Figure 1: Sun logo encircled with a compass with arrows pointing up, down, left, and right. The words “International Orientation and Mobility Online Symposium” lie to the right of the logo.

Date: January 26, 2018

Time: 12:15-1:15 EST

Title: Guide Dogs and the Future of Mobility Instruction

Presenter:
Alan Brooks, Qualified Orientation and Mobility Specialist and GDMI Guide Dog Specialist,
United Kingdom

Guide Dogs and the Future of Mobility Instruction

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Slide 1, Agenda

- Looking Back.
- Demographic changes in individuals with sight loss.
- Technology Implications.
- Medical Research Implications.
- Training the future GDMI & O&M specialist.

Slide 2, Looking Back

- Blind people had few lifestyle/mobility alternatives.
- Institutional lifestyle.
- Sighted Guide from family/friends.
- Self trained with stick.
- Self trained with dog.
- Beggars/Musicians.
- Formally trained Guide Dogs took blind people out of institutions onto the streets. (from 1916 – Germany).

Slide 3, Looking Back

Guide Dogs

- Pompeii 79 AD - wall painting of blind man with dog.
- China 13 century - illustration of GD.
- France 1780 - reference to well trained dogs at the Quinze-Vingts hospital for the blind.
- Austria 1819 - Johann Wilhelm Klein writes on training techniques.
- Germany 1916 - Dr Stalling encourages guide dogs for war blinded.
- Switzerland 1927 - Dorothy Harrison Eustace runs an international training school for clients & GDMI's.
- USA 1930 Nashville - Seeing Eye founded by Maurice Franks.
- UK 1931- GDBA founded in Wallasey.
- Australia 1951 - first guide dogs start in Perth.

Slide 4,

Figure 1 Image of a drawing of a town.

Slide 5, Looking Back

The first GDMI's were dog training enthusiasts rather than experts on blind mobility.
Shortage of good dogs meant that only the most capable people with greatest potential obtained a GD!

Having a GD was to join the elite of your peer group in terms of mobility.
The first dogs (usually GSD's) were rescue dogs often with underlying problems.
Before vaccination dogs could frequently succumb to disease during training or soon after.

Slide 6, Looking Back

Orientation & Mobility

- 1872 W. Hanks Levy.
- 1944 Valley Forge Army Hospital - Richard Hoover.
- 1948 Hines Veterans Administration.
- Europe 1960's – now a degree accredited qualification.
- Australia 1971 – now required qualification to become a GDMI.

Slide 7, Looking Back

- 1977 W.B.U. encouraged more collaboration in the GD world.
- 1989 IGDF formed encouraged collaboration and set guidelines for the GD industry.
- 2005 IGDF strengthens guidelines to become standards.
- 2010 IGDF sets standards for GDMI training.

Slide 8, Changing Demographics & their implications.

- In 1920 only 6% of the U.K. population were over retirement age.
- In 2006 16% of the U.K. population were over retirement age which is still increasing.
- 28% of U.K. GD clients have additional health or disabilities that affect mobility or training.
- Although children born blind today are less in number more have additional disabilities or health issues

Slide 9, Demographics of visually impaired people UK 2006.

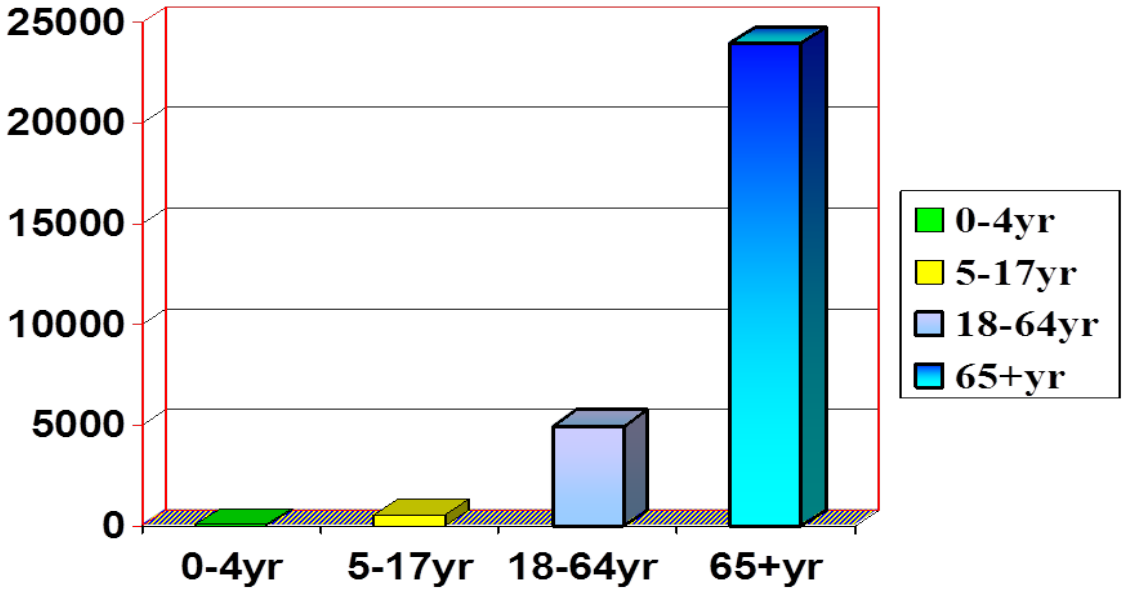

Figure 2 Bar graph showing demographics of visually impaired people in the UK in 2006: 0-4 yr: 0; 5-17 yr: 0; 18-64yr: 500; 65+ yr: close to 2400

Slide 10, Technology Implications

- ELECTRONIC MOBILITY DEVICES – INITIAL CLASSIFICATION:
- Primary or secondary devices.
- Secondary in use with Cane, Dog or sighted guide.

Slide 11, Technology Implications

- Farmer and Smith 1996 Classified
- Type I, single output “go/no go”
- Type II, multiple output “go/no go”
- Type III, offered qualitative information
- Type IV, with “artificial intelligence”
- Some argue that there should be a return to the basic system of classification as primary or secondary devices, others disagree!

Slide 13, Technology Implications

- EXISTING & EMERGING TECHNOLOGY
- Laser.
- Ultra-Sonics.
- Global Positioning Systems.
- Radio beacons (RFID).
- Global Information Systems (GIS).

Slide 14, Technology Implications

Technology Testing and Evaluation - U.K.

OBJECTIVES

- To find out why the technology is not in greater use.
- To examine the quality of the devices available.
- To test the feasibility of developing an on-going testing service.
- To test the feasibility of introducing these devices into a mainstream mobility service.

Brooks, Petrie & Underwood 2002

Slide 15, Technology Implications

U.K. RESEARCH OUTCOMES

- Devices fell into three clear categories for evaluation.
- Identified strengths & weaknesses of different types of device.
- Identifies a need for better information for both end users and training providers.
- Found that little training is available for either end users or training providers.
- Routinely poor installation & programming limits effectiveness of some devices.

Slide 16, Technology Implications

- Currently most technological obstacle detection devices are produced on a cottage industry system - not large scale manufacturing.
- Training for clients has not been universally addressed by mobility professionals.
- Training offered by manufacturers is often neglected in favour of marketing.

Slide 17, Technology Implications

CATEGORISATION OF DEVICES

- Obstacle Detection/Negotiation devices.
- Navigation devices.
- Landmark devices.

Slide 18, Technology Implications

Options for Obstacle Detection Devices Ultra-Sonic or Lasers

- Spectacles or head mounted.
- Cane mounted.
- Hand held.
- Wheelchair/ walking frame mounted.
- Audible feedback – musical tones or not?
- Masking ambient sound.
- Tactile feedback – vibration – subtlety.Slide 19

Figure 3 Image of two men. One holding a metal Adapted Mobility Device. The other holding an electronic mobility device.

Slide 20, Technology Implications

NAVIGATION DEVICES

- Increasingly GPS systems.
- Includes pre-planning computer systems.

Slide 21, Technology Implications

NAVIGATION DEVICES

- Creates considerable interest amongst potential users.
- Performance is mixed with problems of accuracy of message location for pedestrians.

Slide 22, Technology Implications

LANDMARK DEVICES – RFID BEACONS

- Uses small unique frequency transmitter.
- Up to 4 year battery life.
- Can be hidden in brick, wood concrete etc.
- Up to 80 yards transmission but can be reduced to 2/4 yards.
- Receiver could be a mobile phone with the correct App.
- Transmission is radio frequency only.
- Information may be bus/train timetable or just a landmark!

Slide 23, Technology Implications

- LANDMARK DEVICES – RFID beacons
- Potential to be used by the majority of people.
- No purchase required.
- Requires little or no training.
- Quality of installation is often inadequate.
- Quality of message is sometimes inappropriate.

Slide 24, Technology Implications

U.K. Project Outcomes

- Found a strong desire for more & better information on ETA's from end users and professionals.
- There is little provision for training either for the end user or professional.
- Poor installation of landmark devices severely impacts upon their effectiveness.
- Promotion of products without training creates false expectations leading to disillusion amongst end users and professionals.
- Both end user and profession revert to tried & tested mobility practice.

Slide 25, Technology Implications

- Manufacturers need to add training from professional specialists to the marketing aspect of their product.
- Inclusive design in an aging population will increase the market for such products.
- Increasing market size will take the specialists devices out of the present cottage industry manufacturing base.
- Our profession needs to develop CPD training for ourselves.
- We need to demonstrate the benefits of programming devices accurately.
- Re-classify ETA's in line with our findings.

Slide 26, Technology Implications
Ultra-cane training South Africa 2005

Figure 4 Image of a group of people smiling at the camera. Some have Ultra-canes.

Slide 27, Technology Implications

Global Information Systems

- Measure success rates of mobility training.
- Pre-planning of mobility training.
- Problem solving in mobility.

Slide 28, Technology Implications

MEASURING SUCCESS RATES.

- Client carries a GIS monitor prior to training.
- Routes & journey times recorded.
- Delays stoppages recorded.
- Transport use recorded.

Slide 29, Technology Implications

Figure 5 Image of a person facing the side, holding a small bag with a long strap.

Slide 30, Technology Implications

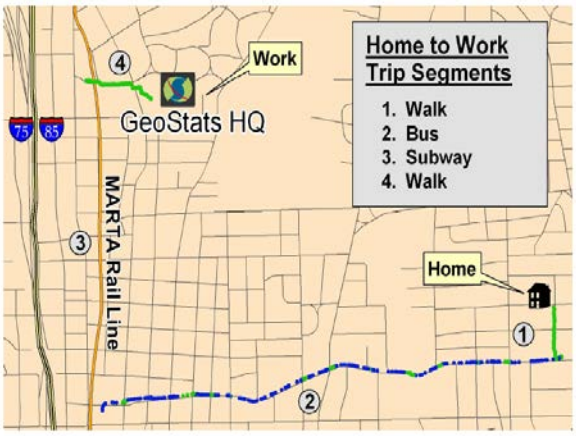

Figure 6 Image of a map with Geo Stats HQ and Home detailed on opposite ends of the map.

Slide 31, Technology Implications

Post Training Measurements

- Same measurements as pre-training.
- Compare frequency of travel.
- Compare speed of travel.
- Compare number of stoppages (efficiency).

Slide 32, Technology Implications

Google Images

- Use images for route planning.

Slides 33

Figure 7 Street images using Google Maps

Slide 34

Figure 8 Same image as above but the image has been zoomed in to show the major roads merging.

Slide 35

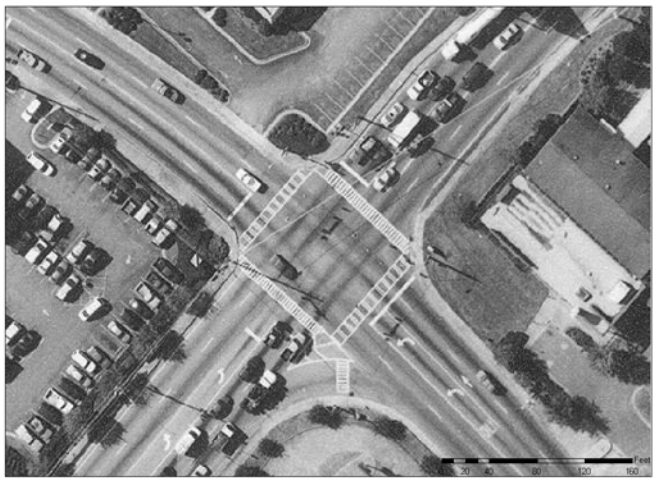

Figure 9 Image of a four-way intersection.

Slide 36

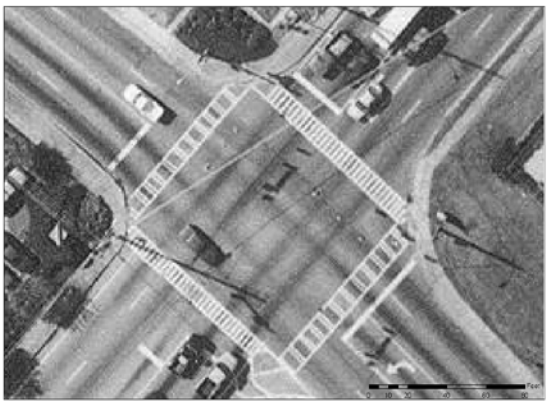

Figure 10 the same 4-way intersection shown above but zoomed in to show the cross walks very clearly.

Slide 37, Technology Implications

What is needed to Make Google Images Work for Us?

- Up to date accurate imagery.
- Evaluation by Mobility professionals.
- Link to Google earth?

Slide 38, Technology Implications

- Inertia Guidance – University of Stuttgart.
- Motion sensor linked to electronic plan of building.
- Not reliant on GPS satellittes.
- Download information from website.
- Challenge is to make it:
- small enough and
- cheap enough
- Easy to use

Slide 39, Technology Implications

What is Needed to make Google Images Work for Us?

- Up to date accurate imagery.
- Evaluation by Mobility professionals.
- Link to Google earth?

Slide 40, Medical Implications

- Restoration of sight
- Retinal implants
- Stem Cell surgery

Slide 41, Medical Implications

Some Problems in Sight Restoration

- Early sight loss & late repair.
- Brain interpretation of new information
- What mobility training is available post restoration?
- Cases of suicide have occurred

Slide 42, Medical Implications

Stem Cell Surgery

- Crashing Through – The man who dared to see, Robert Kurson, ISBN 13-978-1400063352
- The story of Mike May

Slide 43, Medical Implications

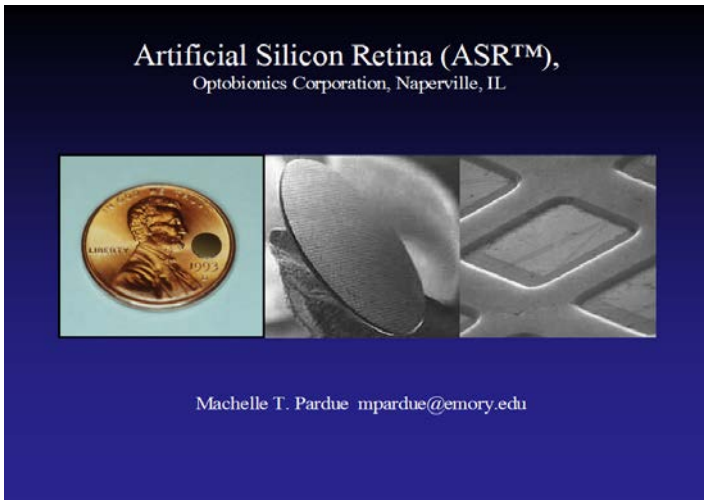

Figure 11 "Artificial Silicon Retina (ASR TM)" Three images: A penny with a small round, flat object above the date, a close-up of a small, round object, and a metal grid.

Slide 44, Medical Implications

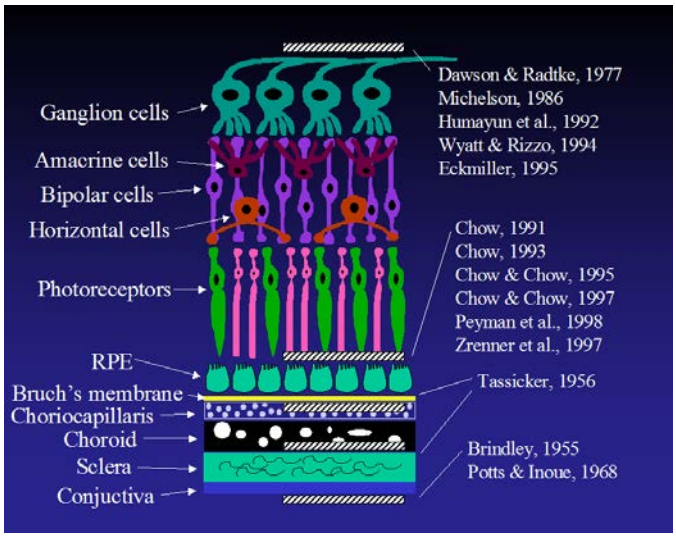

Figure 12 Drawing of various types of cells stacked on top of one another.

Slide 45, Training for the Future

Similar accreditation for both branches of the profession (GDMI and O&M).

- Improved understanding of other professional disciplines.
- Collaborative training for both branches of the profession.
- Professionals involved in relevant Research & Development.
- Project management training.

Slide 46, Training for the Future

Range of Skills Required

- Usual dog training skills where appropriate.
- Improved knowledge of the psychological implications of blindness.
- Teaching skills.
- Training for individuals with recent sight restoration!
- Understanding the function of ETA's.

- Understanding of GPS/ GIS and similar technology.

Slide 47, Acknowledgements & Thanks

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- Professor Peter Barker OBE. BSc (Eng).
- Guide Dogs UK for their 43 years of support.

THANKS TO YOU FOR LISTENING!

Figure 13 Image of Golden Labrador puppy sleeping on the floor.

Texas School for the Blind & Visually Impaired

Outreach Programs

Figure 14 TSBVI logo

This project is supported by the U.S. Department of Education, Special Education Program (OSEP). Opinions expressed here are the authors and do not necessarily represent the position of the Department of Education.

Figure 15 IDEAs that Work logo and US Dept. of Education OSEP disclaimer.