

February 28, 2012

# ENGR110/210

## Perspectives in Assistive Technology



David L. Jaffe, MS



Professor Drew Nelson



John Thiemer

# Items

1. Mid-term reports – questions?
2. Passenger carpool signup list to Willow Garage in Menlo Park on Thursday
3. Passenger carpool signup list to Palo Alto VA on Tuesday, March 6th
4. Elaine Levin's car will return to campus early

# Project Home Stretch

1. Two weeks to final team presentations
2. Evaluate where you are in your project and your goal
3. Consider contingency plans

# Remaining Classes

Thu, Mar 1<sup>st</sup> – Willow Garage

Tue, Mar 6<sup>th</sup> – VA

Thu, Mar 8<sup>th</sup> – Wheelchair Fabrication in  
Developing Countries – Ralf Hotchkiss

Tue, Mar 13<sup>th</sup> – Student Team Project Final  
Presentation

Thu, Mar 15<sup>th</sup> – Course Evaluation & End-  
of-term Celebration

# Spring Quarter Course Announcement

## **Seminar in Women's Health: Women and Disabilities**

Feminist Studies 260/360

Wednesday 2:15 – 5:05

Building 20, Room 21G

[Susan Krieger](#)

This course explores visible and invisible disabilities, women's psychological as well as physical health, cross-cultural variables, and disabled women's identities and diversity of experiences. Disabilities covered include blindness, multiple sclerosis, diabetes, arthritis, emotional and learning disabilities, and conditions requiring wheelchairs and other forms of physical assistance.

# Thursday

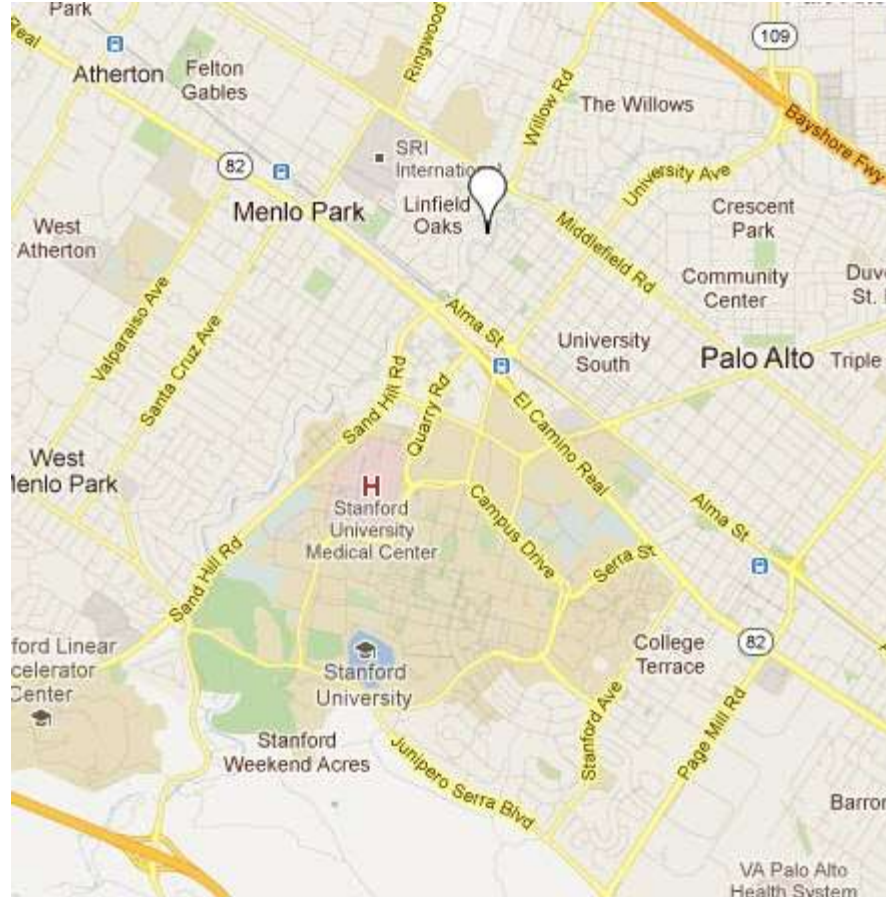


Henry Evans  
and  
PR2



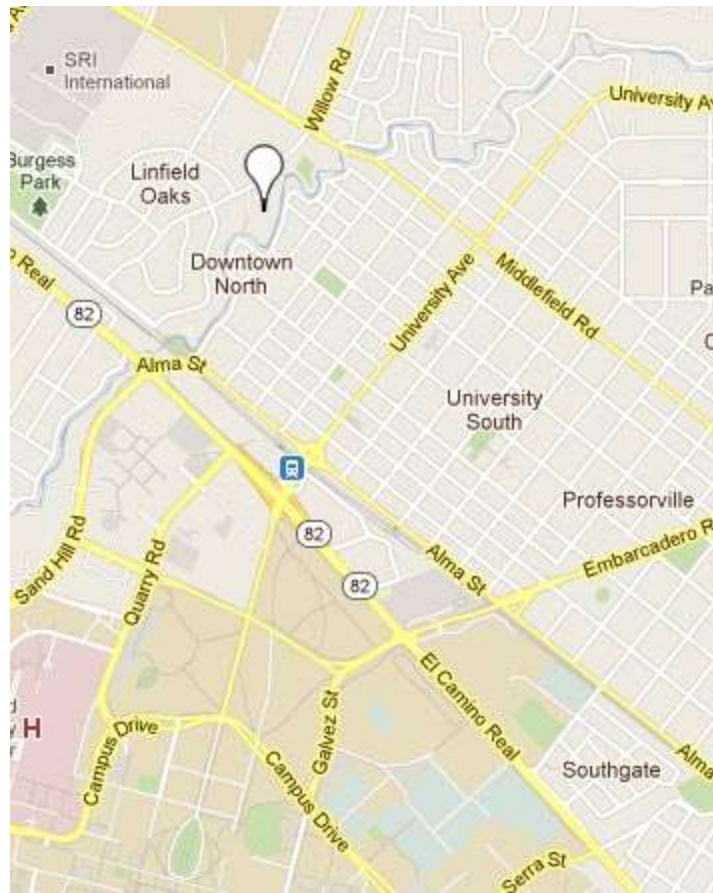
**Tour of Willow Garage in Menlo Park**

# Willow Garage



[Link](#)

68 Willow Road  
Menlo Park, CA 94025



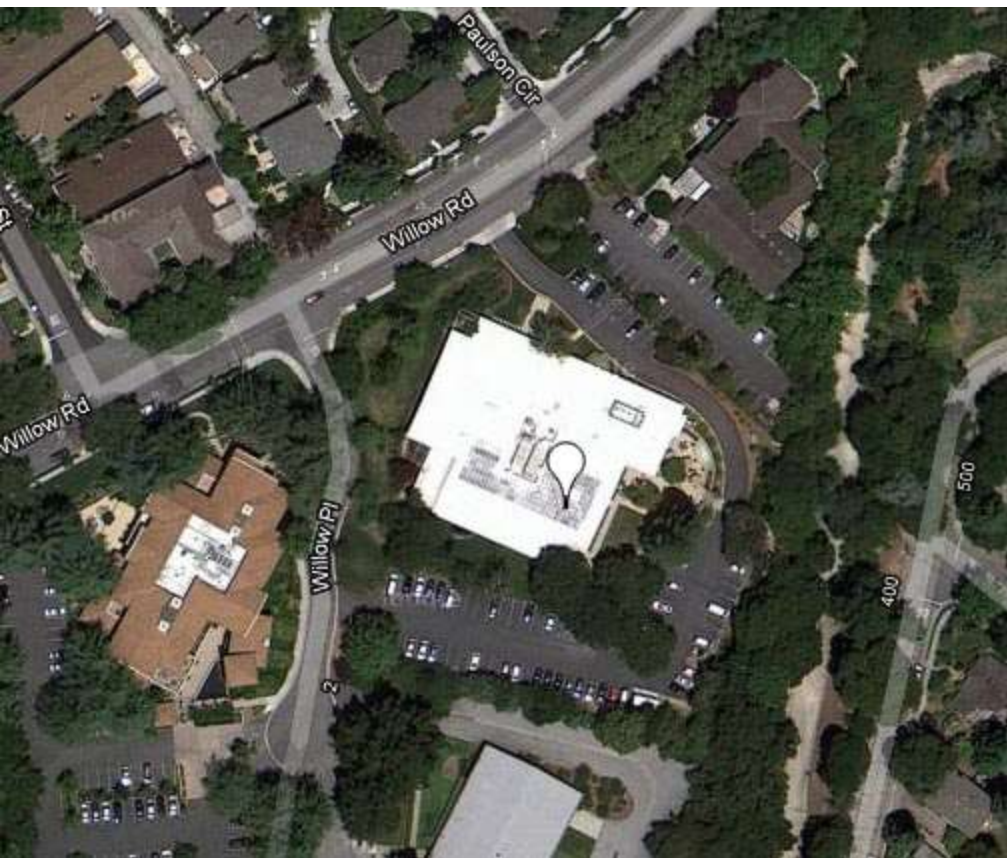


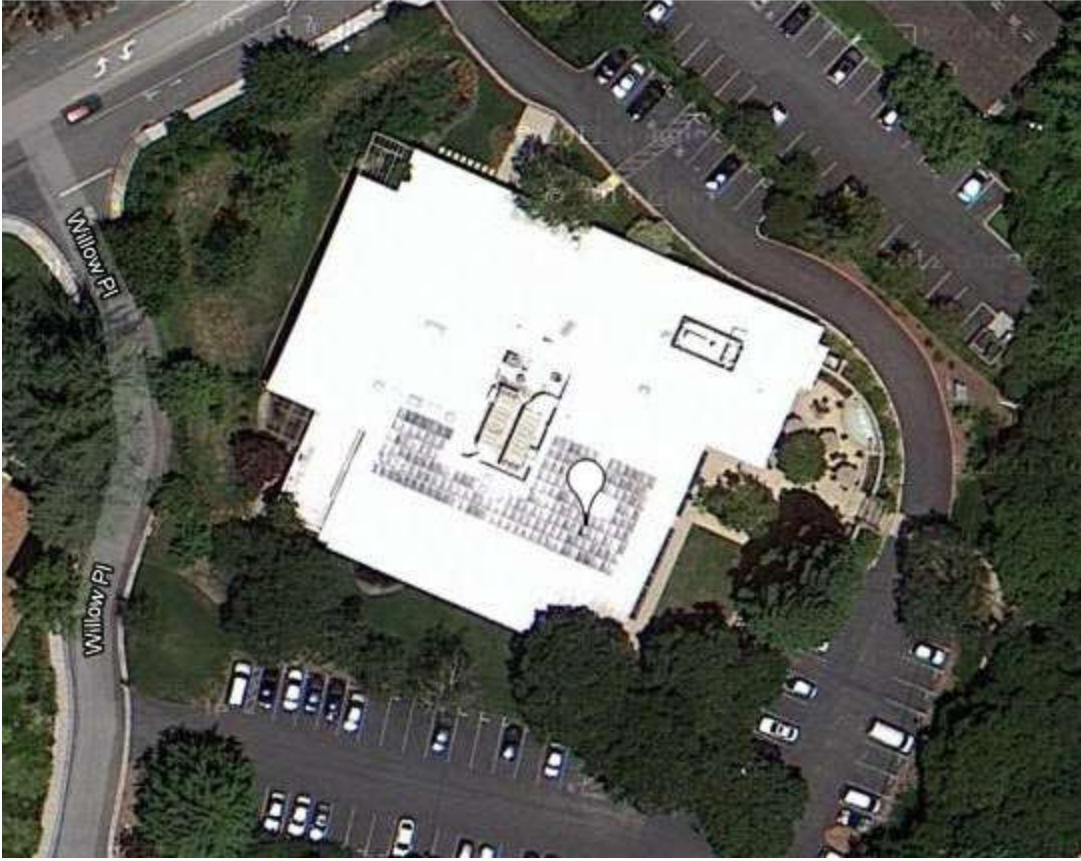














# Tuesday, March 6th

Graham H. Creasey, MD, FRCSEd  
and

Shari Dekelboum, OTR/L, ATP

Karen Parecki, OTR/L, ATP

Evi Klein, MA, CCC-SLP, ATP

Debbie J. Pitsch, MPT, GCS, ATP

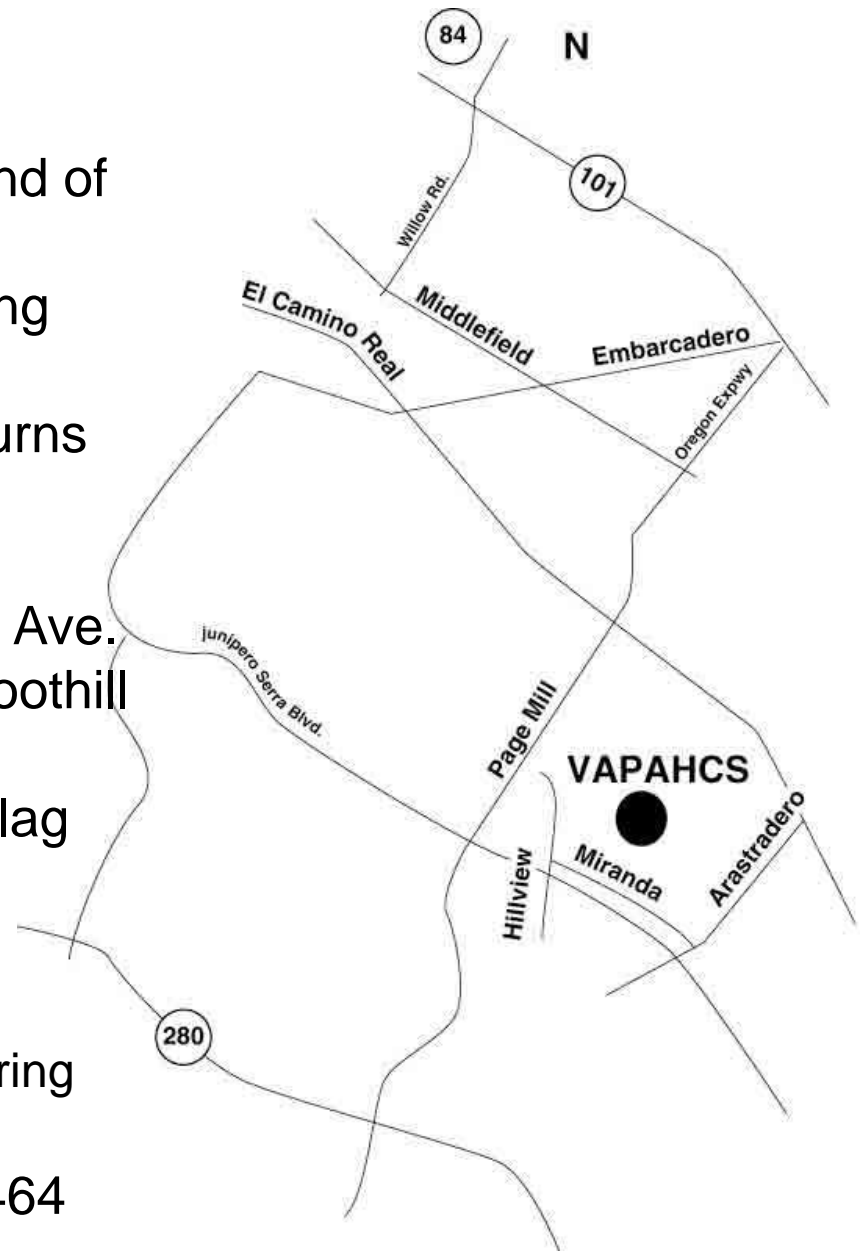


**Tour of VA Palo Alto Health Care System**

Spinal Cord Injury Service

Assistive Technology Center

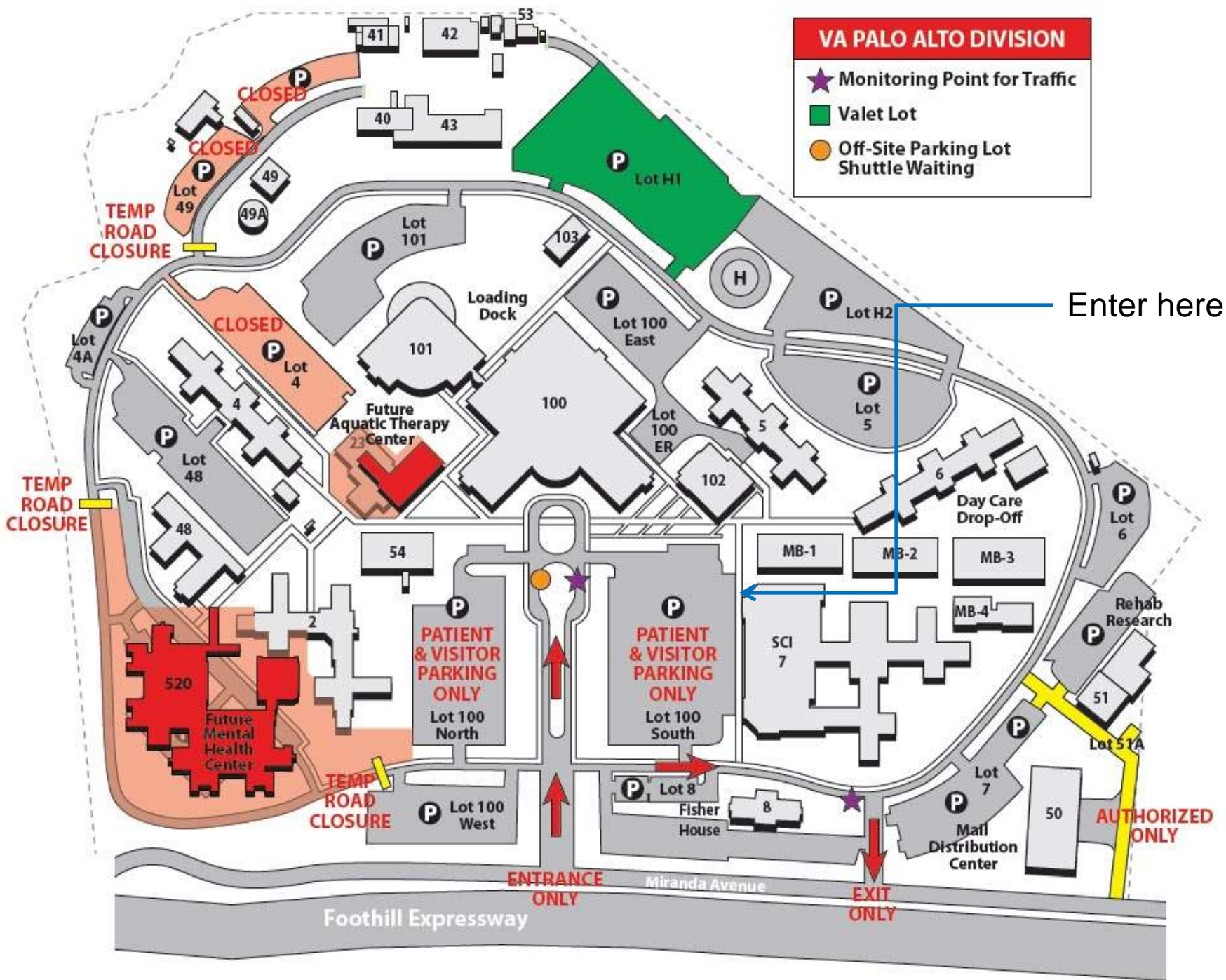
- Take Campus Drive toward the west end of campus
- Turn left onto Junipero Serra Blvd (going south)
- Past Page Mill Road, Junipero Serra turns into Foothill Expressway
- Turn left at light on Hillview
- Make an immediate right onto Miranda Ave.
- Road curves to the left and parallels Foothill Expressway
- Turn left into VA grounds at American flag
- Park in the large lot on the right
- Enter north entrance of Building 7
- Make your way to Room E-111:  
E-111 is the first one on the right after entering the building
- Lost or late? – call Dave at 650/892-4464





# VA PALO ALTO DIVISION

- ★ Monitoring Point for Traffic
- Valet Lot
- Off-Site Parking Lot Shuttle Waiting



Enter here

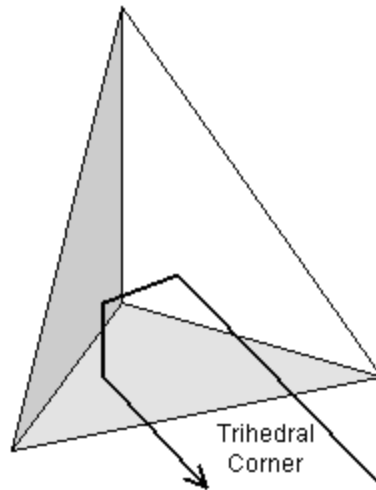
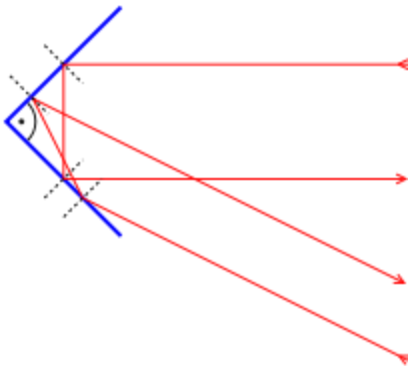
ENTRANCE ONLY

EXIT ONLY

AUTHORIZED ONLY

# Corner Reflector

A **corner reflector** is a retroreflector consisting of three mutually perpendicular, intersecting flat surfaces, which reflects waves back directly towards the source.





# Today



Teri A. Adams, JD  
*Stanford Disability Resource Center*

**You Get No Extra Points for Suffering**

# *Customize the Wheelchair*



***Team name:*** *CustoMobility*

**Mia Davis**

**Project:** Explore ways to add a personal aesthetic to wheelchairs and redefine the perception of wheelchairs and wheelchair users.



# *CustoMobility:*

By Mia Davis



*CustoMobility:  
Making the  
Wheelchair  
Personal*

By Mia Davis

## Some Statistics

- 1.6 million Americans residing outside of institutions use wheelchairs
- Only 155K use electric wheelchairs (~ 10%), other 90% uses manual
- ~600K working-age adults
- 900K elderly (65+)
- Fewer than 88K are under age 18
- Women make up about 60% of wheelchair users (70% use manual, while 50% of males do) – may be due to increased longevity in females



Target group for project





## **Disability Perception**

- Wheelchair users are among the most visible members of the disability community
- 4/5 of wheelchair users responded affirmatively to regarding either themselves as having a disability (80.4%) or having others regarding them as having a disability (78.5%).
- Wheelchairs = symbol of disability

## Goals of Project:

Redefine the perception of wheelchairs and wheelchair users

Create a feasible/ practical, but **attractive** design

Ensure affordability



# Lack of Advancements

1933

**WHEEL CHAIRS**

Colson Hospital Equipment is internationally known and will be found in the leading institutions throughout the country including the Georgia Warm Springs Foundation



Built to give the utmost in comfortable, economical service, Colson Wheel Chairs offer a variety of styles and types to meet every condition or disability. Model C-11-B, illustrated, has comfortable, cool, cane filled seat, back and leg rests, also large cushion rubber tires and coil springs for easy riding.

All adjustments of back and leg rests easily and simply operated.

A postal card will bring you our catalog and complete information.

**Colson**

*"Manufacturers of  
Quality Hospital Equipment  
for Nearly Half  
a Century"*

**THE COLSON COMPANY**  
352 CROAK STREET  
ELYRIA, OHIO, U. S. A.

Courtesy of the Roosevelt Warm Springs Institute

Today



# Inscriptions of Confucius ca. 1680



# Inscriptions of Confucius ca. 1680

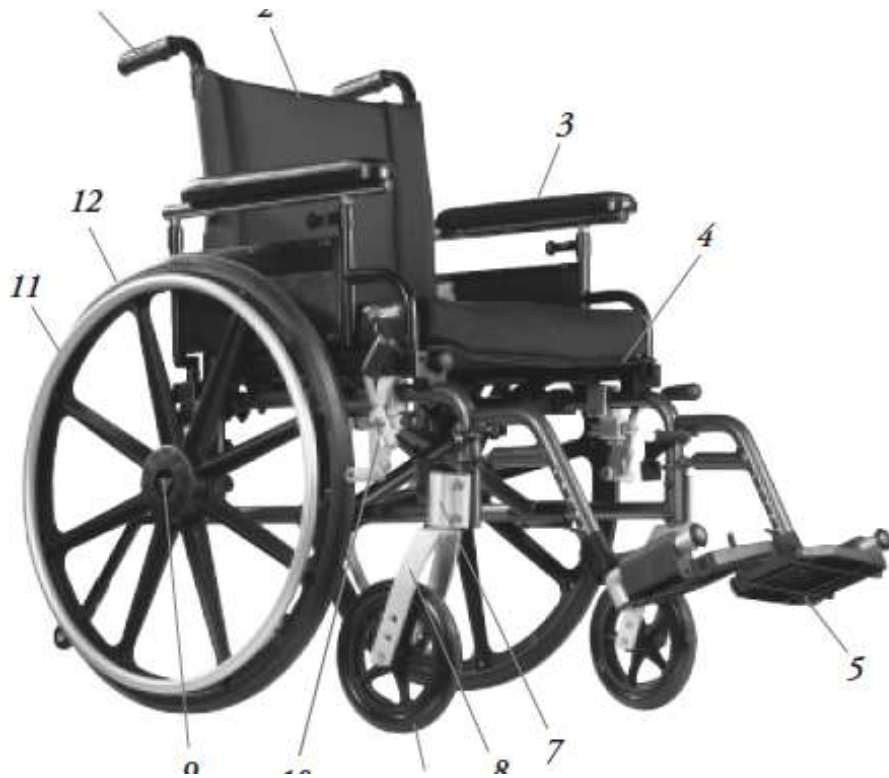


More attractive than  
modern wheelchairs  
– look at all those  
details!

## Veranda

“Has the look and feel of a more expensive chair with an unbeatable price.”





2. Backrest sling upholstery
3. Armrest
4. Seat sling upholstery-  
shown w/optional cushion
5. Swing-Away Footrest
6. Casters
7. Caster housing
8. Fork
9. Quick-release axles
10. Wheel locks
11. Handrim
12. Rear wheel

**Breezy**

# Tracer

Note: Image may show upgrades.







# AGE of Customization



What are the options for  
Wheelchair users?

**SABER**



Colours, \$2145

## Customized Mobility, LLC

- Mounted Game Box on back
- Mounted Cribbage board plus extra cars
- Custom wheel cover graphics on back
- Front wheel covers are poker chips
- Extra cool graphics just for card playing enthusiasts



### Problems:

- Has to be built with these features – not simple add-ons
  - → Can't change after purchase
- Over the top
- \$799



Wheelchair Personalities

# INSPIRATION



# INSPIRATION

Eames Lounge Chair



Le Chaise Chair



# INSPIRATION





What do these have in common?



Cushions! (some much needed  
curvature)







Back



Seat



**Front**

Canvas  
surrounding a  
foam pad



**Side**

Stitching  
for simple  
removal  
(zipper)



**Back**

Buttons for  
easy fastening

# Velcro





Provides cushioning for support and increased comfort (padding insert – foam, mattress material)



Available in different patterns and materials for customization







Wheelchairs

Scooters

Walkers

Accessories

Incontinence

Bathroom

Lift Chairs

Beds/Tables

Kids

All Products

Search



Free Shipping  
orders over \$99.00



Lowest Price  
100% Guarantee



Easy Returns  
best on the web



Manual Wheelchairs

Standard Weight

Invacare Veranda Manual Wheelchair

Cart

Everything you need to know

Customize

Reviews

Returns



### Invacare Veranda Manual Wheelchair

Item #: 2398 | InvacareSKU: V18PFR

Print Page reviews  
Email a Friend

★★★★★ 7 reviews

[Write a Review](#) | [Read Reviews](#)

#### Quick Overview

- Choice of full-length fixed or desk-length removable armrests
- Pocket on back of backrest

**\$117.00**

Sugg. Retail: \$336.00

Customize & buy

SHIPPING: FREE /Ships 1-2 days



view  
more

Customize & buy





Configure your Invacare Veranda Manual Wheelchair  
Use the options below to build the product to meet your needs

Base price:  
**\$117.00**



#### Seat Size

[Learn More](#)

- [18" x 16" \(standard\)](#)
- [16" x 16" \(narrow\) + \\$15.00](#)  
[Unavailable Due to the Armrests selected](#)
- [20" x 16" \(Wide\) + \\$15.00](#)  
**temporarily Out of Stock - Available - 03/15/2012**
- [18" x 16"](#)

#### Armrests

[Learn More](#)

- [Full-length, Fixed Armrests](#)
- [Desk-length, Removable Armrests + \\$20.00](#)

#### Footrests

[Learn More](#)



- [Swingaway \(Standard\)](#)
- [Elevating Legrests + \\$35.00](#)

#### Wheelchair Cushion



- [Total chair cushion + \\$49.00](#)
- [Non-slip Waterproof Gel Cushion + \\$39.00](#)
- [Tempur-Pedic ViscoRide Cushion + \\$124.00](#)
- [Memory Foam Back Cushion + \\$69.00](#)

#### Wheelchair Accessories



- [Wheelchair cup and bottle holder + \\$25.00](#)
- [Liquid Caddy Drink Holder + \\$20.99](#)

#### Bags

- [Reflective mobility tote bag + \\$30.00](#)
- [Armrest Pocket + \\$29.95](#)

#### Wheelchair Ponchos



- [Rain Poncho + \\$49.00](#)
- [Fleece poncho + \\$35.00](#)
- [Winter Poncho + \\$59.00](#)



\$145 Ali-Med Wheelchair Arm  
Trough



.....a wheelchair  
Snuggie?

What kind of “options”  
are these??



## Armrest Wheelchair Bags





**Side Access Seatback Wheelchair Bag**

How is this accessible?

# Inspiration



# Inspiration





# Inspiration



# Utilize Side Space







Too ostentatious ...  
maybe another way  
to add lights without  
being too flashy



# Colored Tires



# FUTURE WORK

Build a functional prototype

Multiple iterations

Get feedback from users

Think about improvements to electric wheelchairs

Brainstorm more options for men

# FACTORS TO CONSIDER

Affordability (total costs)

- target consumers

Compactness (can it fold...  
traveling, storing, etc.)

# Short Break

