

# **A Culture Within A Culture: The Impact of Organizational Culture on Nuclear Safety**

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# Organizational Culture

- Organizational Culture has a major influence on the development of a strong nuclear safety culture
- Culture is defined as the basic assumptions, shared values, and beliefs that guide the way employees behave towards each other and approach their work. It's the “way we do things around here”.
- There are four facets of culture:
  - Artifacts - What we see and hear (Congruency of espoused values, structures and practices)
  - Climate - How it feels, perceptions.
  - Behaviors & Attitudes - Associated with values and beliefs.
  - Assumptions - Deeply held, commonly out of our awareness.

# What We Believe About Culture

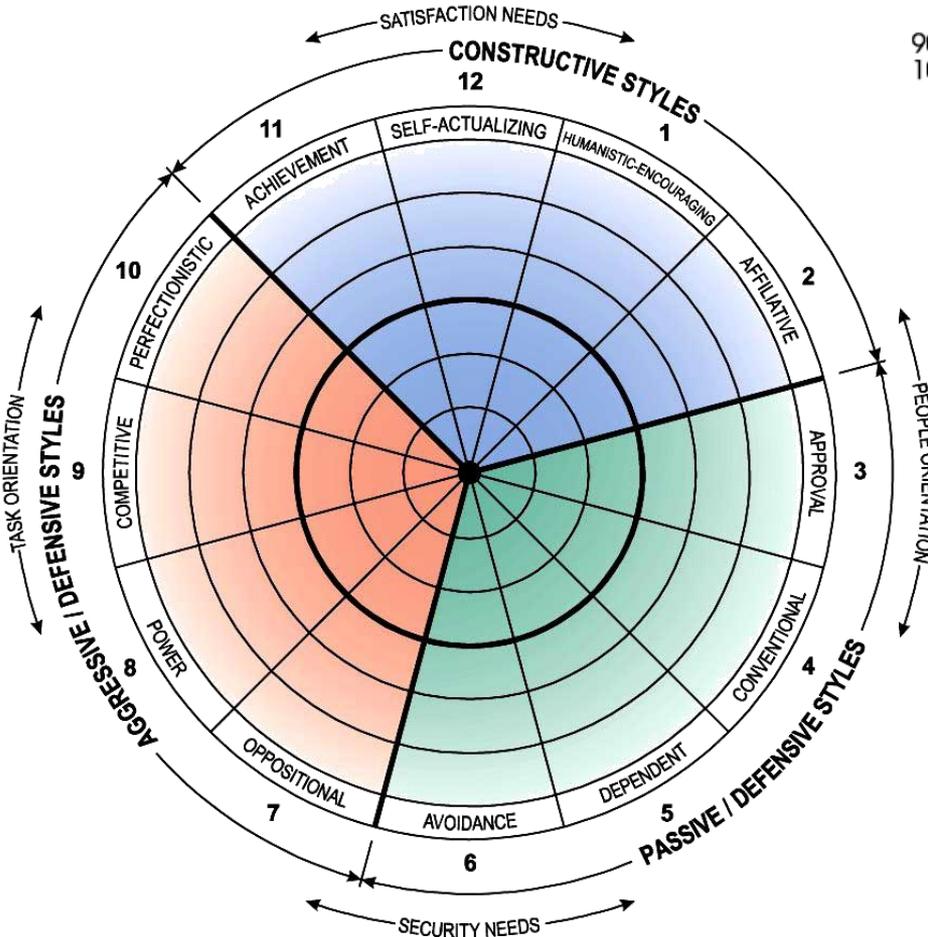
- Culture can be measured
- There is an “ideal” cultural profile for nuclear organizations
- A high expectation for Constructive behaviors in a nuclear organization leads to improved performance, sustainable over time

# The Organizational Culture Inventory, Leadership, and Plant Performance (Summary)

- Tosan partnered with INPO's Organizational Systems Department in a project to compare plant performance with leadership behaviors
- The Human Synergetics International's Organizational Culture Inventory (OCI) was used to assess culture
- The OCI consists of 120 questions describing behaviors that might be expected of members of an organization

# Organizational Culture Inventory (OCI)

## The Circumplex



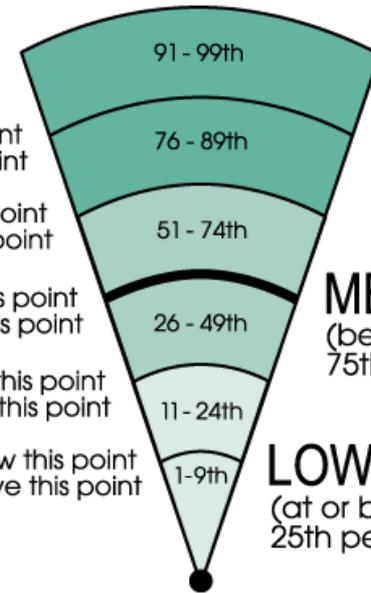
90% score below this point  
10% score above this point

75% score below this point  
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50% score below this point  
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10% score below this point  
90% score above this point



**HIGH**  
(at or above  
75th percentile)

**MEDIUM**  
(between 25th and  
75th percentile)

**LOW**  
(at or below  
25th percentile)

**Demonstrates Level  
of Intensity**

# The Constructive Norms

## **Achievement, Self-Actualizing, Humanistic/Encouraging, Affiliative**

The constructive norm behaviors are characterized by:

- Developing healthy relationships
- Working effectively with people
- Following policies and practices
- Accepting criticism
- Pursuing a standard of excellence
- Planning
- Knowing the business
- Being good listeners
- Resolving conflicts constructively
- Thinking in unique and independent ways
- Involving others in decisions affecting them

# Passive Defensive Norms

## Approval, Conventional, Dependent, Avoidance

The Passive Defensive norm behaviors are characterized by:

- Avoiding confrontation
- Agreeing with everyone
- Never challenging superiors
- Accepting the status quo
- Switching priorities to please others
- Being good followers
- Treating rules as more important than people/ideas

# Aggressive Defensive Norms

## **Oppositional, Power, Competitive, Perfectionistic**

The Aggressive Defense norm behaviors are characterized by:

- Competition rather than cooperation
- Refusing to accept criticism
- Personally running everything
- Maintaining unquestioned authority
- Shifting responsibility to others
- Playing politics
- Putting things off
- Opposing new ideas
- Setting unrealistically high goals

# Methodology

- 12 nuclear power plant sites participated
- Four were considered “Strong”
- Five were considered “Steady”
- Three were considered “Challenged”
- The categories and plant placement were based on WANO performance indicators and INPO plant assessment ratings
- Two approaches were used to analyze the data: visual comparisons of the circumplexes provided by HSI and statistical analysis

# Results

- Most of the specific survey items in the OCI Constructive norms are consistent with the behaviors described in the INPO document, *The Leadership Fundamentals to Achieve and Sustain High Levels of Plant Performance*
- The results of both the visual and statistical analyses demonstrated a relationship between specific organizational and leadership behaviors and plant performance
- Plants that reported organizational and leadership behaviors described by the OCI as Constructive tend to have higher INPO assessments scores, a higher INPO Performance Index, and a higher Unit capability factor
- Plants reporting more constructive behaviors have lower operating costs per Mwh, a lower number of total scrams, a lower Forced Loss Rate, a lower industrial safety accident rate, and a lower number of unplanned scrams
- Plants reporting organizational and leadership behaviors described as Passive Defensive or Aggressive Defensive tend to have the opposite results

# Conclusions

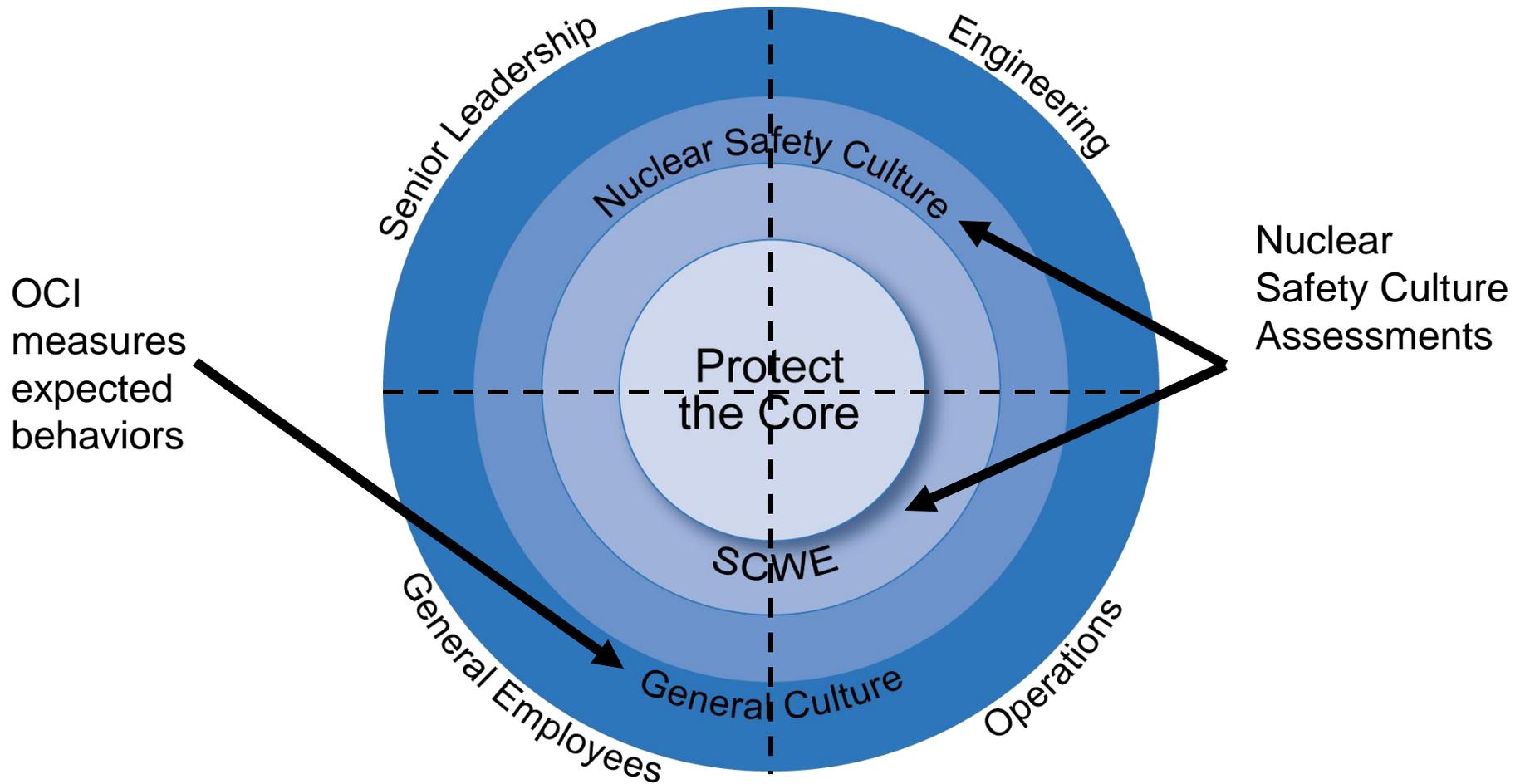
- The sites surveyed reported their current cultures as Aggressive Defensive
- Factors that promote these cultural norms are:
  - Leaders tend to focus on *what* people are doing rather than *how* people are doing
  - Task-driven cultures are often characterized by a lack of employee engagement; job insecurity; and are expected to do things without the necessary resources at the individual level, methods of reinforcement and sources of power at the first line supervisor level and cultural values at the senior leader level

# Conclusions (cont'd)

Aggressive Defensive styles:

- Foster organizations where competition is valued over cooperation and work takes precedence over all else
- Experience relatively high levels of stress, role conflict and dissatisfaction
- Interactions with co-workers suffer as the organization scrambles to meet conflicting or impossible expectations and standards
- Experience “burn out” and lose many people, including their best employees

# The Constructive Culture and Nuclear Safety

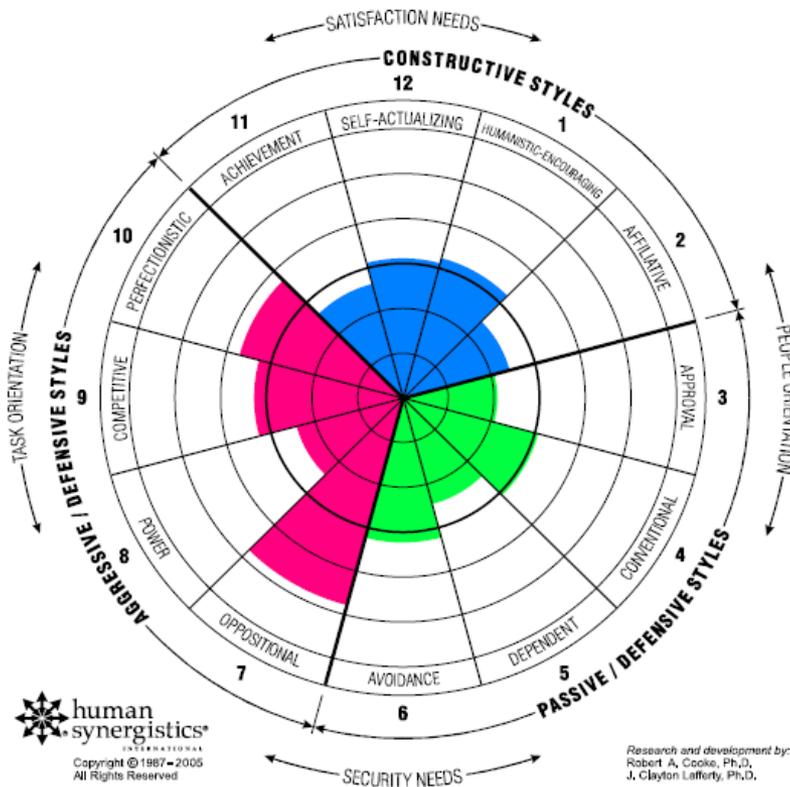


# The Bottom Line

- Using the OCI as the measurement tool, there is a relationship between organizational culture attributes, plant performance and leadership behavior
- The attributes and behavioral expectations of a Constructive general culture are absolutely in alignment with those attributes and behaviors clearly articulated by IAEA, INPO and WANO their documents regarding the principles of a strong nuclear safety culture,

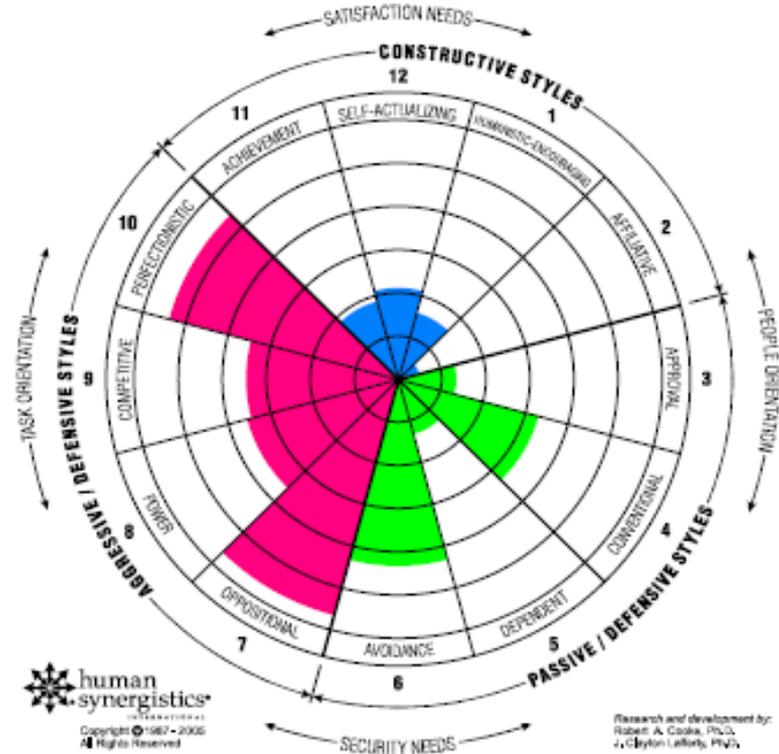
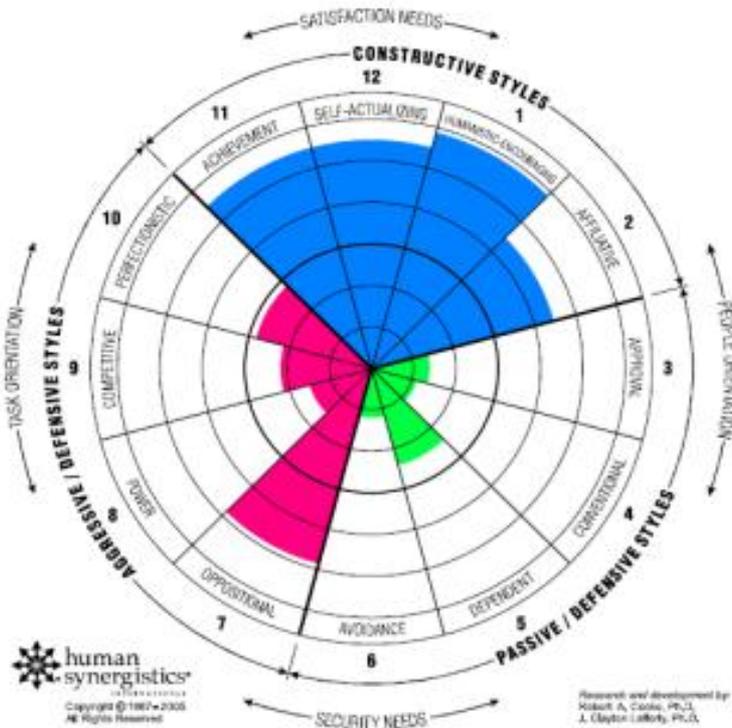
# OCI Comparisons

## Current Culture



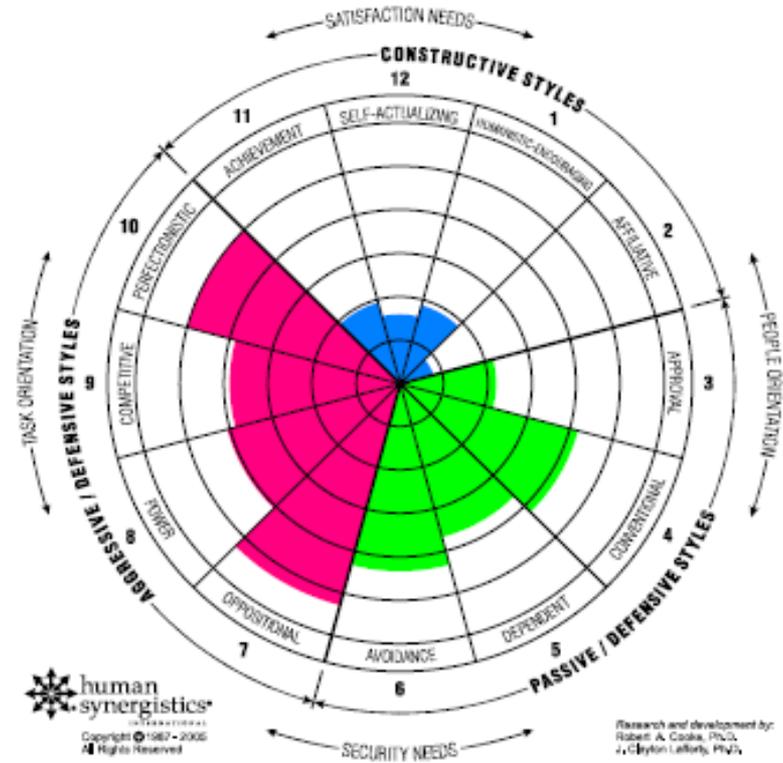
# OCI Comparisons

## Senior Leaders Culture



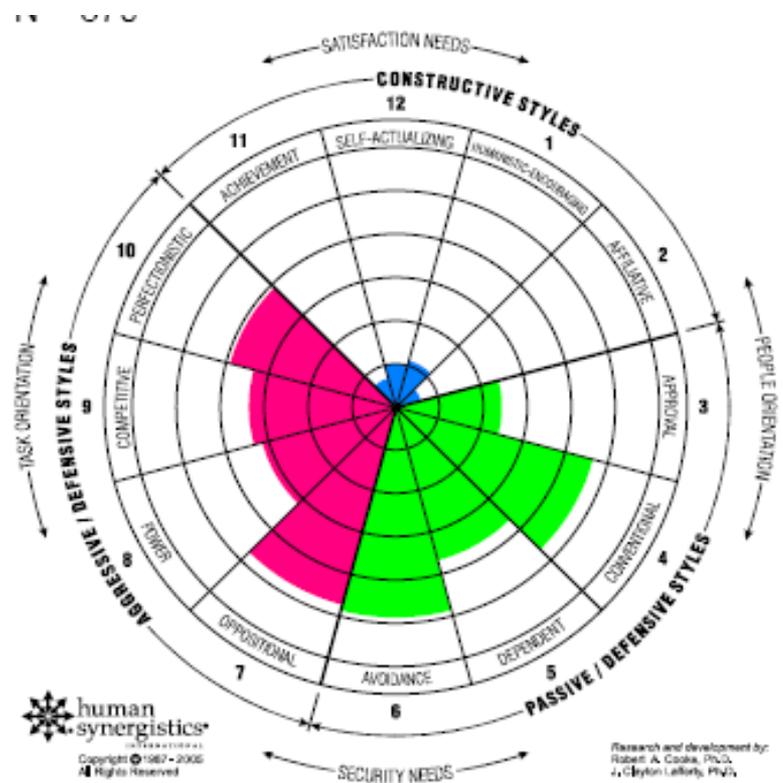
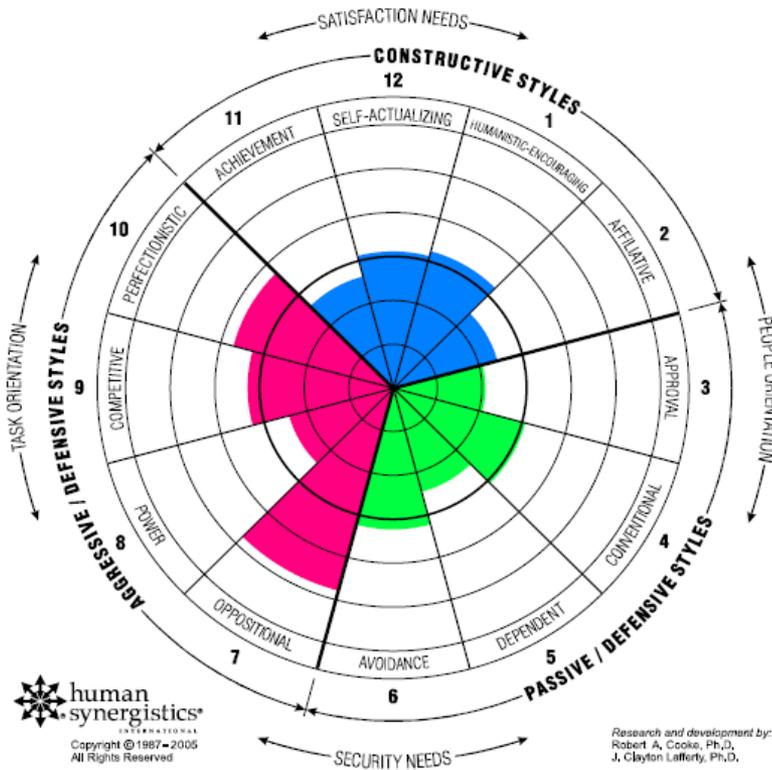
# OCI Comparisons

## First Line Supervisor



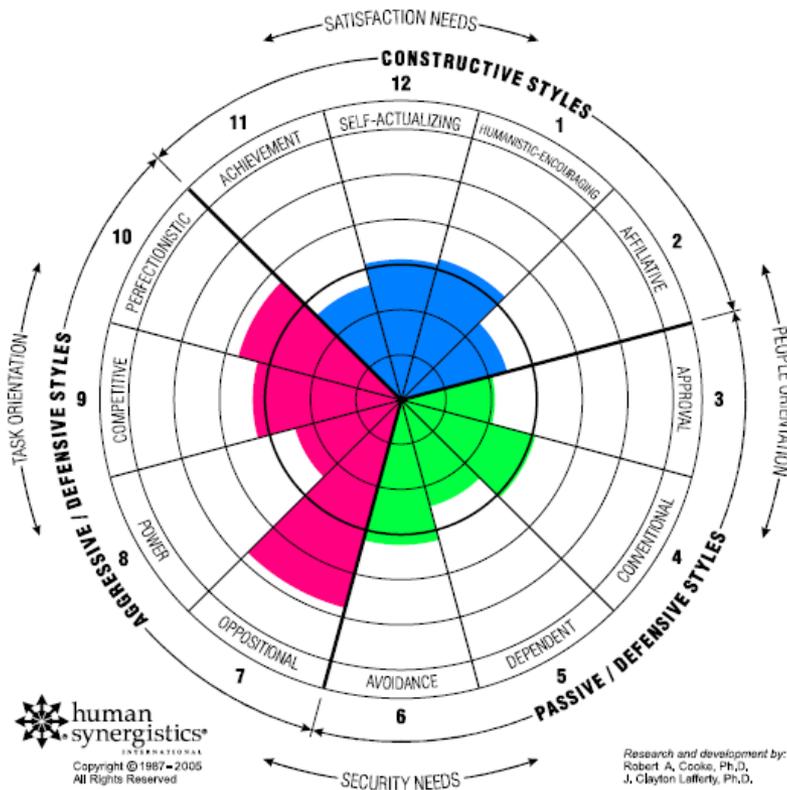
# OCI Comparisons

## Individual Contributor



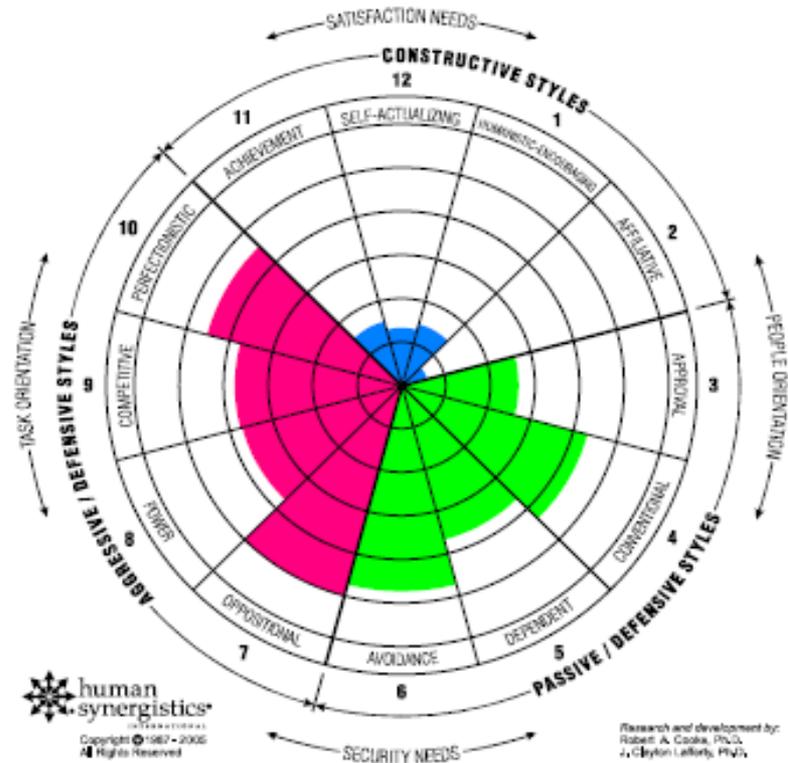
# OCI Comparisons

## Engineering



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