CEOSE Mini-Symposium
Women of Color in STEM: Getting there cuando no hay camino: Chicanas in Mathematics, Science and Engineering

October 27, 2009
Arlington, VA

The Committee on Equal Opportunities in Science and Engineering
National Science Foundation
TERC, Inc.
Paths to Discovery
Autobiographies from Chicanas with Careers in Science, Mathematics, and Engineering

Getting There Cuando No Hay Camino (When There Is No Path): Chicanas in Mathematics, Science and Engineering

Norma E. Cantú, Ph. D.
Professor of English and U.S. Latina/o Literatures
University of Texas at San Antonio
• Introduction

• Adelante Project and Book Development /Organization

• Testimonio as Research Tool: Autobiographies

• Findings: Themes and Factors

• Implications and Directions for Policy in STEM for Latinas
The Adelante Project

- NSF grant
- MALCS gathering 2003 and subsequent writing
- AAAS publication of *Flor y Ciencia: Chicanas in Mathematics, Science and Engineering* and UCLA’s *Paths to Discovery: Autobiographies of Chicanas with Careers in Mathematics, Science and Engineering*
Book development and organization

- **Telling to Live: Latina Feminist Testimonios: Contributors--**
  - Luz del Alba Acevedo
  - Norma Alarcon
  - Celia Alvarez
  - Ines Hernández Avila
  - Ruth Bejar
  - Rina Benmayor
  - Norma E. Cantú
  - Daisy Coco de Filippis
  - Gloria Cuadraz
  - Liza Fiol Matta
  - Yvette Flores
  - Aurora Levins Morales
  - Clara Lomas
  - Iris Lopez
  - Mirtha Quintanales
  - Eliana Rivero
  - Caridad Souza
  - Patricia Zavella
Flor y Ciencia: Chicanas in Mathematics Science and Engineering (2006)
Paths to Discovery: Autobiographies from Chicanas with Careers in Mathematics, Science and Engineering (2007)
The Authors
CHAPTER 1

What I Did on My Summer Vacation

Elma González
Professor Emerita of Ecology and Evolutionary Biology
CHAPTER 2

Haciendo Caras
The Making of a Scientist

María Elena Zavala
Professor of Biology
CHAPTER 3

Life Lessons

Cleopatria Martínez
Professor of Mathematics
CHAPTER 4

Our History, My Life

Elizabeth Rodríguez-Johnson
Senior Policy Analyst
¡Claro Que Sí Se Puede!

Lupita D. Montoya
Assistant Professor of Environmental Engineering
Mi Viaje en Esta Vida
The Life of a Laredo Girl

Martha Cecilia Zúñiga
Professor of Molecular, Cellular, and Developmental Biology
CHAPTER 7

The Education of a Chicana Scientist

Elvia Elisa Niebla
Director of Global Change Research
CHAPTER 9

A’s for Academics, C’s for Conduct

Diana Marinez
Professor of Biochemistry and Dean, College of Science and Technology
CHAPTER 10

On the Inside, Looking In
The Roots of a Life in Science

Lydia Villa-Komaroff
Chief Executive Officer
and Chief Scientific Officer
Introduction and appendix

- Aida Hurtado’s Introduction
- Deborah Santiago’s Appendix
Findings…

- Testimonio as a qualitative research tool
- Master narratives and success
- Parents, family, community
- Teachers and mentors
- Reading and academic preparation
- Negotiating stigma: race, class, gender
Findings...

- **Testimonio as Qualitative Research Tool**
  - Telling stories chronicles paths to achievement
  - The stories reveal the key obstacles and conditions
  - Theorizing around testimonio allows for a differential consciousness (Sandoval)
  - The method can be replicated
Findings...

- **Master Narratives**
  - Reinscirbe power between groups
  - Establish norms: “that’s just the way things are”

- **These Stories defy the dominant master narratives of success**

- **Overcoming obstacles**
  - Poor educational preparation due to a racist educational system
  - Lack of resources for academic success
Findings...

- **Role of parents, family, community**
  - The home and community provided educational scaffolding that provided the authors with a sense of possibility for a career in science and mathematics
  - Supportive mothers
  - Understanding of extended family
Findings…

- **Role of Teachers and Mentors**
  - Teachers in K-12 inspired and provided support
  - Professors encouraged and opened doors
  - Authors were provided with opportunities
  - Mentors supported projects, decisions, offered options – were there in many ways including financial, moral and technical support
Findings…

- Reading in English is essential and all authors enjoyed reading for pleasure.
- Language played a key element in success—they all told stories of how their home language and the school language impacted their experience. Their bilinguality was an asset that was not valued.
Findings

- Negotiation of stigma:
  - Racism
  - Sexism
  - Classism

- Authors dealt with various situations successfully overcoming race, class and gender biases.
Other Themes and factors

- Passion for the field
- Desire to give to the community
- Involved with programs and organizations that support increasing the number of Chicanas in STEM (SACNAS, Adelante Project, Etc)
Implications and Directions for Policy in STEM forLatinas...

- Synthesis of findings and pointing forward
- Continuing the process
- What can be done…
Implications and Directions for Policy in STEM for Chicanas/Latinas ...

- Additional and creative programs at all levels that provide
  - Access to education
  - Opportunities for success
- Teacher training and preparation
  - Content based, culturally relevant
  - Higher education faculty ready to lend a hand
- Recruitment to and Support in graduate school
  - If students are not ready, allow them opportunity to get ready!
  - Support and ease the path to a doctoral degree
GRACIAS