Dementia Garden Design: A Framework for Facilitating Kaplans’ A.R.T. in Environments of Care
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Kaplans’ Attention Restoration Theory
Ulrich’s Theory of Supportive Gardens
Cooper Marcus’ Alzheimer’s Garden Audit Tool
Zeisel’s Process: Image, Present, Test
Moore’s Exemplary Dementia Gardens
Schowalter Villa’s ‘My Garden’

...“I remember being protected from spring rains as we enjoyed the sounds of thunderstorms and the smell of a wet garden....” Schowalter Resident
Directed Attention:
“the central construct is that of focus, of supporting difficult mental activity in the face of potential distraction” (S. Kaplan, 1995). The mechanisms that support Directed Attention can become fatigued. Spending time in a restorative environment can restore the ability to process information.
Roger Ulrich’s Theory of Supportive Gardens:

The capability of the garden environment to facilitate stress coping and restoration is the basic premise underlying the conceptual framework.

Restoration becomes stress reduction, or “a shift toward a more positively-toned emotional state; positive changes in physiological activity levels; and sustained attention intake, Ulrich, 1991).

Stress is defined as the “process of responding to events and environmental features that are challenging, demanding or threatening to well-being.

----Sense of Control and Access to Privacy
----Social Support
----Physical Movement and Exercise
----Access to Nature and Other Positive Distractions
Cooper Marcus’ Alzheimer’s Garden Audit Tool:

A comprehensive list of do’s and don’ts—design elements and qualities necessary for a successful therapeutic garden for dementia patients

Program Elements

Location and entry to garden
Layout and pathways
Planting
Seating
Overall design & details
Maintenance & amenities

Gardens that fail:
---- are designed with apparently little regard for what is known about use of the outdoors by Alzheimer’s patients
---- were off limits to residents because of staff policy, even though they were thoughtfully designed
--- are gardens with good qualities containing problems or omissions, making it difficult for caregivers to encourage use by residents
John Zeisel’s Process:

Knowledge drives image formation which is then graphically presented. Testing then occurs through presentation of graphic images to the client. The client, also familiar with the needs of dementia patients, provides feedback. Feedback expands knowledge and a new cycle of reimage and present occurs.

**IMAGE:**
Designers start with an image of how the users see the world.


**SIX IMPORTANT PHYSIOLOGICAL CHANGES IN DEMENTIA PATIENTS:**
1. Loss of complex sequencing executive functioning
2. Difficulty creating and embedding new cognitive mapping
3. Damaged supra-chiasmatic (timekeeping) nuclei
4. Compromised hippocampal “event tagging”
5. Limited thalmus, orbito-frontal cortex control
6. Limited hippocampal impulse control

**ENVIRONMENTAL DESIGN CONSTRUCTS THAT COMPENSATE FOR THESE PHYSIOLOGICAL CHANGES:**
1. Natural mapping (objects that need no explanation)
2. Temporal support (plantings that reinforce seasonal change)
4. Landmarking: clear and evident landmarks connected by clear and evident pathways. Pathways involve little or no decision making and always lead to places of safety. Entrances should look alike and be easily recognizable from all parts of the garden.

**PUT A PARK IN THE GARDEN**

**IMAGE/PRESENT/TEST = PROCESS**
Program Requirements: large open area; patio space for 20-30 diners; outdoor cooking; perennial gardens; water feature without the pond; clear pedestrian circulation; universal design/ADA compliance; combination of passive and active recreation; therapeutic, restorative environment, secure/safe; community feedback during design; no increase in current maintenance requirements.

-----I would like to have the opportunity to get outside a little bit everyday.......... If there was a fence I could go all around and no one would have to watch me...

Schowalter Resident
The literature on what constitutes the ideal prosthetic outdoor space is both intuitive and prescriptive, offering checklists for administrators as they plan what these spaces should look like, and what should happen inside them. Unfortunately, the advice is often confusing (Cohen-Mansfield, J., 2007, p. 37).

Anticipated Health Outcomes for Schowalter:

-reduced anxiety and fatigue; reduced frequency and severity of depression; pain reduction from sunlight exposure; increased or improved physical functioning, strength and endurance; increased attention span and ability to concentrate; and improved socialization. Other health outcomes include increased compliance and improved quality of sleep.
FRONTPORCH: The area in the northwest corner takes on the designation of Frontporch--a place to be seen and to observe the activities of others. A place to enjoy the weather, share a cup of coffee or a meal. A place to relax and socialize with guests or other residents--a “together place.”

Design Characteristics: The most formal and public area. Plantings will have year-round structure with opportunities for seasonal color to reinforce temporal patterns and access memories.

BACKYARD: The backyard is where the work is done and where more solitude and privacy are to be found. The vegetable garden is here, as are the raised planters and the tool shed. Here one can be out of the public eye or be in a “together place” when gardening with friends.

Design Characteristics: Flexible, informal, messy, seasonal, sunny.

BACKPORCH: The Backporch is more intimate than the Frontporch. This is where residents might slip out in the morning for a cup of coffee, check on the garden, or watch the birds gather at the feeder.

Design Characteristics: Flexible, informal private, a “takeover” area.

PARK: The Park will be a large, open area for large gatherings and barbecues. Park benches will be provided for sitting alone or with others and for watching the children from the Hessston Intergenerational Daycare Center on their occasional treks into the park. The park area will provide pleasant views into the area from residential rooms and the other three areas of the courtyard.

Design Characteristics: Simple, open, restorative, solitary, fascinating.

Moore, K. (2007). Restorative dementia gardens: exploring how design may ameliorate attention fatigue. *Journal of Housing for the Elderly*, 21:1, 73-88. Moore (Assistant Dean at the KU School of Architecture) established a correlation between exemplary dementia gardens and ART characteristics. His interpretation theoretically linked five garden’ design concepts with the four ART characteristics, “to raise awareness of ART and its potential implications for designing garden environments and horticultural therapies for people experiencing dementia” (Moore, p. 73).
Experts’ qualitative data (comments and design elements relating to “exemplary” dementia gardens) are assigned to one of the four A.R.T. characteristics.

Moore concludes that the best dementia gardens also contain the four A.R.T. characteristics of person-environment interactions:

- Being Away
- Compatibility
- Fascination
- Extent

Moore even suggests that dementia gardens with A.R.T. characteristics might be used to diagnose early stages of Alzheimer’s because A.R.T. supports Directed Attention, which supports executive functioning. Moore states that attention and executive functioning tests have significant predictive value in diagnosing Alzheimer’s in the preclinical phase.
Being Away frees one from mental activity that requires directed attention, Kaplan, 1995, p. 173). The Kaplans have identified three kinds of escape from an informational viewpoint: escape from distraction (which fatigues directed attention); escape from a particular content; and escape from certain purposes (S. & R. Kaplan, 1989, p. 183).

In Moore’s use of the concept of Being Away, contrast and enclosure become necessary to create the feeling of Being Away. Enclosure becomes more like spatial definition, and by defining one space in the garden, other space is excluded, creating a sense of enclosure. Change of pavement texture or elevation and shrub massing, which interferes with visibility, cannot be used.
FASCINATION

Objects or processes can invoke fascination. A scene possessing the quality of Fascination will provide two distinct cognitive benefits. First, it will engage the viewer and keep them from becoming bored. Second, it will allow the mechanisms involved in directed attention to rest. Fascinating process can be guided by understanding that is already possessed, and lead to further understanding of a bigger picture.
For a setting to possess the restorative characteristic of Compatibility, there must be agreement between the participant’s purposes, the environmental patterns and constraints and the actions required by the environment. “In order for an environment to exhibit Compatibility, the environment must provide needed information, eliminating the need to second-guess. Prompt and useful feedback from the environment aids in achieving the purpose for being there (S. Kaplan, 1995, p. 173).

Moore emphasizes fit and support and the physical components that create the garden.

**PHYSICAL COMPONENTS:**
- wide, level, non-glare paving, high ratio of softscape to hardscape

**SENSORY PROPERTIES:**
- deal with glare and contrast

**SPATIAL PROPERTIES:**
- choice to interact alone or in groups
Connectedness and scope together define the concept of Extent. The Kaplans’ description of Extent is informed by their early work in cognitive mapping. A scene must have enough connectedness to enable building a cognitive map and enough scope to justify making the effort to construct the cognitive map. The parts of the scene make sense, they are connected, and their connectedness and scope can provide a bridge between what one is experiencing in the present, and “what they know about the world as a whole” (S. & R. Kaplan, 19889, p. 184).

Moore adapts the Kaplans’ definition of Extent to become a more inward-looking sensory experience in keeping with the physical and neurological limitations of dementia patients. The true focus is on the haptic system “that involves the integration of many senses, such as touch, positional awareness, balance, sound, movement and the memory of previous experiences” (Moore, 2007, p. 81).
“And, finally, nearby nature and gardens deserve far more standing than they are usually accorded. Viewed as an amenity, nature may be replaced by some greater technological achievement. Viewed as an essential bond between humans and other living things, the natural environment has no substitutes”


**BEING AWAY:**
Textures/choices are “distinct from the quotidian”, offering a break from the routines, smells, noises of indoor life. Stone potting shed is the ultimate example of Being Away.

**EXTENT:**
The four areas provide scope and extent by invoking the residents’ prior experiences and knowledge and by providing activity choices that they understand.

**COMPATIBILITY:**
Most dominant feature is the 6.5’ walking path, wide enough for 2 wheelchairs. Flexible seating—sun or shade/alone or in groups—is also a Comptibility characteristic.

**FASCINATION:**
Many opportunities here: listening to and watching the water feature; daycare children chalking on the sidewalk; birds, squirrels, butterflies, gardeners, sunlight filtered through leaves.
Maximize views into courtyard from all locations
Provide "standing" views into courtyard.
Mowine stria should be installed throughout
Cooper Marcus’ Alzheimer’s Garden Audit Tool

BEING AWAY
FASCINATION
EXTENT
COMPATIBILITY

Moore’s Exemplary Dementia Gardens


Urich’s Theory of Supportive Gardens

DEVELOPMENT OF THE FRAMEWORK
DEMENTIA GARDEN DESIGN:
A Framework to Facilitate Kaplans’ ART in Environments of Care

### Source Key

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<td>M</td>
<td>Moore, K.D. Restorative dementia gardens: exploring how design may ameliorate attention fatigue. Journal of Housing for the Elderly, Vol. 21, Nos. 1 &amp; 2, pp. 73-88.</td>
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### ART CHARACTERISTICS

#### Being Away:
Recovering from mental fatigue requires that one be away from the source of the fatigue. Being away can be physical or conceptual. Escape from distraction; escape from a particular content; and escape from certain purposes. “Distinct from the quotidian,” (M, p. 80).

#### Extent:
Being in a whole different world that is physically different with its own rules and properties, or mentally different, or in your mind and impacted by both knowledge and fantasy. Goes beyond richness in stimuli to coherence in stimuli to the degree that the experience engages a substantial portion of one’s mind, (K, p. 81). True focus on the “haptic system which involves the integration of many senses, such as touch, positional awareness, balance, sound, movement, and the memory of previous experiences,” (M, p. 82). Sense of extension in time and space, (K, 1998, p. 77).

#### Compatibility:
Compatibility between one’s inclinations and environmental circumstances: both what the setting requires from the individual and what it offers in terms of information and opportunities.

#### Fascination:
Central to resting fatigued attention, deriving from thinking, doing, wondering. People are fascinated from thinking things out. There are objects of fascination in flora, fauna, water and endless play of light. “Quiet fascinations do not totally dominate one’s thoughts. They permit reflection; they make it possible to find out what is on one’s mind,” (K, 1998, p. 69)

### Design Details

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<td><strong>C, U-Nature</strong></td>
<td>\sunflower adjacent to garden where residents can enjoy a semi-outdoor experience year round. \simple, looped pathway system that permits walking alone. Appropriate destination points (gazebo, seating area; large shade tree that can be used for programmed activities. <strong>High ratio of green to hardscape.</strong> Provision of a flat lawn area large enough for an informal gathering of moveable chairs, a game of croquet, or for young residents to sit or lie on. Vegetation introduced in a variety of ways: raised beds, vine-covered arbors and trellises, perennial borders, tubs of annuals, trees, hedges, etc. Provision of a rich, multisensory experience (vision, touch, hearing, smell) to activate senses. An area specifically designed for supervised gardening activity program (raised beds, potting shed, tool shed, various large containers, gathering area, access to drinking fountain. <strong>Memory plants.</strong> Seating options for a person alone or couples. Seating for groups larger than two to sit and easily converse. Choice of seating in sun/shade throughout most of day/year. Small scale design changes so that a person moving slowly would have a variety of visual experiences (enclosed, open, shaded, varied plant material, etc. Provision of markers or landmarks along the pathway. Provision of natural elements that might be of interest to residents or visitors (plant labels, plan of garden, etc. Garden is very attractive; well-maintained and rich with amenities. Provision of markers or landmarks along the pathway. <strong>Potential to observe wildlife.</strong> Distinct gardens with coherent articulation of the purpose of each place. <strong>Range of activity levels.</strong> Activity stimulation. Details of nature. Circuits in pathways that create the sense of a larger area. Views placed so that entire garden can be seen from one place. Fine textures and darker colors in background. <strong>Bolder textures and lighter colors in foreground.</strong></td>
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*Source: Cooper Marcus, C.; Kaplan, S.; Moore, K.D.; Ulrich, R.S.; Zeisel, J.*
…”I am a person that needs sunshine and fresh air, and I miss the outdoors....”

Schowalter Resident