

AWIS

ASSOCIATION FOR WOMEN IN SCIENCE

Summer 2011 *Volume 42, Number 3*

What is Advocacy?

Gender Bias

**Women in Academic Geoscience
Motivating Future Scientists**

YOUR NETWORK, YOUR RESOURCE, YOUR VOICE

■ Features

- 8 *What is Advocacy and How Does it Work?* Page Baluch
- 10 *Advocating for Status and Recognition of Women in Science* A.B. Popejoy
- 12 *Is Gender Bias Gone with the Wind?* Joan Williams
- 14 *Institutional Commitments and Grassroots Advocacy: Advancing the Status of Women Faculty* Vania Cao
- 17 *NIH Director's ARRA-Funded Pathfinder Award Promotes Diversity in the Scientific Workforce* Melissa McCartney
- 20 *Conversations with Sally Rockey* Faye Farmer
- 22 *AWIS Fellows Program: Spotlight on Dr. Susan Forsburg* Hoorig Nassanian
- 24 *Increasing the Recruitment and Retention of Women in Academic Geosciences: Where We Are and Where We Should Be* Jennifer Glass
- 28 *AWIS All Star Volunteer Barbara Mandula* Janet Bandows Koster

■ National AWIS

- 4 PRESIDENT'S REMARKS *Bylaws are Boring* Joan Herbers
- 5 NEWS FROM NATIONAL *We're All About You!* Janet Bandows Koster
- 6 EDITOR'S NOTES *Editor's Notes on Advocacy* Laura Mackey Lorentzen

■ In Every Issue

- 28 MONEY MATTERS *Is there a Robot in Your Future? Retirement Planning for the 21st Century* Edi Alvarez
- 31 CAREER TALK *Salary Negotiation: The Cost of Avoidance and Tips for Success* Mara Jeffress
- 33 PI PLEASURES AND PERILS *To Bee or Not to Bee: The PI Who's a Generous Advocate – Or, Not so Much?* Karen Elkins
- 36 SCIENCE AND SOCIETY *Improving Undergraduate Biology and Science Education on a Broad Scale* David F. Brakke
- 37 GENERATION TECH *Motivating Future Scientists* Page Baluch
- 40 SCIENCE AND EDUCATION *Engaging Students and New STEM in Advocacy* A.B. Diefenderfer
- 42 BOOK REVIEW *Medical Mysteries* Margaret Reilly
- 44 CHAPTER NEWS Compiled by Joy Ramos



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Editor's Notes on Advocacy

By Laura Mackey Lorentzen

AWIS membership is an investment in one's professional support network. Active membership not only advances the organization's mission, but also provides a venue for the expression of our individual and collective voices. This issue of AWIS Magazine is themed "advocacy," a topic that is certainly as

applicable to STEM disciplines today as it was when AWIS was founded 40 years ago. For starters, see the August 2011 report by the U.S. Department of Commerce, Economics & Statistics Administration titled "Women in STEM: A Gender Gap to Innovation" (available at <http://www.esa.doc.gov/Reports/women-stem-gender-gap-innovation>). I encourage you to carry this issue with you and read it cover to cover. Our volunteer editors and writers who researched and wrote the numerous articles in this issue are to be commended for their comprehensive take on advocacy. In this one edition, a wide range of advocacy topics are covered, from just what is advocacy, to the present state of gender bias, to what various institutions and government initiatives are engaged in advancing the success of women in STEM disciplines.

I also encourage you to provide feedback on our magazine via letters to the editor. All of the magazine staff, from those who write the columns and feature articles to those in turn who work to edit and proof the copy, to those making layout decisions, are members of AWIS who do the work for this quarterly publication because they want to ensure all of us in science have access to timely, relevant topics. Take a moment and write to us to comment on what struck you as you read this issue or share with us your thoughts on what future topics you might wish us to focus on in future issues. Organizational growth is the theme of the Fall 2011 issue of AWIS Magazine. Editorial correspondence can be submitted to the AWIS National Office at 1321 Duke Street Suite 210, Alexandria VA 22314 or via email awis@awis.org.

Remember that as AWIS now celebrates its first 40 years of service to and for women in STEM, AWIS strives to be your network, your resource and your voice!

ERRATA

AWIS Magazine apologizes for the incorrect first name of the author of "Ph.D. to J.D.: A Career in Biotechnology Patent Law" in the Spring 2011 issue. The correct author name is Katie Stagliano.

AWIS

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AWIS All Star Volunteer Barbara Mandula



Dr. Barbara Mandula

Established by AWIS in 1974 as the Educational Foundation, funds are provided by contributions from AWIS members and supporters. The inaugural contribution was provided by then AWIS president, Dr. Estelle Ramey, who contributed some of her speaking fees. From its inception through this past year, the program has annually given 25 awards of \$500 or \$1,000 to high school students, undergraduates, and pre-docs.

Together with Barbara's leadership, the AWIS National Board has been working to reinvigorate the AWIS Educational Awards Program, fostering its growth. The newly-designed program, to be announced within the next few months, will position AWIS to expand its reach, partner with other organizations, and support the life-long learning that is essential for successful careers. ■

Barbara has been an advocate for women and minorities in science throughout her career. A retired biochemist, she received her Ph.D. from Brandeis in 1969, and worked for the Environmental Protection Agency (EPA) in the Office of Pesticide Programs from 1988, until her retirement in 2008. And, this wasn't Barbara's first stint as an AWIS volunteer as from 1988 to 1992, she served as editor of the AWIS Magazine. Today, Barbara continues to be active in the Seattle AWIS Chapter.

Many, many thanks to Barbara for her long-standing dedication to AWIS! ■

Is there a Robot Retirement Planning

Lucy's retirement story set in the year 2031

Lucy retired in 2031 after a long professional science career. Like anything else, retired life has proven to have its ups and downs, including bouts of depression, moments of forgetfulness, and the side effects of her illness. Lucy is pleased that she made her retirement lifestyle choice early, while she had the energy and focus to deal with all of possible alternatives. With a bit of planned technological oversight, Lucy is able to live at home and enjoy her golden years to the fullest extent

the (pre-
joy her
possible.

Each morning at 8 am, CARA ("Care And Recreation Aide") rouses Lucy from sleep to begin her day. Last week, Lucy forgot to turn off the oven and CARA was quick to remind her. The robot often locates misplaced items with ease. At breakfast, CARA dispenses the medications Lucy needs. Keeping track of all those pills would otherwise be such a complex chore! Life certainly seems more complicated than she remembers. CARA monitors Lucy's vital signs and transmits unusual fluctuations to her doctor and her daughter immediately. Lucy is pleased that robot lease prices keep dropping – making CARA a permanent part of her budget. Lucy likes that with CARA she can live at home without being dependent on or a burden to others. In contrast, her friend Susie is very depressed after moving to a retirement home not of her choosing. Unfortunately, Susie did not leave clear instructions about her retirement wishes and the Court agreed with her family that she would be better cared for in a retirement home.

Lucy doesn't walk as well as she used to, but she owns a three-wheel scooter that she rides to the local market. CARA clips onto the back of the scooter and goes with her, reminding Lucy of her shopping needs while traveling up and down the aisles, carrying her groceries and even paying for purchases. Since CARA has direct access to her account she can help Lucy follow her budget, which is simultaneously monitored by her financial advisor.



in Your Future? for the 21st Century

By Edi Alvarez

Back at home, Lucy routinely teleconferences with her grandchildren using CARA's interactive screen. The kids can always count on grandma's help with their science homework. The evenings can be a bit lonely, because so many of Lucy's old friends have moved

away or passed on – CARA is programmed to identify alternatives in this situation. At CARA's suggestion, they'll read together, work on puzzles, or sit and chat on the patio about the latest news, watching the sunset over the lake while one of Lucy's favorite tunes issues softly from CARA's speakers. Those are occasions when Lucy reflects on the meaning of the name "Cara" – friend in Gaelic.

Vision versus reality in the year 2011

The assistive care robot envisioned in Lucy's retirement story isn't as far fetched as you might think – it is based on current technological efforts. With the increasing number of retiring baby boomers and ensuing pressures on health care, governments and entrepreneurs alike are looking to technology for simple and cost-effective solutions. The French firm, Aldebaran Robotics, has developed a "home assistant" robot named "Romeo" (Figure 1) that can entertain, monitor vital signs, keep track of household objects, and perform simple tasks like taking out the garbage (1). Another French firm, Robosoft, has manufactured a robot whose interactive screen and basic speech functions enables the user to quickly and easily communicate with health care providers or

keep track of schedules (2). The Georgia Institute of Technology's Aware Home Research Initiative is looking at innovative ways to help the elderly maintain their independence using devices such as the ShareTable , which helps family and friends who live far apart remain connected through teleconferencing (3). International robotics manufacturers who have historically focused on robotics for the automobile industry and humanoid robot prototypes are increasingly shifting gears, focusing more and more on assistive care technologies (4). Some of these robots are already commercially available; others expected to reach production in five to ten years. The societal and economic imperatives are strong:

- Life expectancy is increasing (5).
- 89 percent of seniors prefer to live independently and age in their home (6).
- 80 percent of those over 65 are living with at least one chronic disease that impacts cognitive or mobility functions (7).
- More than half of the population in their 80s suffers from cognitive and physical impairments (8).

Retirement realities

Regardless of which innovations actually come to pass, our imaginary Lucy is likely to experience three retirement phases (9), which in my opinion need to be addressed and documented by every retirement plan.

Most retirees are prepared and can visualize the first most active phase in retirement since it is very similar to pre-retirement in terms of physical and mental capabilities. If a retiree continues to work, I find that it will be part-time or as a volunteer. In my experience, most plan to travel, write a novel, trace family history, or pursue myriad postponed dreams. This phase can last many years, or (sorry to say) get skipped altogether if personal health issues or family problems arise. During this phase, a robot could assist in caring for and staying connected with loved ones, providing mental stimulation as well as performing mundane tasks.

The second phase begins when there is a decline in either physical or mental capacity, or both. This phase can begin at any age and the retiree is not always aware that they have changed. Often retirees cope by simplifying and putting off complex or difficult decisions. In my experience, during this phase even simple decisions can cause retirees to fret, stress, and be unable to take action. Diminished driving ability, for example, is often ignored since it is perceived to be at the heart



of independence. Without early and adequate planning, this phase will involve major complex decisions that retirees can be simply unprepared for, such as the sale of a home or the move to new (often smaller) accommodations or into a retirement community. During this phase, health care becomes especially difficult to manage. Currently, most support comes from spouses, family, friends, or paid assistants who help the retiree to reach or implement health care decisions. Even so, they in turn may require someone else to oversee the retiree and provide ongoing guidance. The type of support needed may not be covered through long term care insurance, and without a solid plan can result in financial hardship or poor financial decisions. Financial advisors and family may help identify when additional assistance is needed and set in motion what the retiree requested in their retirement plan. A robot could provide assistance implementing a plan when family, friends, or paid professionals are not immediately available. As in the story, Lucy is able to (affordably) maintain a degree of independent through CARA, her support providers intervening only when necessary through monitoring provided by the robot.

The third phase is often triggered by a major health event that leaves a retiree with significant physical or mental limitations. Retirees in this phase require daily supervision, including assistance with everyday activities and regular medical attention. This level of care is currently provided by family, community groups, and third party providers. Comprehensive support by a third-party can be expensive, however, and is typically provided within the scope of assisted living communities or a nursing home. If correctly purchased, long-term care insurance can cover many of these costs and allow a retiree to live in the community of their choice. Decisions on where to spend the rest of one's life can have enormous financial and life style implications that can be stressful and require complex analysis. And yet, by this phase many retirees could be cognitively compromised (7). In Lucy's case, she has prudently established a trusted fiduciary and family member to help guide her financial and health decisions as physical and mental abilities decline.

For retirees much like Lucy, who might have directed staff and made countless complicated decisions during their careers, it can be difficult to envision a time down the road when just logging onto the Internet seems an onerous task. A key ingredient to a successful retirement is to examine honestly what lies ahead and plan accordingly. With the right type of built-in support along the way (robot or otherwise), retirement can truly be the golden years that are immensely satisfying and productive. Assuming present trends in technology continue, then yes there will be a robot in your future (perhaps even before retirement). When preparing your retirement plan, take the time to consider your lifestyle using all available tools during the three phases. Create a vision, build a plan and adjust it as new tools become available. ■

Thanks to everyone who shared that they have difficulty planning for something as abstract as retirement planning. I hope Lucy's story will help you approach your own retirement or that of your parents. Your continued feedback helps to make the *Money Matters* column relevant.

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Finances can support or derail professional and family life. It is Edi's intention to be both a resource and advocate for our financial health. Edi is a Registered Investment Advisor in California and Certified Financial Planner™ providing financial services to individuals and businesses. She is a past president of the Association for Women in Science, San Francisco Chapter, and presently serves on the AWIS Finance Committee. Edi can be contacted at edi@aikapa.com.