vita a volte fosse più semplice?!

Blind.
Low vision.
Only one arm.
Everybody.
Regognizable.
Personalized.
Simplified.
Not different.
Helpful.
Easy.
Touchable.
Visible.
Intelligent.
Comfortable.

Project Leader: Mario Trimarchi
Assistant: Caroline Dippold

RATIONALE

Existing products - history, story, inspiration ?!
This master dissertation document will not be a document about people with disabilities nor a document for people with disabilities, but a document for *everyone*. A document about designing products for everyone, healthy and disabled alike. A product that serves the needs of everyone in an improved manner is better than a product that addresses the special needs of certain users in particular, but is useless or unattractive to the rest of us. There seems to be a discrepancy in the design of products. either products are aesthetically pleasing, not to say beautiful, or products are designed for optimum function. Rarely does one find both in combination. Why is that ? And why is it that the products that are designed to function under special circumstances are even less aesthetically pleasing ? Because the user group is comparatively small and the design investment is not matched in revenue ? Because special products serve special needs and that is to remain their sole purpose ? It seems when speaking about well designed objects, that ease of use or enhanced performance is often emphazised when characterizing products for the disabled users. But why should only the special products be

easy to distinguish
easy to open / close
easy to handle
easy to hold
easy to measure
easy to dispose
easy to carry
safe to use ?

Why should special products have to be for special people only ? Do the rest of us not care if a product is malfunctioning as long as it is aesthetically pleasing or serves some other secondary purpose ? What are the products on the market ? What is useful, what is functional, what is stylish, what is special ? Is a popular or best-sellling product always one that is well designed and performs best ? Or have we become such fashion victims that the industry can count on us to buy the latest market trend regardless of the product's performance or longevity ? If we are serious with ourselves, how many products have we purchased becaused we liked the mere look, desired to own something of that brand or wanted to join in the club of happy ipod users ? It is amazing how many disfunctional or one could even say inconsiderate products populate the shelfs of our stores. Products where one wonders how they are supposed to be used, who designed and manufactured them and who actually buys them ?! In the general context, how do you actually squeeze the liquid out of a citrus fruit on the *philippe starck juicy salif* ? Is this product a best seller due to its function, sculptural beauty or the names *Philippe Starck* and *Alessi* ? How do you get to the rest of the toothpaste in the tube ? Or in the context of this particular project, how do you differentiate between your shampoo and conditioner ? How do you manage to put the toothpaste on the brush and not next to it ?
Products which require the least amount of effort in operation should not be reserved for people with arthritis problems, nor should products with clear graphic information be targeted only to people with low vision. Minimal strength effort, one handed operation and operation independent of vision or hearing are features advantageous to all products and to all of us. A well functioning product does not have to look boring, plain or mechanical. A well designed product is a product with optimized characteristics and an emotional resonance. A product that one enjoys to look at and then enjoys even more when using it.

Therefore, this document will not be about designing for niches or minorities nor about thinking disabled. This document will present a research on taking restrictions to design something appealing and something more intelligent for everyone to use.

Inspiration references
independence
hands that serve as eyes
essential
inclusive
user friendly
intelligent
simple

INTRODUCTION

Good design does not mean more. Improving a product's function does not always mean adding features or buttons. It might actually mean taking them away. Less often is more. The common objective is to simplify the objects surrounding us and to thus simplify our gestures. Simplifying for a comfortable life for everyone. Simplifying to enhance and facilitate life for everyone. Is that not what is called Universal Design ? Universal Design is the process of creating products, be it devices, environments, systems or processes, which are usable by people with the widest possible range of abilities, operating within the widest possible range of situations,environments, conditions, and circumstances. Universal Design means designing products so that they are flexible enough that they can be directly used, without requiring any assistive technologies or modifications, by people with the widest range of abilities. Universal Design also means designing products so that they are compatible with the assistive technologies that might be used by those who cannot efficiently access and use the products directly. It's the little things that make all the difference. A simplification and balance of various design elements make various items accessible to those on whom they would otherwise be lost. Punchy buttons, Braille text, well-defined edges, but also the use of sound and colour, are all small details which can make all the difference. Especially colour is extremely important considering how many visually impaired retain some sight, whose lives can be significantly improved by the right balance of colour and light or shades that are easier to discern, contrast, certain color combinations as opposed to, say, white on white. In practice, a white plate on a white tabletop is virtually invisible to a visually impaired person.
(for the complete research on color, contrast and light, please see the sketchbook)

Simplifying in this context means reducing to the essential. To create something essential, one has to eliminiate everything that is excess and unneccessary. What are the simple yet so important questions ?!
Why does an object have a certain size, shape and color ? Does the shape, color or texture tell me something about the content of the product ?
Are product characteristics dictated by style, due to functionality or a result of production logistics ?
How do i differentiate two products of the same category ? How do i know which one is my shampoo, which one my conditioner ? And what about the shower gel ?
When is something empty ? Does the weight of the container tell me how much is inside ? Does the pressure I need to squeeze it tell me if it is empty ? Can i open it to feel if there is something left inside ? How can i perceive if something is finished ? Can i get to the rest inside the product to maximize prodcut usage ?

RESEARCH

Handicapped

When is someone considered a handicapped ? Handicapped are not only people who are born with disabilities or people who have serious permanent impairments. Being handicapped means being restricted in what we consider normal or average human capabilities. Restricted permanently or restricted temporarily, technically both means handicapped. But if restricted capabilities are taken as measure, are children then handicapped ? Or pregnant women ? Or elderly people ?

The last group out of the three mentioned probably is the most likely to be considered handicapped even though in theory they are actually more independent than children. Being handicapped can be an initial state as the result of a birth defect. Being handicapped can be the result of a slow process. The aging process brings natural restrictions which can turn each one of us into a more or less handicapped person. One in 12 of us will become blind or partially sighted by the time we are 60. This number rises to one in six by the time we reach 75.

Our society is aging due to a decline in birth, longer life expectancy and early retirement. In 2010, every third citizen in Europe will be 50+. In 2040, every second citizen will be 50+. Old people will outgrow young people and impairments will take on more and more importance. Why are we not paying more attention to this large user group ? Why are the elderly among the special niche groups which the market caters to with a few specialized products ? Elderly outgrow young people and woman outlive men. Compared to women, the number of men aged over 80 is only half as much. Are women's needs the same as men ? Are their needs being met by the products offered ? Should we focus on elderly women before men ?

The senior phase is actually the longest life phase of all. How come it is not considered the most important ?

phase 1: years   0-18 = 18 years
phase 2: years 18-35 = 17 years
phase 3: years 35-50 = 15 years
phase 4: years 50-79 = 29 years

The average senior feels 14 years younger than his/her actual age, with the level of physical fitness and activity among seniors increasing. Senior society has moved from the invisable to the dominant generation in the last decade. Today's seniors should be one of the main target groups as they actually have disposable income and time to spend on life's pleasures. Yet, the industry focuses on needs and desires of the young active segment of the market as the main buying power.

What age brings

Age does not only bring wisdom and experience. As we get older, our senses become less acute. we have trouble distinguishing details and colors. We cannot read anymore without our glasses or maybe not at all. Our physical abilities, mental agility and motor skills decrease and every day tasks are more and more difficult to handle. The sensory and physical change has tremendous impact on our quality of life. Our lifestyle, abilitiy of communication, enjoyment of activities and social interaction changes. These change can result in a sense of isolation and a feeling of dependence.

The number of disabled eldery is growing rapidly. In 2002, there were 43 million adults with arthritis in the U.S. In 2030, 64,9 million Americans will suffer from arthritis. The number of people who will suffer functional disability due to arthritis, stroke, diabetes, coronary artery disease, cancer, or cognitive impairment is expected to increase at least 300% by the year 2049. Already in 1997, arthritis and rheumatic conditions cost the U.S. 86 billion dollars.

Being handicapped can be the result of a momentary incident. An accident can turn each one of us into a temporary handicapped. All of a sudden we face the same issues and dependencies that handicapped people face every day relative to the gravity of disability, the timeframe and the level of adaptation to the disability. But would we consider ourselves handicapped in that situation ? What about other everyday situations ? Like in the dark ? When you get up at night in the dark, do you have problems finding your way ? Or without a mirror ? Are you dependent on your mirror or can you perform your daily beauty rituals without one ? Have you ever broken your arm and had a cast for 6 weeks ? Or had to wear an eye patch over one of your eyes ? Did you consider yourself handicapped ? Probably not since you were just injured, but technically, you were handicapped. You were restricted in your capablities and dependent on the help of others in the timeframe of your injury. Did daily operations become harder or impossible ? Did normal products all of a sudden become impossible to open or handle which you never considered to be difficult ? Did you get used to your situation ? For which operations do you need two hands ? Which can you manage with one ? Have you ever wondered ?
The same concepts are important to disabled and seniors that are important to everyone else. Disabled people aim for independence the same way that children and elderly people do. An independence which is a natural state for most of us and which can be achieved rather easily, were the objects surrounding our daily tasks user friendly in the true sense of the word.

Many people have trouble admitting to themselves and to others that their capabilities are diminishing, that their motor skills are decreasing and that their vision is fading. "I think the best thing for anyone going through it to remember is that their life is not over; it's not the end of the world. You just learn how to do things a new way.
It might be a slower way than before, but life isn't a race,"

Blind
At present, there are 45 million blind people in the world and 175 million people with visual impairments. 90% of all these people live in third world countries. Only 10% of legally blind people see nothing at all. They can distinguish light from darkenss but nothing else. 90 % of legally blind people have some usable vision and can read print or magnified print with an aid. Some blind or partially sighted people have no central vision while others have no side vision. Some see everything as a vague blur; others see a patchwork of blanks and defined areas. Some people with impaired vision can see enough to read this print even though they might have difficulty in crossing a road. Only 10% of legally blind and partially sighted people can read Braille, as 66 percent of this group of people are elderly. Developing the sensitive touch to read braille is difficult for an elderly especially in combination with arthritis.
(for the complete research on blindness and low vision, please see the sketchbook)

Focusing on their abilities, rather than their disability, is indicative of the way many disabled people view themselves. *"I put the tube up to my mouth, bite off what I want, and then put the brush on my teeth and go at it."* There is a tendency to over-protect disabled people, often derived from a well-intended desire to minimize risk. Avoiding taking risks frequently means that people are denied opportunities to gain independence. Independence especially in the simple daily tasks. How does a blind or one armed person brush their teeth or wash his / her hair ? Mastering the details of everyday tasks is an evolutionary process. Young blind children who are not bathed frequently will not grow up understanding how important bathing is. If a blind child's hair is not kept clean and neat, he / she will not get used to what clean, combed hair feels like. The hand is the eye of the blind. Young hands have to learn what clean feels like, what it means to lather a washcloth, use a nail brush, and shampoo and rinse hair.

Brushing teeth is another daily task that blind people can only take seriously if they understand what a clean mouth feels like. "I remember the moment I discovered that the furry little jackets of plaque were not intended to be a permanent part of my teeth and that this stuff was what I was supposed to be removing with my toothbrush. In this case it was a matter of training my tongue to notice food caught between my teeth and the scum building up on them. From there it was easy to keep my teeth clean, but more than once I have heard a sighted person comment with distaste on the unpleasant appearance of a blind person with yellowed or dirty teeth and food lingering between them." Again the problem is that the blind child who is never taught what a clean mouth feels like and how to detect the need to brush teeth will never be sensitive to this part of body hygiene.

We all distinguish objects with the help of our four senses, sight, touch, smell and sound. We perceive and differentiate light, illumination, colors, contrast, shapes, graphics and size of text with our visual sense, texture, pressure, density and raised letters with our tactile sense and sounds, talk and voice with our audio sense.

Color and Light
Partial sight, aging and congenital color deficits all produce changes in perception that reduce the visual effectiveness of certain color combinations. Two colors that contrast sharply to someone with normal vision may be far less distinguishable to someone with a visual disorder. It is important to appreciate that it is the contrast of colors one against another that makes them more or less discernible rather than the individual colors themselves. Each color of the spectrum represents a different wavelength. An object that we see as red reflects the "red" wavelength of light and absorbs all the other colors of the spectrum. Visible light comprises only a tiny portion of the entire electromagnetic spectrum of radiation. The wavelengths that the human eye can typically visualize lie between 400 and 700 nanometers in length. However, rather than exhibiting a single wavelength, visible light is usually a mixture of wavelengths whose varying composition is a function of the light source from which it is emitted. How should lighting be in an environment for people with disabilities ? Lighting should be bright and at consistent levels throughout the house, trying to eliminate as much glare and reflection as possible. Fluorescent lighting makes for a bright energy efficient house. Switch plates, and electrical sockets, that are a contrasting color from the wall are easier to see. Light shades of paint on the walls are preferable. Flat finishes help to eliminate glare. Light filtering curtains, blinds, shades and awnings cut down on glare through windows, but allow plenty of indirect sunlight into the house.
(for the complete research on color, contrast and light, please see the sketchbook)

Details
In the life of visually impaired people, memory plays a great role. At home, all objects are in a certain order. Each objects has its particular place which makes for easy identification, distinction and use. The memory of where something was placed and touching the shape of the object guides the choice between objects, not reading labels. Therefore, the shape, size and texture of products are very important. People with visual impairments are very detail conscious and sensitive. Details, characteristic of a particular product, as large clear font, slightly raised letters or embossed pictograms help differentiate one product from another. " When i want to clean, I distinguish the cleaning sprays by the shape of the spray nostrils". But what about in a store ? If a visually impaired person does not know a product by shape, texture or smell and does not have a magnifying glass to read the label, he/she identify or use it without help. In the 70's product categories were color coded. Dish detergents were green, parfumed products yellow or peach. Today product categories are blending. The dish detergent looks and smells like shower gel and the air freshener can easily be mistaken for a body deodorant. The differences are so minute that it is even difficult for people with normal capabilities to tell products apart.

Aids

Customised handgrips and extension handles for handheld products like toothbrushes may assist a person to brush the teeth effectively when poor grip or limited joint mobility are identified as obstacles. If you have dexterity problems or a physical disability, you may find it difficult to hold onto your toothbrush or dental floss. This can be solved by using a few simple home remedies or devices such as using a wide elastic band to attach the brush to your hand, enlarging the brush handle with a sponge, rubber ball or bicycle handle grip or trying to wind an elastic bandage or adhesive tape around the handle. You can lengthen the handle with a piece of wood or plastic such as a ruler, popsicle stick or tongue depressor. Often, using an electric toothbrush or commercial floss holder is easier than the regular version.

PROJECT DESCRIPTION

Initial Ideas

What if you would spray the toothpaste directly into your mouth ?
Tooth bon bons, candy or gum for direct consumption ?
Could the toothpaste be integrated in the toothbrush ?
Would an illuminated bottle guide you the way ?
Could you push the shampoo bottle with your head instead of your hand to dispense the content ?
What if the shampoo was integrated into the shower head or was a shower head attachment ?
Would a glowing bottle facilitate product distinction ?
What about using an LED ? light impuls / blinking
If you don't see it anymore, it is gone...
Temperature ? thermal effect or thermos technology
Could vibration be a means of differentiation ?
Would you like your toothbrush to be voice activated ?
Could i call my toothbrush ?
Audio signal for identification ?
What if the shampoo would peep if it was empty ?
Would a magnet draw your toothbrush back into its holder ?
Could your shampoo be your personal IV ?
What if your toothpaste was a tooth tape instead ?

Develop ideas from the research, not from spontaneous ideas.
Start qualities from the environment in which the object will be used, not from functions only

The products should be sophisticated, elegant, intelligent, simple, easy to use.
Take an aesthetic starting point, not a technical gadget !
What is the quality of the bathroom ? What are the behaviours ? How do you pick up, carry and squeeze something ?
Wouldn't we all benefit if things did not slip ? If things did not fall over ? If things had their fixed place so we knew where we had put them ?!

Simplify -
DREAM ?!

Hair Care Concept

The problems, drawn out of the research, of where to put products, how to put them down, how to find them again, not to throw them over and how to carry multiple products with only one hand were the starting point for the project development. The initial design was a system of ring shaped containers which would be flexible in how to be picked up, held, squeezed and stored. Not in use, the rings could be hung or clipped to anything, including towel bars or bath / shower fixtures, locking them in place instead of free-standing containers which are likely to fall over when approached by a low vision user. In use, the rings could be carried on the body - around the neck, over the wrist or in hand - allowing the user to carry multiple containers at once, even with only one hand. The partially soft rings would be easy to pick up and allow for various ways of holding and squeezing them. To release the contained liquids, the rings would be squeezed with low effort making them suitable for users with arthritis problems as well. The system would include wearable ring containers for shampoo, conditioner and gel. (for process images, please see the sketchbook)

Further investigating the behaviours of how to hold a product to be able to squeeze it properly, of how to release and apply the liquid contained in the product, proved the rings to be only part of the solution. The product needed to be more versatile. It seemed important that the product could not only hang but also could stand on its own. This feature would make the product more flexible for use at home as well as point of purchase display in the store. To stand and hang, the product needed to have a container part and a handle part. For transport, the product could be carried at the handle in one hand or over the wrist, alone or in multiples. To release the contained liquid, the user could hold the container part of the product over his / her head and directly squeeze the liquid onto the head. The user could also hang the product by the handle over the mixer in the shower and squeeze the liquid from the bottom of the container directly into the same hand. To simplify use, the products would feature a non drip valve at the bottom of the container instead of caps which tend to get lost or flip lids which can be difficult to operate. Differentiation between the shampoo and conditioner containers would be made through an overall application of texture. The shampoo container would feature a textured finish, the conditioner a smooth glossy finish. The user could immediately feel the difference between the products at whatever point he / she touched the product. I chose against the use of color as the white aesthetic symbolizes simplicity, purity and hygiene in its highest form. Text or punctiform application of symbols seemed unneccessary, as the seeing person could immediately tell the difference with his / her eyes and the blind person could immediately feel the difference with his / her sensitive hands. The differentiation through rough and smooth seemed logic in the analogy of the hair washing process. The user starts the process with dirty coarse hair and first applies the shampoo. The conditioner then detangles and smoothens the hair in the second step. This sequence would be explained on a paper banderole around the product which the customer would read when purchasing the product in the store. The banderole would feature large print font and maybe a small description in Braille. Braille would be an added feature as the group of people able to read Braille is very small, as mentioned under *blind*. The banderole would be discarded at home once the customer had understood the system of differentiation. Keeping the product information essential would not only simplify the user – product interaction, but also decrease the cost in manufacturing.

As stated before, the products to be designed were to address issues faced by the disabled, but at the same time appeal to everyone. Therefore, the fashion component played an important role in the project. The customer would want to own the product line for its improved functionality as well as its style statement. The shape of the product was designed as clean and simple yet sexy curvaceous. The formal language and absence of color made the product appeal to both genders equally. As portability was a key characteristic in the design of the products, the user would be able to use the products outside the home in a much easier way then standard products before. Bringing the products to the gym or the public pool and hanging or wearing them in the shower, where you do not want anything to touch the floor for hygienic reasons and the shelves provided are often too small to hold several body care products at once, would become a much more convenient experience than juggling multiple containers or bringing a bag into the shower to hold several containers. Even at the beach, the products could become a fun and fashionable accessory.
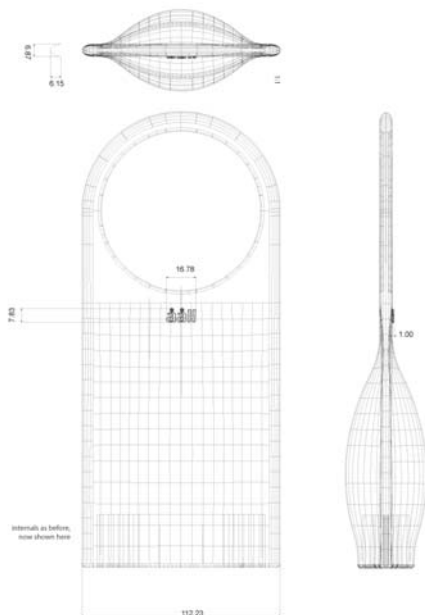
Single Hair Care Containers

textured = shampoo

smooth = conditioner

non drip valve

Single Hair Care Containers
tech dwgs

To further reduce the number of separate products to be carried around and offer product variety, a shampoo and conditioner combo container was added to the product line. The combo combined a shampoo and a conditioner container via a flexible strap. The containers could be connected to each other through an integrated button on one side of both containers.This constellation allowed for extended user possibilities. The combo could be carried the same way as the single container in hand or over the wrist by the strap. Since the combo could be unbuttoned and opened, the product could be hung over closed fixtured as towel bars or railings. The product could also be unfolded and stored completely flat, minimizing the space it would take up for excample in a suitcase or sports bag. Product differentiation would be made in the same way as with the single containers keeping the system of use consistent.
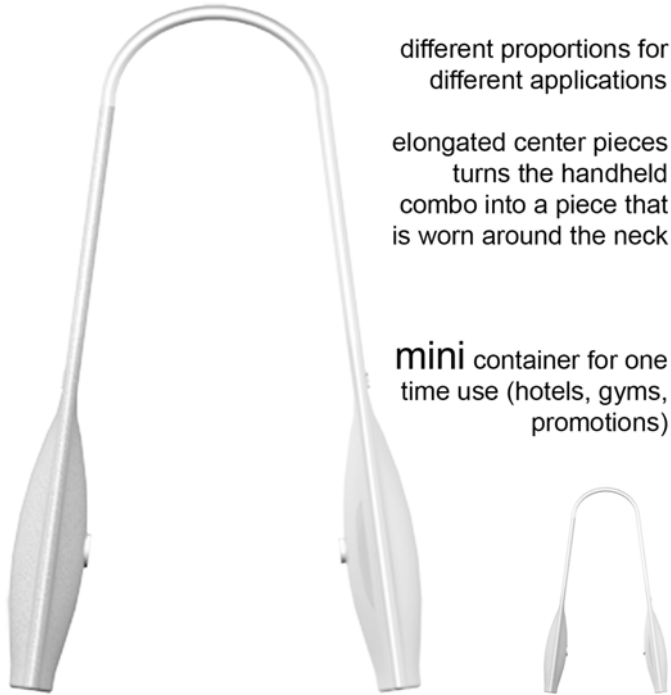
Double Hair Care Containers

textured = shampoo

soft = conditioner

mini containers for one time use (hotels, gyms, promotions)
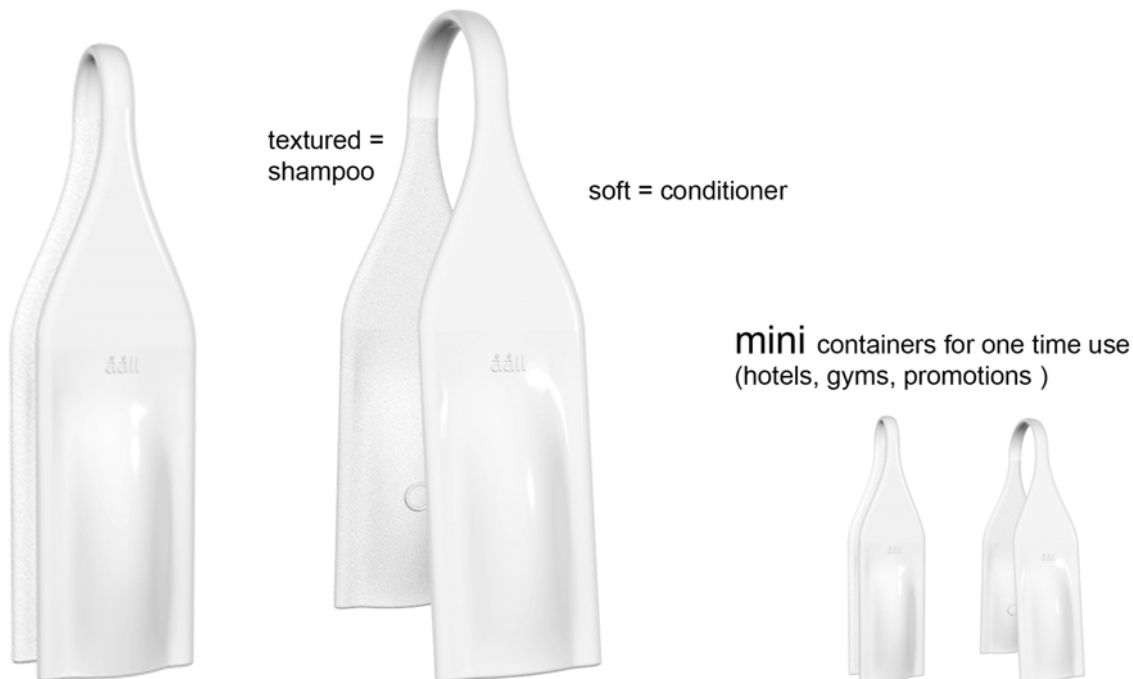
Different product proportions could allow for different ways of use and extended applications. By elongating the center strap, the combo container would grow into something resembling a scarf. Carried around the neck, the product would allow one or both hands to be absolutely free. Shrinking the product to a mini size could turn the product into disposable ampullas, attractive for hotel or gym scenarios and promotional give aways or product samples.
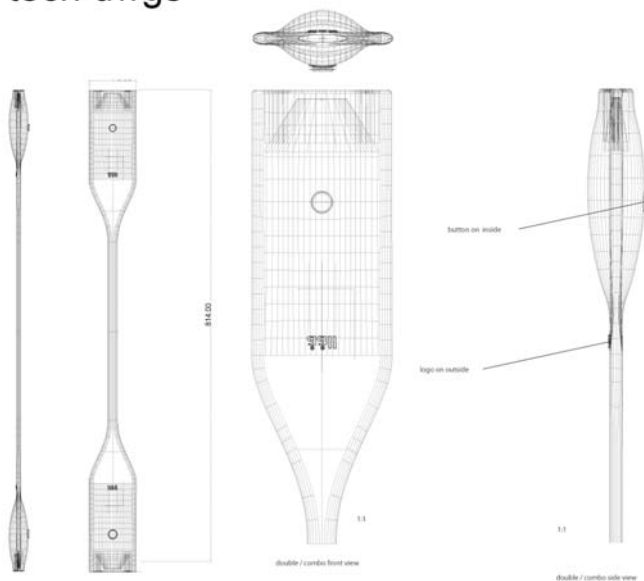(for process images, please see the sketchbook)

Double Shampoo Containers

different proportions for
different applications

elongated center pieces
turns the handheld
combo into a piece that
is worn around the neck

mini container for one
time use (hotels, gyms,
promotions)

Double Hair Care Containers
tech dwgs

button on inside

logo on outside

double / combo front view

double / combo side view

Oral Care Concept I

The oral care concept was based on two main themes drawn out of the research. The direct consumption of toothpaste, the way many blind people deal with the problem of applying the toothpaste to the brush. They don't. Instead they squeeze the toothpaste directly into their mouth. And second, the problem of how to sqeeze the toothpaste out of the tube when having manual constraints due to arthritis or a one armed handicap. As stated in *inital ideas*, various concepts of monodoses, pills and strips were considered as possible solutions. To allow for easy, one handed, single step and direct consumption of the toothpaste, the toothpaste would need to be integrated into the toothbrush. Research showed very few existing models on the market containing toothpaste in the handle of the brush. The lack of popularity of this concept must lie in its malfunctioning. Due to the thick consistency of toothpaste, when drying up, the paste clogs the exit hole and makes repeated use difficult. In addition, the dried residue is unhygienic as it remains between the bristles and causes bacteria growth. A liquid however would solve this problem. Was the toothpaste a liquid spray rather than a paste, it could easily be dispensed directly from the toothbrush without clogging or hygiene concerns. Oral care is about maximum hygiene, as we all strive to have the whitest teeth possible. A liquid spray would support the concept of purity and essence and become something of a dental elixir.
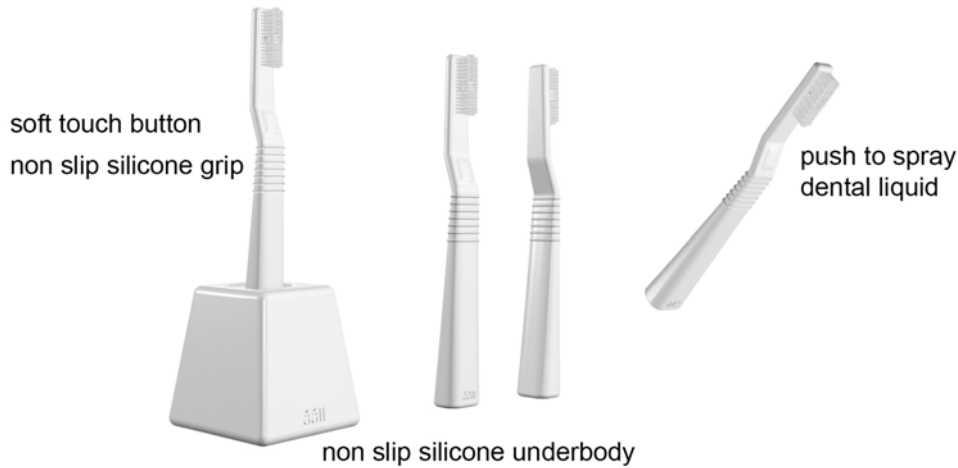
In the inital concept, the spray was to be released from the head of the toothbrush to avoid any bacteria built up in the bristle area. Inserted into the mouth, the user would push a button on the handle of the toothbrush. The button would be positioned so that accidental spraying later in the toothbrushing process would not occur. The user would spay one dose of dental spray into his mouth. As he / she started brushing, the spray would begin to foam and thicken within the mouth. The thickness of the foam could be an indicator of when to stop brushing. The toothbrush was to be disposable and contain enough dental spray for one month. When the spray was empty, it was time to replace the toothbush. This way, the liquid would also act as an indicator for when to change your toothbrush, which most people do not do often enough.

Input from the company required a longer toothbrush life and the choice for the user to change the brush at a later point, even if unhygienic according to dentist's recommendations.The liquid would be sprayed directly through the bristles into the mouth to make the experience more immediate and logical. The consistency and make up of the spray would counter the hygiene concerns.

To elongate the use time of the toothbrush, the toothbrush could be used in conjunction with a refill base. In this case, the toothbrush would contain enough liquid for 1 week of use and could be used and carried alone in scenarios away from home such as work, the gym or short travel. At home, the base would serves as a stand and a refill station.

(for process images, please see the sketchbook)

Inclusive Toothbrush 1

soft touch button

non slip silicone grip

push to spray
dental liquid

non slip silicone underbody

Inclusive Toothbrush 2

colored silicone inlays for a better grip

Two toothbrush version were designed with equal features. A soft touch button to facilitate locating and pressing the button. Punctiform silicone ridges or planar silicone inlays to provide non slip gripping areas and possible application of colors. A silicone inlay on the underbody of the base to ensure non slip standing.

Content Indicator

psi indicator   out = empty   in = full
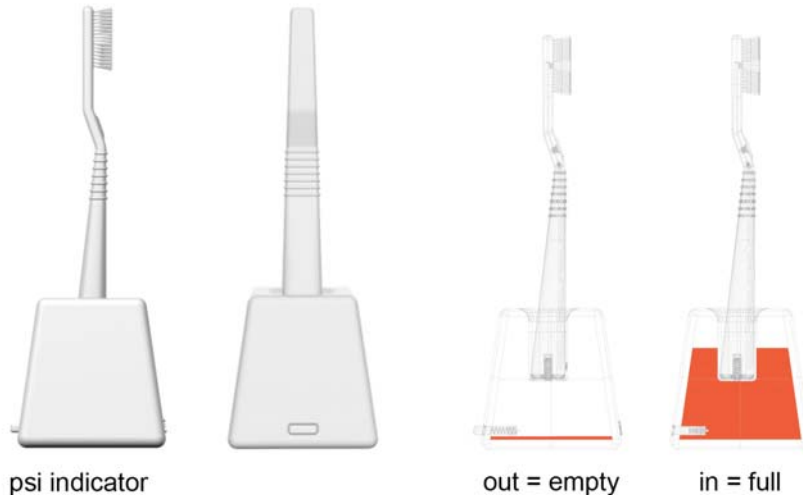
The base was designed as a pressurized compartment containing the liquid dental spray. A psi indicator would be calibrated to the pressure inside the container in the full and empty state. When the container was full, the indicator would be flush with the housing of the base. When empty, the calibrated spring would push the indicator out, creating a visual and tactile clue.

Toothbrush tech dwgs

spray nozzle

internal pump

pump valve

pressurized base with dental liquid

psi indicator
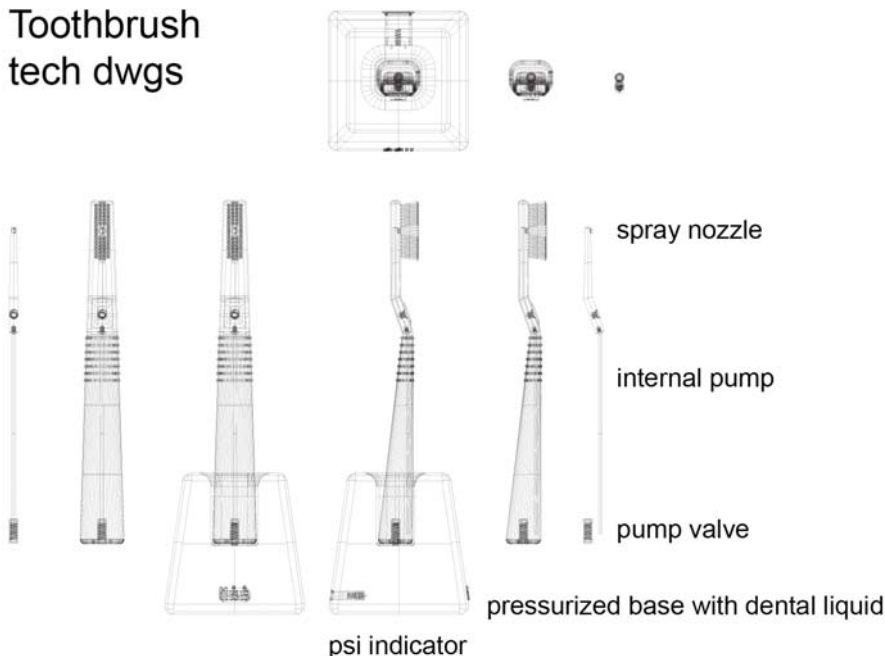
The toothbrush would feature a valve on the bottom of the handle similar in mechanism to a butane gas lighter. When the toothbrush was pushed down inside the base, the valve would let liquid from the base into the handle. A standard reciprocating piston pump mechanism would transport the liquid inside the handle up to the nozzle head in the center of the bristle area, through the push of the button.

Oral Care Concept II
In addition to the inclusive toothbrush, an oral tablet cup was presented as part of the initial oral care concept to the company. As feedback was positive, it was decided to add this product as a third to be developed for the project.

The concept was a disposable cup containing oral tablets in the rim. The user would push out a tablet from the rim into the cup and let the tablet dissolve in water. The mixture could be used as mouthwash rinse or as liquid toothpaste. In the latter case, the liquid remaining in the mouth after rinsing with the mixture, would be brushed to a foamy consistency. The tablets would be organized around the rim of the cup in daily strips of an average three tablets. This system would facilitate indentifying used and unused tablets and indicate how many days of tablets remained. The clean and simple shape of the cup visually tied in with the other two products of the product line. At the same time, the shape was an indicator of the water level inside the cup. As the cup was split into 2 parts, it was easier to discern at what level the water streaming into cup was, as it transcended from the narrow bottom part into the open top part. This feature was important for blind people who often rely on using clip on liquid level indicators. As this product was meant to be disposable, this problem had to be solved through the shape of the cup itself.
The maxi cup would contain one week worth of tablets. Any larger number would start to be confusing, especially to the blind user and would also generate hygienic concerns. Since the tablets would be pushed out into the cup and the open covering was left hanging on the inside of the rim, bacteria could collect in those areas. In the timeframe of one week, this would not be a matter of concern, but in a longer timeframe it might be. The user would dispose of the cup after one week and start a new one. The maxi cups would be sold in packs of four stacked cups, to last one month. The maxi would be used primarily in the home or longer duration scenarios.
The mini cup would contain three tablets for one time or one day use. The cups could be an attractive alternative to disposable mini toothpaste tubes as they are offered in hotels, airplanes, sleeping trains, dentist offices and alike.
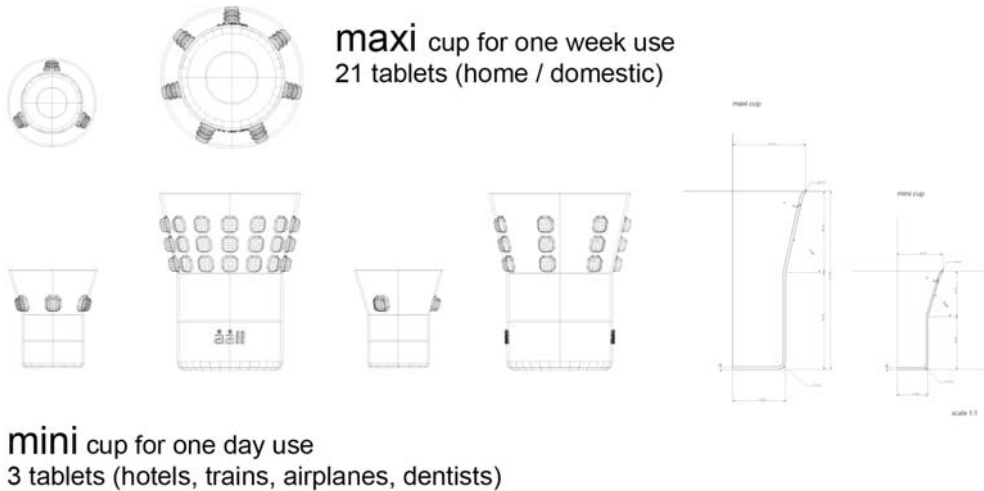(for process images, please see the sketchbook)

Disposable Cup with Oral Tablets

push a tablet from the rim into the cup and dissolve in water. use as mouthwash and /or liquid toothpaste

Disposable Cup with Oral Tablets
tech dwgs

maxi cup for one week use
21 tablets (home / domestic)

mini cup for one day use
3 tablets (hotels, trains, airplanes, dentists)

If the cup was transparent, the tablets could offer color contrast and add a playful aspect to the product. This could be interesting especially for children and make the process of brushing teeth more of a fun activity.

Other possible applications for the disposable tablet cup concept could be the insertion of medicine pills. Imagine a disposable mini cup with aspirin pills included in the rim. The cup could even contain water and be sealed at the top like a yogurt container. This would allow for total freedom of consumption, independent of being close to a source of water. The aspirin cups could be sold anywhere from airports to gas stations to large scale events like concerts to pharmacies and convenience stores.

PROJECT CONTEXT IMAGES
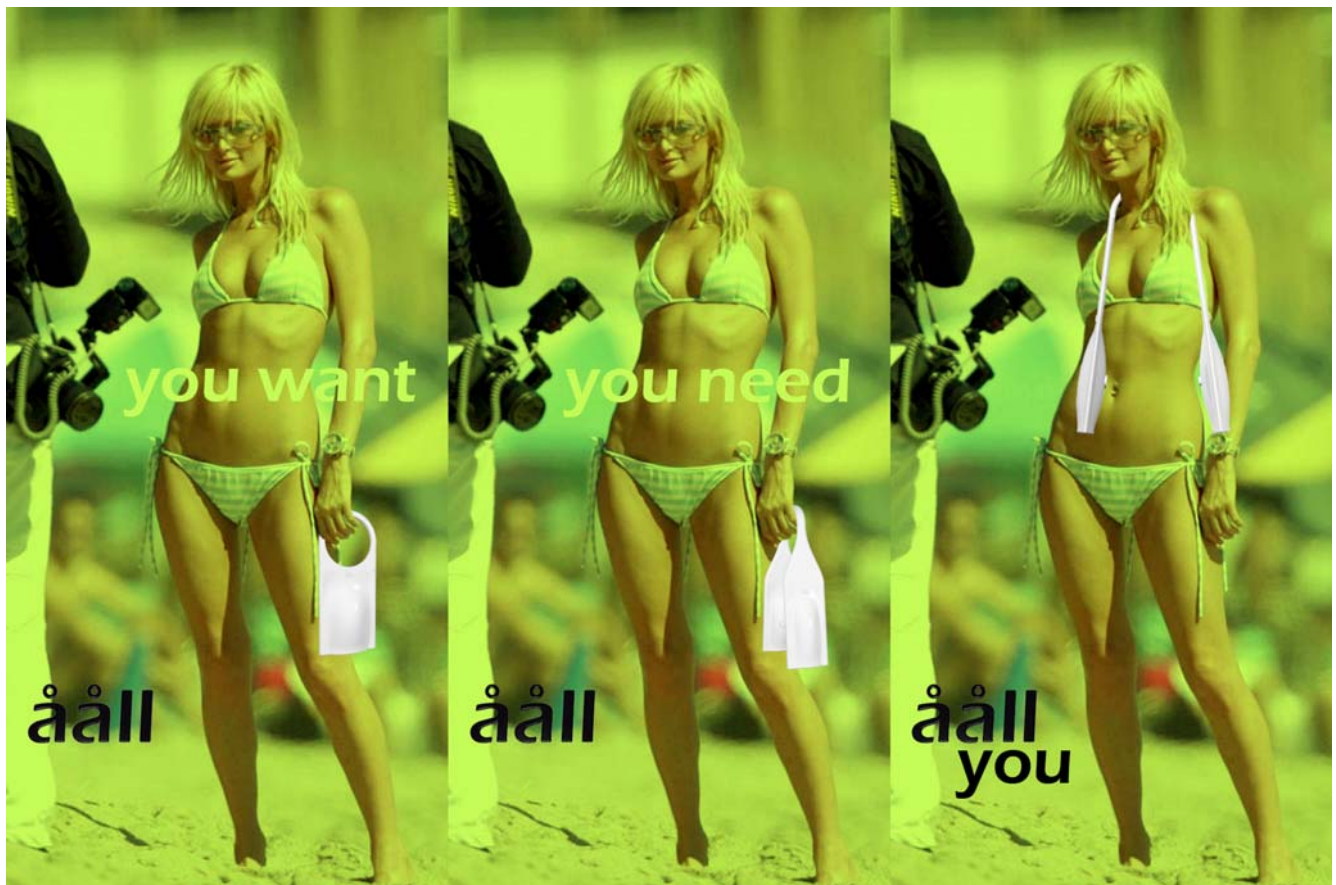
FINAL PROJECT ABSTRACT

ååll is a new line of hair care and oral care products for Sunstar. The line proposes new concepts for hair shampoo and conditioner containers, a toothbrush and an oral tablet. **ååll** products are inclusive. The line is designed for everyone, including low vision, blind and physically impaired people.

ååll shampoo and conditioner are a set of flexible containers. Shampoo and conditioner become part of the bathroom landscape or can be carried as fashionable accessories in public. The containers can be hung over fixtures to give them a fixed place and to facilitate liquid dispensing. Multiple containers can easily be carried with only one hand.

ååll toothbrush is a disposable toothbrush which contains a toothbrushing liquid. When the brush is inserted into the mouth, the liquid is sprayed through the bristles with the push of a button. Through brushing, the liquid turns into a foamy paste. **ååll** toothbrush can be used in conjunction with a refill base. The toothbrush is inserted into the base for daily storage. To refill, the toothbrush is pushed down into the base and liquid is pumped up from the base into the toothbrush.

ååll oral tablets are mouthwash / toothpaste monodoses. A number of tablets are enclosed in the upper part of a disposable plastic cup and can be released into the cup by pushing the tablet from the outside. The released tablet dissolves in the cup in water, forming a liquid toothpaste / mouthwash. The mouthwash is taken in and spit out. The liquid, remaining in the mouth, turns into a foamy paste when brushing the teeth.

ååll è una nuova linea di prodotti Sunstar dedicati alla cura dei capelli e all'igiene dentaria. La linea propone una nuova concezione di contenitori per shampoo e balsamo, dentifricio e pastiglie orali; Tutti in un'unica confezione e disegnati per chiunque, incluso persone con problemi locomotori e disturbi alla vista.

ååll shampoo e balsamo sono conservati in contenitori flessibili; possono diventare parte dell'arredo del bagno o essere portati in pubblico come accessori alla moda. I contenitori possono essere appesi sia per essere piu' facilmente reperibili, sia per facilitare il consumo del liquido contenuto in essi. Più contenitori possono essere portati in giro facilmente con una sola mano.

Lo spazzolino da denti **ååll** è uno spazzolino usa e getta che contiene al suo interno del dentifricio liquido. Quando viene messo in bocca, il liquido viene rilasciato sullo spazzolino attraverso la pressione di un bottone. Spazzolando i denti il liquido si trasforma nella classica pasta schiumosa. Lo spazzolino **ååll** puo' anche essere utilizzato con una base che lo ricarica. Lo spazzolino viene in questo caso posto sulla base dopo il suo utilizzo quotidiano. Per ricaricarlo lo spazzolino viene premuto dentro alla base in modo che del nuovo dentifricio venga trasferito dalla base all'interno dello spazzolino.

Le pastiglie ååll sono dentifrici/colluttori monodose. Le pastiglie sono contenute nella parte superiore di un contenitore di plastica usa e getta. Premendo, le pastiglie cadono nel contenitore e diluite nell'acqua diventano dentifricio/colluttorio. Il colluttorio viene versato in bocca per essere poi sputato, mentre se viene trattenuto in bocca diventa una schiuma cremosa per la pulizia dei denti.

CONCLUSION

In this master project I have attempted to design an inclusive product. A product including a wide variety of users with a broad range of physical capabilities. The average product ignores the differences between users and idealizes the capabilities of the user. The product for the disabled is too specific and schematic to appeal to a user who does not specifically need the respective product. The inclusive product valorizes the differences and complexities between users and offers a dynamic process as the solution. I have focused on abilities rather than disablilites to design a simple, functional and aesthetically pleasing family of products. It was important to me to solve the posed questions and problems through low tech solutions versus high tech gadgets. Simplifying a product and the gestures surrounding the use of the product does not comply with attaching blinking lights or voices to my toothrbrush. Instead, I have redefined basic existing products and by putting them into a new context, created new and innovative solutions. The objective of this project was not to create an extra market for Sunstar, but to create extra value for their existing market. The objective was to broaden the market for Sunstar and respond to maybe not all, but more needs of the the various customer groups.

The proposed family of products is simple, elegant and gender free in aesthetic. The products feel good in the hand, are easy and intuitive to operate and include a component of fun. All proposed products are realistic in terms of manufacturing possibility and costing. As stated in the respective sections of this document, a few of the products have great potential to be developed into various different directions, opening new market segments and customers for Sunstar. The idea of the hair care combo mini sampler or the aspirin tablet cup are promising examples of the extended product potential.

I am satisfied with the result of this project in the context of the rather short timeframe. However, I would have welcomed the possibility to take the project to an even higher level of completeness. Producing a working model to be able to test product functionality, improve user interaction and ease of operation, would have been a logic and preferable step in the design process. Product packaging, point of purchase display in the stores and marketing would have been very interesting areas to address and design. Unfortunately timing did not permit for that and the project therefore cannot be considered final.
I am very interested in investigating the above mentioned development possibilities and would welcome the opportunity to collaborate with Sunstar on the realization of the presented design concepts.

Thank you for your time and consideration.

Jennifer Flume

BIBLIOGRAPHY

the following list of websites is an attempt to document the sources of my research process and to give appropriate credit to the respective authors. please excuse any omissions, as they are unintentional.

http://creative.gettyimages.com/source/home/homeCreative.aspx
http://www8.cao.go.jp/kourei/english/annualreport/2004/1-1.html
http://www.oecd.org/topic/0,2686,en_2649_37435_1_1_1_1_37435,00.html
self identification of handicap: www.census.gov/hrd/www/new_emp/sf256.pdf
haircare myths http://www.disabled-world.com/artman/publish/hair-care.shtml
http://www.lifesolutionsplus.com/body-care-hair-washer-p-159.html
http://omni.ac.uk/browse/mesh/D003730.html
http://www.reach.org.uk/
http://www.dynamic-living.com/bathing.htm
http://www.rnib.org.uk/xpedio/groups/public/documents/visugate/public_focusnov99.hcsp
http://www.afbp.org/Information/Advice/beautysense.asp
http://www.nfb.org/fr/fr10/fr03ss09.htm
http://www.essentialaids.com/
american foundation for the blind: http://www.afb.org/message_board_replies.asp?TopicID=522&FolderID=3
http://www.newscientist.com/channel/info-tech/dn7049
http://www.wired.com/wired/archive/10.09/vision.html
http://www.rnib.org.uk/xpedio/groups/public/documents/PublicWebsite/public_06_Questions.doc
http://www.gizmodo.com/gadgets/gadgets/index.php
http://www.rnib.org.uk/xpedio/groups/public/documents/PublicWebsite/public_everyday.hcsp
http://www.dentaco.no/articles.html
http://www.ada.org/public/topics/special_needs_faq.asp
http://www.radiustoothbrush.com/index.asp?PageAction=VIEWPROD&ProdID=134
http://www.gogreen.cellande.co.uk/shop/products/toothbrush/toothbrush.htm
http://www.goplanetgo.co.uk/index.php?crn=69&rn=306&action=show_detail
http://webexhibits.org/causesofcolor/2.html
http://www.dai-sho.com/colorblindness/
http://www.otal.umd.edu/uupractice/color/
sciforums.com > Science > Human Science > can the blind see?
http://www.99main.com/~charlief/vi/myths.html
http://www.lighthouse.org/color_contrast.htm
http://en.wikipedia.org/wiki/Blindness
http://acept.la.asu.edu/PiN/rdg/color/color.shtml
http://www.ipac.caltech.edu/2mass/outreach/infrared.html
http://micro.magnet.fsu.edu/optics/lightandcolor/sources.html
http://en.wikipedia.org/wiki/Color
http://en.wikipedia.org/wiki/Thermochromism
http://park.org/Guests/Trace/pavilion/whats_u1.htm
http://science.howstuffworks.com/question388.htm
http://www.hobbyglow.com/
http://www.glotechint.com/products.html
http://www.glo-novelty.com/about.htm
http://en.wikipedia.org/wiki/Chemical_light
http://en.wikipedia.org/wiki/Glow_in_the_dark
http://www.glowinc.com/
http://cms.3m.com/cms/US/en/2-135/ciuuiFQ/view.jhtml
http://www.kodak.com/US/en/corp/researchDevelopment/productFeatures/oled2003P.shtml
http://www.geek.com/news/geeknews/q22000/gee20001019002668.htm
http://wolfstone.halloweenhost.com/TechBase/litled_LightEmittingDiodes.html#WhyBother
http://www.sciencedaily.com/releases/2002/04/020402080207.htm
http://science.howstuffworks.com/question42.htm
http://www.northcoastjournal.com/031705/cover0317.html

http://radio.cz/en/article/66602
http://www.philippe-starck.com/