

***Learning from Sanambele:
Role of Food Insects in
Village Nutritional Health***

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A photograph of cotton plants with white bolls (cotton balls) and some green leaves, set against a bright blue sky with scattered white clouds. The cotton plants are in the foreground, and the sky is in the background.

The *Quiet Revolution* and our New Paradigm, Bottom-up Philosophy

Experiential, holistic, participatory, site-focus

THE QUIET REVOLUTION! THANK YOU TO OUR



CSREES National Institute of Food
and Agriculture
Higher Education
Challenge Grant Program

***Montana State University-
Bozeman***

***PSPP 465R Health, Poverty,
Agriculture: Concepts and Action
Research***



BIOL 106CS

Issues of Insects and Human Societies

Land Grant Universities:

Virginia Tech

University of California-Davis

University of California-

Riverside

Montana State University

Non-Land Grant

Service-Based, Private, Urban:

University of St. Thomas

St. Paul MN

Public, not service-based:

University of Montana

**Tribal College 1994 Land Grant :
Chief Dull Knife College
College of the Northern
Cheyenne People**



Underlying Philosophy of The Quiet Revolution

Part 1

- Savory, Alan and Jody Butterfield. 1999. Holistic Management: A new framework for decision making. Island Press.
- Bennett, Milton J. 2004. Becoming interculturally competent, in Wurzel, J., ed. Toward Multiculturalism: a leader in multicultural education (2nd ed.). Pp. 62-77.
- Chanbers, Robert A., Arnold Pacey, and L.A. Thrupp. 1989. Farmer first: Farmer innovation and agricultural research. Bootstrap Press.
- Norberg-Hodge, Helena. 1991. Ancient futures: Learning from Ladakh. Sierra Club Books.

The Quiet Revolution

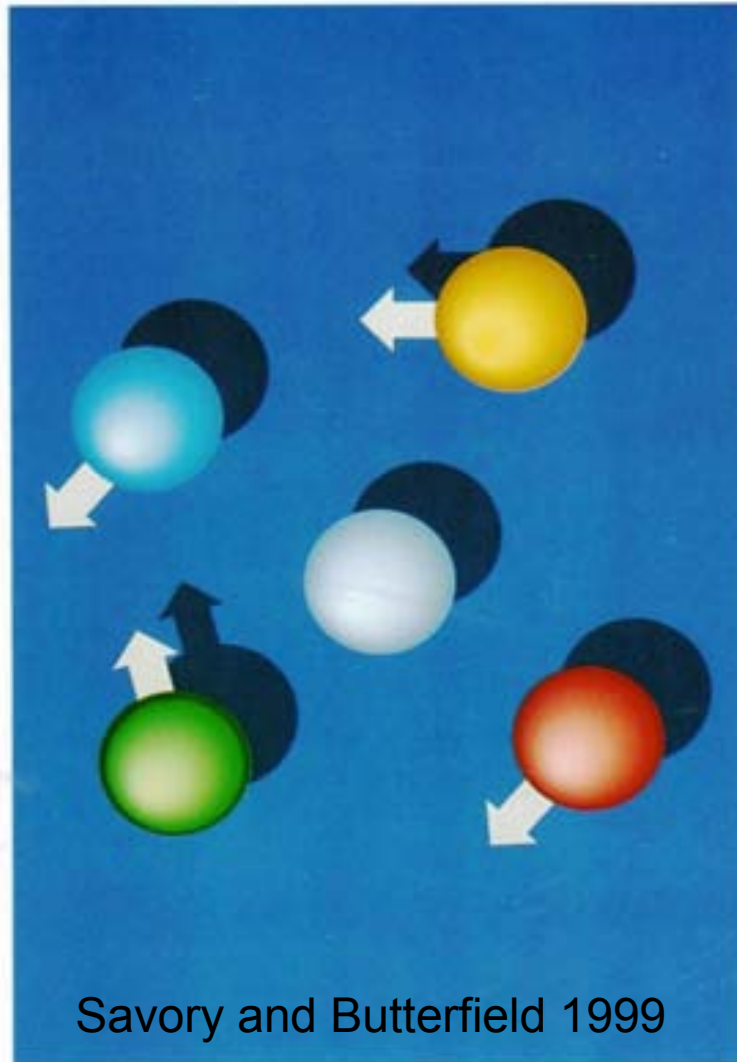
Part 2:

- Easterly, William. 2006. The white man's burden: Why the West's efforts to aid the rest have done so much ill and so little good. Penguin Press.
 - Ayittey, George B.N. 2005. Africa unchained: The blueprint for Africa's future. Palgrave Press.
 - Calderisi, Robert. 2006. The Trouble with Africa: Why foreign aid isn't working. Palgrave Press.
- Yunus, Mohammed. 2007. Creating a world without poverty: Social business and the future of capitalism. Public Affairs.

Underlying Philosophy of The Quiet Revolution

Part 3:

- Ba, Amadou Hampate. 1972. Aspects of African civilization
(person, culture, religion.)**
- Weist, Thomas. 2004. History of the Northern Cheyenne.**
- Littlebear, Richard. 2006. We, the Northern Cheyenne.**



Savory and Butterfield 1999

Plate 1. *Although they have considerable knowledge of green, yellow, red, and blue, people in single, isolated disciplines are unable to manage gray (the "whole") of which they have no knowledge. Management is not even focused on gray, as the arrows indicate. This single-discipline approach to management was generally recognized as a failure many years ago.*

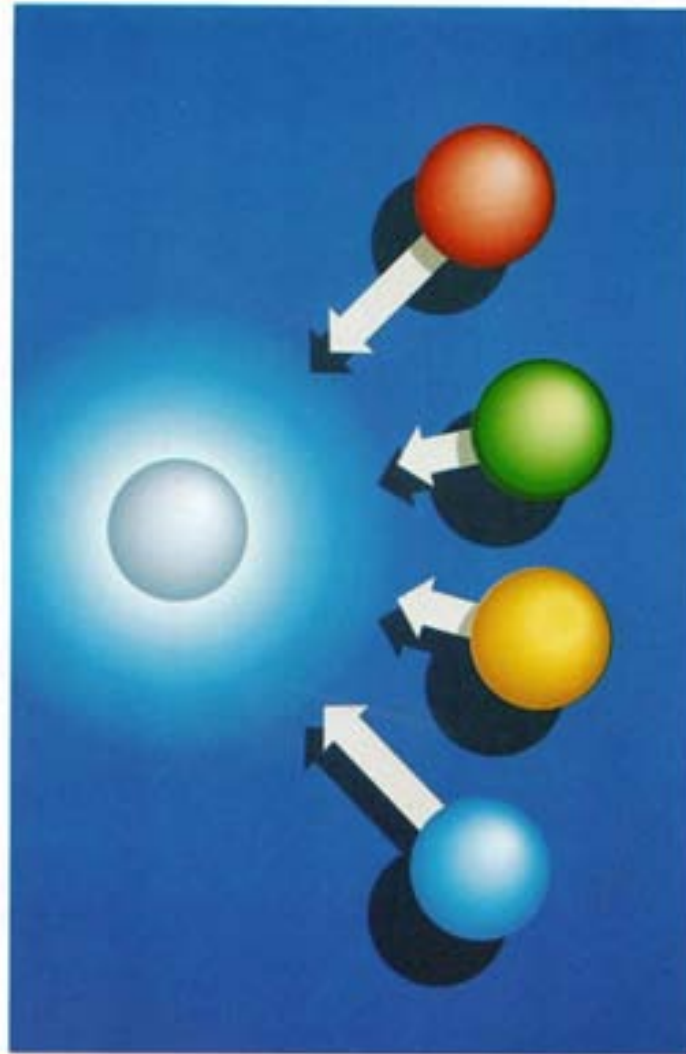


Plate 2. *People in a multidisciplinary team are focusing on *gray* from their perspective, as arrows indicate, but still with no knowledge of *gray*. The lack of success arising from multidisciplinary management was attributed to poor communication owing to the jargon associated with the various disciplines, rather than a lack of knowledge.*

Savory and
Butterfield 1999

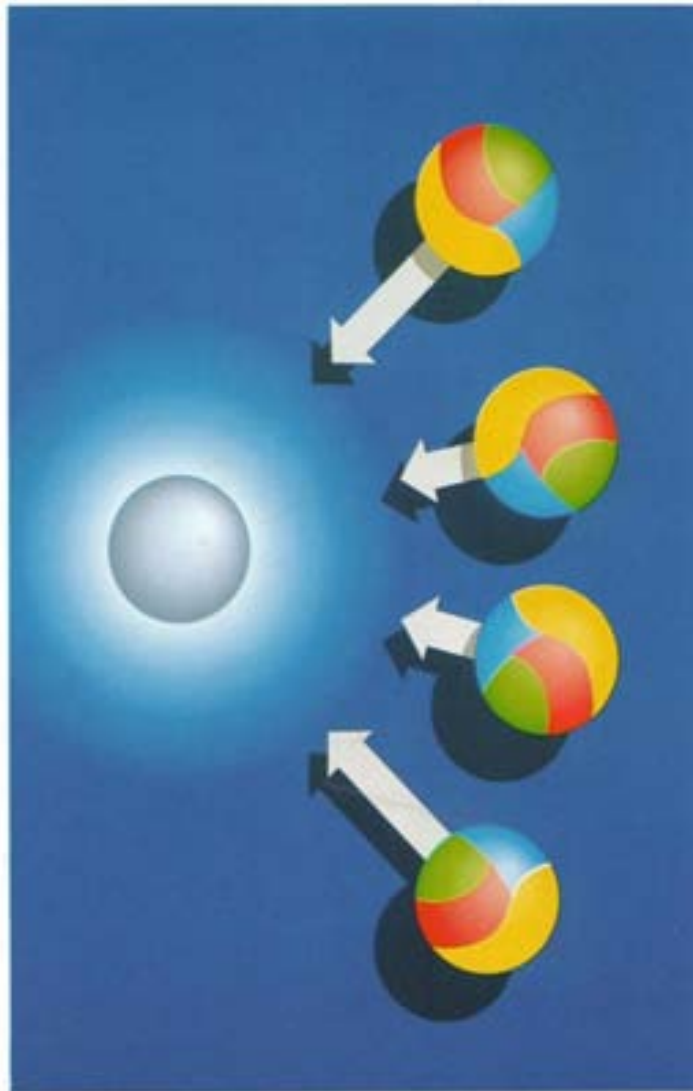


Plate 3. *To overcome communication problems, people trained in several disciplines form interdisciplinary teams that then focus their attention on gray, as the arrows indicate. Knowledge of gray is still lacking, however. The lack of success arising from the interdisciplinary approach to management has only recently been acknowledged.*

**Savory and
Butterfield 1999**

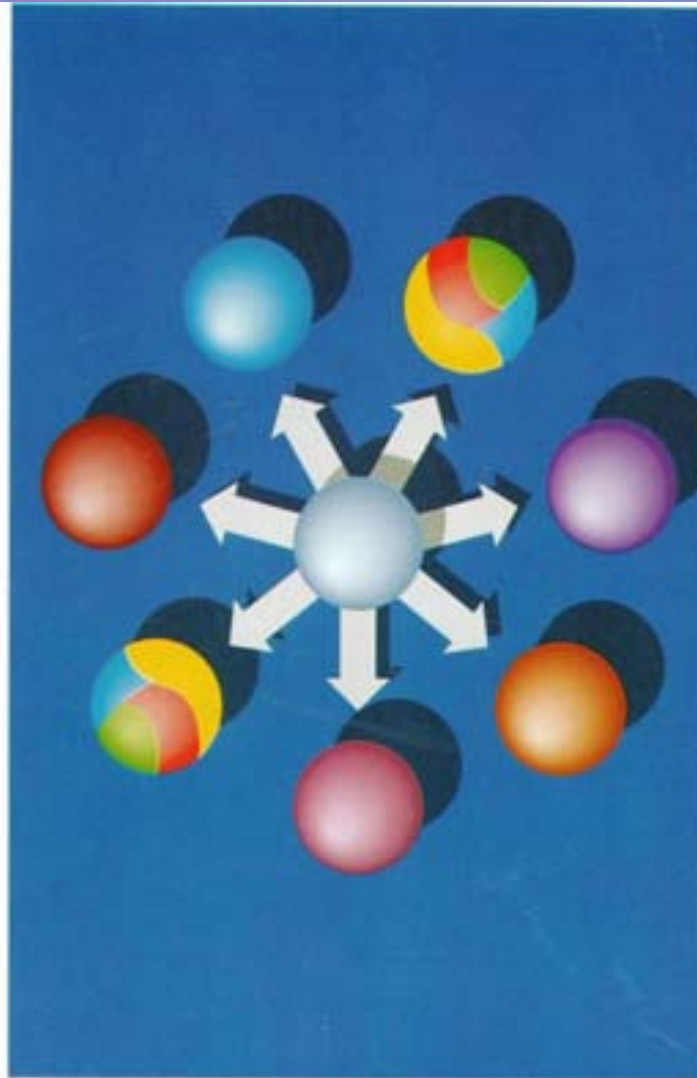


Plate 4. We now take the perspective of the whole (gray), first of all by defining the limits of a "manageable" whole, then determining what that whole must become based on the needs of the people within it and the environment that must sustain their endeavors (the holistic goal). Now the people making decisions within the whole can look outwardly at all available knowledge to determine which best serves their needs and takes them toward the holistic goal.

**Savory and
Butterfield 1999**

WELCOME TO SANAMBELE

Traditional Bambara
village in Mali



Location:

2 hrs by car or motor bike from capital city,

Bamako

9 hrs by public bus

Population:

1999 - 732 people

2005 – 1000 people

2010 - 1,200 people

History

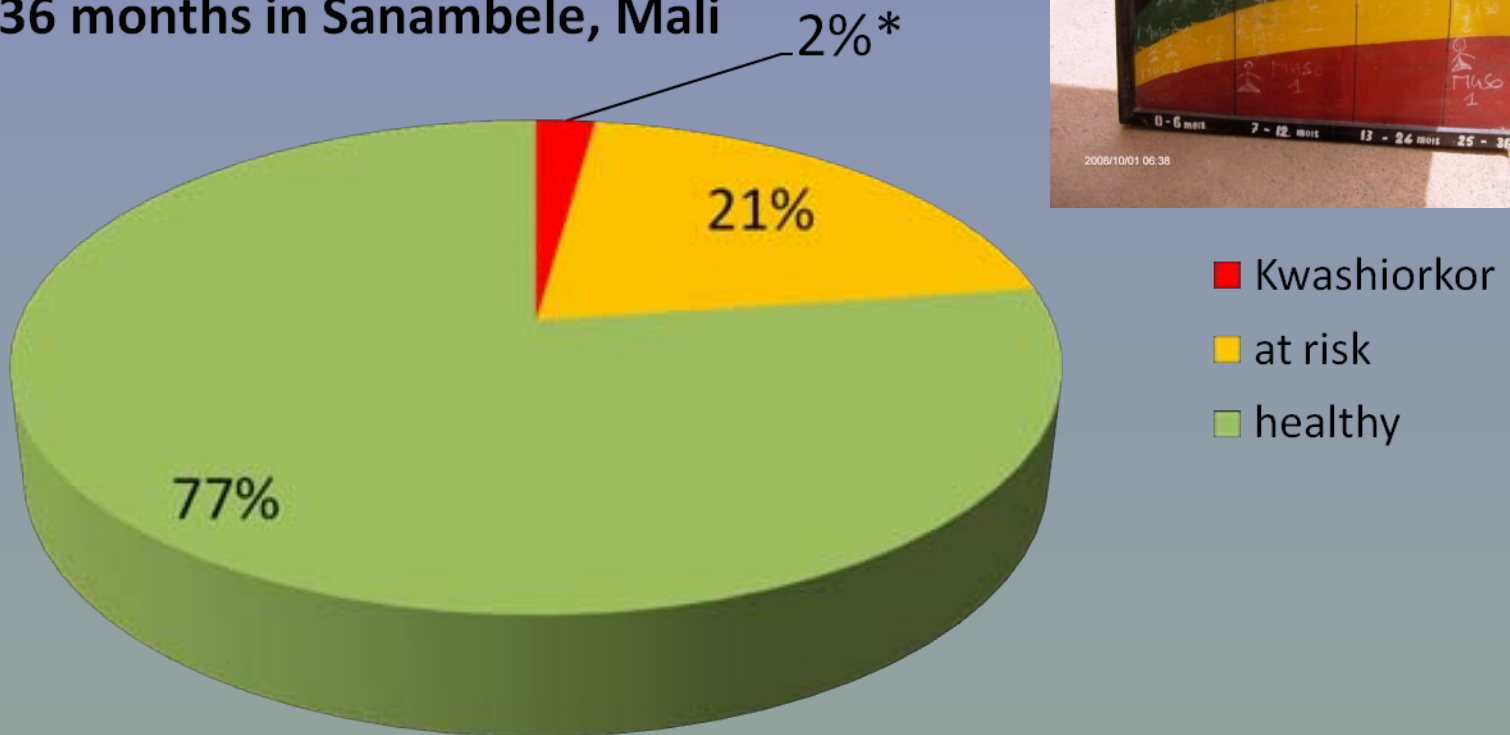
- 1999 IPM CRSP participatory IPM vegetable growing project for export
- 2005 Montana State students/faculty/mentors from Mali national agricultural research organization conduct gender-based focus groups in 11 villages in region, including Sanambele
- Samambele identified holistic goals as a village were #1 malaria eradication, #2 hunger

Malaria History

- 2007 villagers develop sustainable, village-based malaria IPM (eradication) plan
- 2009 first year no child dies from malaria and mosquitoes disappear from village in rainy season.
- Villager leaders make plans to help neighbor village develop malaria IPM

2008 Kwashiorkor History

Health Statistics of children ages
0-36 months in Sanambele, Mali



*These cases recovered. No deaths due to Kwashiorkor in 2009



2009 Kwashiorkor history

- March President of Sanambebe Women's Association initiates classes for moms to learn-to-read through nutrition lessons.
- March Women's Association learns to recognize kwashiorkor and make intervention diet for at-risk children
- Sept women discourage children's grasshopper hunting / eating because of nearby cotton fields with pesticides.
- Sept students introduce brick wall concept of complete proteins



The image shows a woman pointing to a diagram on a wall. The diagram is a tree with a blue trunk and branches, and red roots. The text on the wall is handwritten in a non-Latin script, likely a local language. The diagram is drawn on a piece of white paper and is the central focus of the woman's attention.

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2010 Kwashiorkor History

- No deaths from Kwashiorkor
- some children recovered from at-risk status

Traditional
Adult foods

Traditional Children's foods



Nutritional Facts

- Kwashiorkor (diet deficient in complete protein ← meat, eggs & dairy), can cause permanent damage
- Malian Diet consists of:
millet, sorghum, rice, corn, tomatoes, carrots, peanuts and cowpeas
→ incomplete protein by itself



Complementary / Complete Protein Sources



Cowpeas
peanuts
chicken
wild caught birds
wild caught fish
wild caught frogs
goat meat
goat milk
cow meat
cow milk
sheep meat
grasshoppers
termites
giant water bugs



Nutritional aspect

- Young children (5-10 years old) need ~1g protein/kg bodyweight/day → 19-34 grams protein

	Average Weight of insect	Protein content per 100 grams of weight	Protein content per insect (average)	Number of grasshoppers to be consumed to make up 10% of diet	
				5 year old	10 year old
male	0.313 grams	~20.6grams	0.1376g	27 OR	48 OR
female	0.688 grams	~20.6 grams	0.07g	13	24

Compared to ~29 grams per 100 grams of lean beef



© Reuters

- *Oedaleus senegalensis*



- *Kraussaria angulifera*



Grasshopper are supplemental snacks for young children

Western Attitude

REJECTED

- Risk of pesticides should be assessed
- Risk of losing cultural richness
- Reassess holistic goals to identify current issues



Recommendations



- Listen
- Respect and recognize value in traditional wisdom
- Encourage holistic goal setting.
- Be an example of ethnorelativism

T H A N K Y O U !



Questions?

