

The “Wow” Effect

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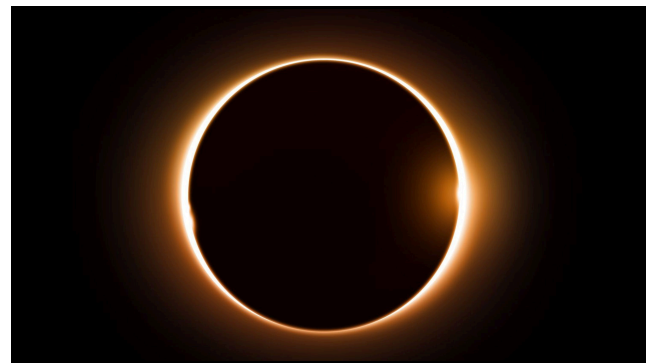
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An unusual day...

- Record number of sick days
- State populations tripled
- Record-breaking marriage proposals
- Same distinct #hashtag
- Unusual Fashion Choices
- Strange Behaviors



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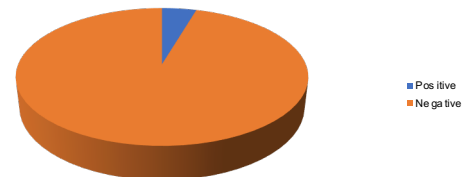
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What do you feel when you...

- Gaze up at the Milky Way?
- See a beautiful sunrise or sunset?
- Witness an act of great compassion or courage?
- Watch a child learn to walk?
- See a mind-blowing work of art?
- Attend an incredible performance?

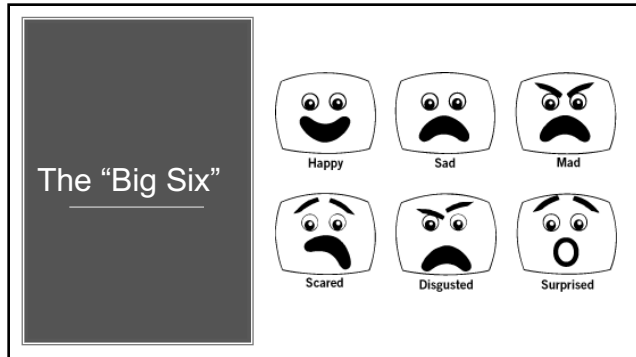
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Ratio of Abstracts (1968-2000)



Historical Focus on the Negative

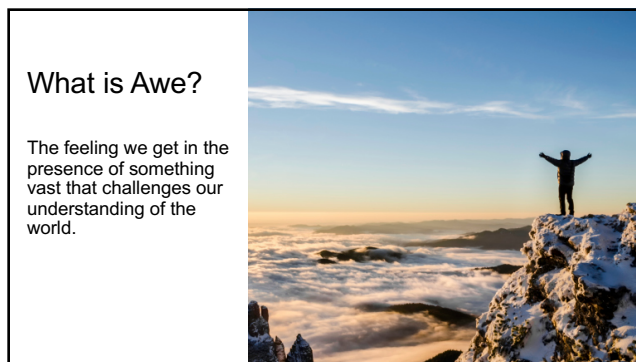
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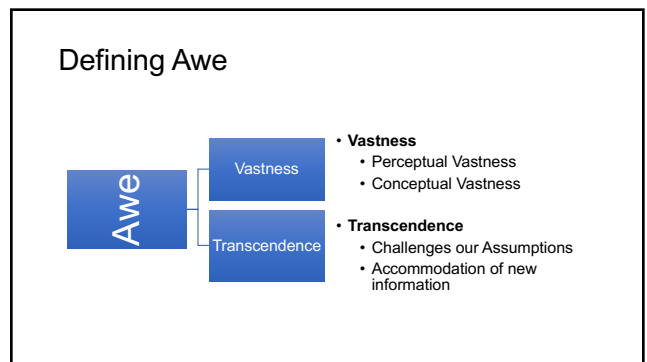
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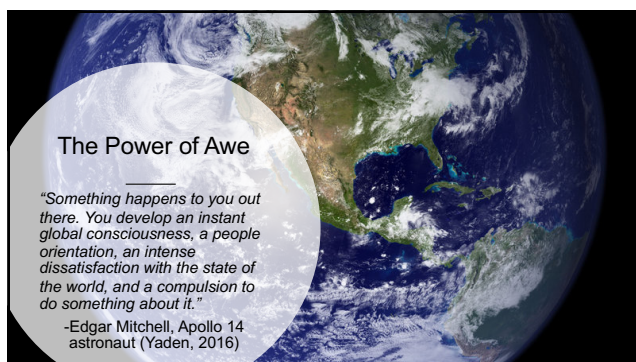
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I'M SICK OF REPEATING MYSELF.

-HISTORY

A Brief History of Awe

- Origins of the word "awe"
- Awe as a religious state
- A shift to the secular
 - Edmund Burke
 - Immanuel Kant
 - Ralph Waldo Emerson
 - John Muir
- Awe in the field of psychology
 - William James
 - Sigmund Freud
 - Abraham Maslow
 - Viktor Frankl
- Modern understandings of awe

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Who Experiences Awe?

- **Personality factors**
 - Extraversion, Openness to New Experiences
- **Character Traits**
 - Optimism, Gratitude, Creativity, Love of Learning, Appreciation of Beauty
- **Spirituality and Religion**
 - No differences found overall, though sources of awe may differ
- **Social Class**
 - Slight link to lower-SES individuals

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Cross-Cultural Research

- Universal human emotion found across all cultures
- Differences in frequency of experiencing awe (Razavi, 2016)
 - Comparison of US, Poland, Malaysia, Iran
- Differences in sources of awe (Bai, 2017)
 - US/Europe: more likely to experience awe through nature or through themselves
 - East Asia: more likely to experience awe through another person

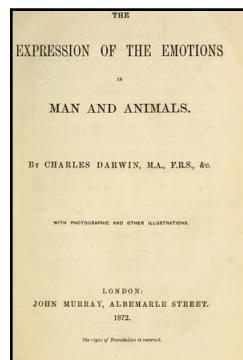
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Challenges to Awe

- Technology
- Rise of Urban Living
- Increasing length of workday
- Rising levels of stress
- Constant worry and rumination
- Increased materialism
- Changing attention spans
- Decreased attendance for concerts, museums, and live performances



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Why do we experience Awe?

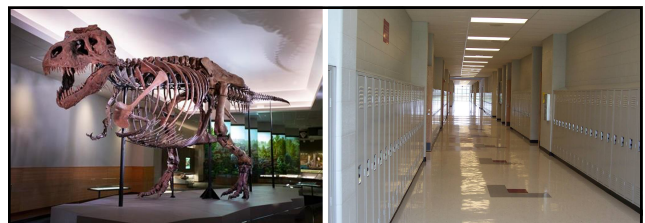
- Emotions not only serve a purpose, but developed within our species for specific evolutionary advantages
- Not merely a result of social learning
- But what purpose might awe serve?

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The Why of Awe

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Awe Connects Us With Others (Shiota & Keltner, 2007)

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Awe Connects Us

Circle the picture that best describes your relationship with the community at large. (S = Self; C = Community at Large)

Bai (2017): Awe resulted in greater feelings of closeness with others in the community compared to neutral or negative experiences

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Awe Makes Us More Compassionate (Piff, 2015)

- 60 seconds gazing up at Eucalyptus grove or at Science building
- Staged "accident" would then occur
- Awe condition far more likely to help
- Piff: "Awe arouses altruism"

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Awe Increases Generosity (Rudd, 2012)

- Brief writing exercise
 - Happy memory or awe-inspiring memory
- Awe condition
 - Higher levels of patience
 - Greater willingness to donate time or money to a good cause

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Awe Increases Generosity (Prade, 2016)

- First study looked at how frequently people experienced various emotional states.
- Participants also given 10 lottery tickets and that they'd be entered for a cash prize
- Could either keep all the tickets, or share with an unknown stranger
- Awe linked to 40% greater generosity

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Awe Increases Generosity (Prade, 2016)

- Follow-up study compared people reflecting on awe-inspiring experiences to neutral experiences
- Then asked to imagine winning the lottery
- Reflecting on awe resulted in significantly increased generosity and sharing of the potential prize money

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Awe Makes Us More Curious (Smith, 2016)

"Bad news, its curiosity"

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Awe Enhances Positive Emotions (Joye, 2015)

- Participants watched slideshow of either awe-inspiring nature scenes or those that were more commonplace
- Both groups reported mood improvements, but awe condition led to vastly greater gains
- These findings also suggest that awe itself may play a major role in nature's healing powers

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Awe Increases Life Satisfaction (Rudd, 2012)

- Participants asked to read an awe-inspiring story or a more neutral one
- Then asked to rate their own overall life satisfaction
- Reflecting on awe resulted in significantly increased life satisfaction

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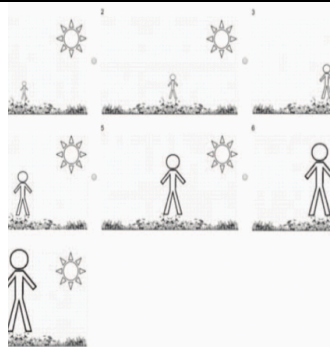
Lasting Mood Boosts (Stellar, 2017)

- Participants tracked mood and experiences of awe over several weeks
- On average, people experienced approximately 2 instances of awe per week
- Powerful awe experiences resulted in mood improvements even weeks later

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The *Small Self* (Bai, 2017)

- Awe reliably leads to a feeling of smallness relative to the world around us, a phenomenon known as "the small self."



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Awe Decreases Materialism

- Awe linked to a preference for spending \$ on experiences rather than material goods (Rudd, 2012)
- Awe leads to a decreased emphasis on money, and prioritization of other values (Jiang, 2018)



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Awe Lowers our Stress (Anderson, 2018)

- Whitewater rafting adventure for war veterans and inner-city high schoolers
- Led to dramatic decreases in stress and PTSD symptoms
- Improved overall well-being, optimism, and social functioning
- Awe as the “active ingredient” in nature



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Awe Changes Our Time Perspective (Rudd, 2012)

- The rise of “time poverty”
- Experiences of awe “stretch out time”
 - Participants reported a sense that time had expanded
- More likely to volunteer time to charity
- Reduced overall stress



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Awe Increases Humility (Stellar, 2018)

- Individuals who reported more awe experiences rated by both self and peers as being:
 - Less self-absorbed
 - Less narcissistic
 - More humble
 - Possessing a more accurate understanding of their own strengths and weaknesses

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Awe Can Lead to Rapid Change

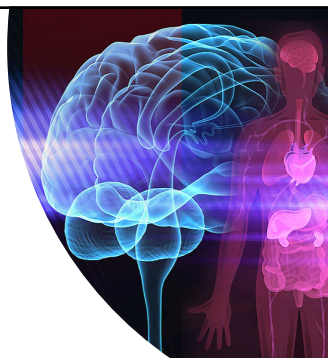
“Awe is a lightning bolt that marks in memory those moments when the doors of perception are cleaned and we see with startling clarity what is truly important in life.”

-- David Elkins



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Our Brain and Body on Awe



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Awe and Inflammation (Stellar et al., 2015)

Short-Term/Acute

- Fights disease and infection
- Restores us to homeostasis
- Signals immune system to spring to action
- Heals and repairs damaged tissue
- Localized

Chronic

- Persistent, low-grade
- Widespread (rather than localized)
- Linked to heart disease, stroke, Alzheimers, depression, and much more

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Awe and Inflammation

DPES Subscale	IL-6	IL-6
Awe	-0.33***	-0.33**
Amusement	-0.02	0.16
Compassion	-0.09	0.05
Contentment	-0.20*	0.04
Joy	-0.23*	-0.11
Love	-0.10	-0.07
Pride	-0.21*	-0.009

Note. β values for positive emotions predicting IL-6 and controlling for participant's BMI. In column 1, emotions are separately entered into regressions and in column 2 they are simultaneously entered.
* $p < .05$. ** $p < .01$. *** $p < .001$.

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Your Brain on Awe (Newberg, 2016)

- Activation in areas linked to interpersonal bonding and release of oxytocin
- Decreased activation of Default Mode Network (DMN)
- Decreased activation in the parietal lobe
 - Contributes to sense of self, orients us to world around us
 - May explain the "out of body" experience many report during moments of awe
- Decreased activation of subgenual prefrontal cortex
 - Linked to anxious rumination

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Awe and the Brain

- Sixty audience members wearing electroencephalogram (EEG) headgear
- Able to detect unique and specific brainwave "signatures" during particular awe-inspiring moments during the performance



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Awe and our Nervous System

- Typically work in reverse of each other (like a hot and cold faucet)
- Awe appears to be a rare state in which both branches are activated simultaneously

AUTONOMIC NERVOUS SYSTEM

* SYMPATHETIC

- Fight or Flight



* PARASYMPATHETIC

- Rest and Digest



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Awe and Goosebumps
(Shurtz, 2012)

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Verbal and Nonverbal expressions of awe

Vocal bursts: listeners able to identify "awe vocalizations" compared to other emotions (Simon-Thomas et al, 2009)

Similar verbal expressions across both Western and non-western cultures (Cordaro, 2016)

Facial expressions: widening of eyes, jaw slightly dropped, raised eyebrows common across cultures (Shiota, 2003; Campos, 2013; Anderson, 2017)

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Awe	Admiration	Amusement	Anger	Disgust	Envy	Embarrassment	Excitement
Moderate to strong association (> 50%)							
AU6—85%	AU12—95%	AU6—56%	AU1—58%	AU6—79%	AU6—69%	AU6—70%	AU6—70%
Chin raiser	Lips apart	Chin raiser	Inner brow raise	Chin raiser	Chin raiser	Chin raiser	Chin raiser
AU12—95%	AU26/27—80%	AU12—85%	AU4—56%	AU12—97%	AU12—84%	AU12—80%	AU12—80%
Lip corner puller	Jaw drop/mouth stretch	Lip corner puller	Brow lowerer	Lip corner puller	Lip corner puller	Lip corner puller	Lip corner puller
AU125—81%	AU1—79%	AU24—60%	AU125—50%	AU125—54%	AU125—54%	AU125—54%	AU125—54%
Lips apart	Inner brow raise	Lip pressor	Lips apart	Lips apart	Lips apart	Lips apart	Lips apart
AU26/27—68%	AU5—61%						
Jaw drop/mouth stretch	Upper lid raiser						
Weak association (25–49%)							
49%	AU57—27%	38%	AU24—38%	34%	AU55/56—49%	45%	
Head bounce	Head forward	Head nod	Lip pressor	Bounce	Head tilt	Shoulders back	
AU55/56—34%		AU25—26%	AU2—37%	AU26/27—31%	AU43—26%	AU53—38%	
Head tilt		Lips apart	Outer brow raise	Jaw drop/mouth stretch	Eyes closed	Head up	
AU1—25%			AU55/56—37%				
Inner brow raise			Head tilt				
			37%				
			Forward lean				
			AU57—33%				
			Head forward				

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The Dark Side of Awe



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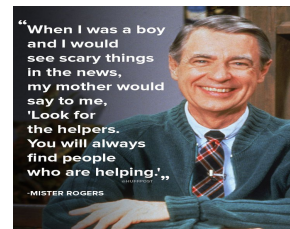
The Impact of Negative Awe

- 20% of reported awe experiences are negative
- Threat-based awe (Piff, 2015)
 - Lower rates of positive emotions
 - Higher rates of anxiety and sadness
 - Greater activation of sympathetic nervous system

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Negative Awe and Altruism

Negative awe experiences resulted in increased altruism and a desire to help others (Piff, 2015)



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Psychological Benefits of Awe

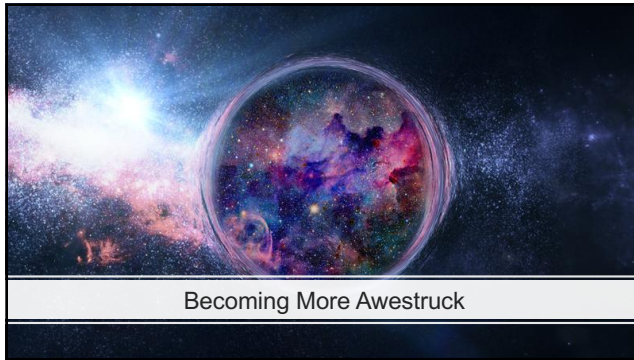
- Increased positive emotions (Joye, 2015)
 - Lasting boosts to mood (Stellar, 2017)
- Increased life satisfaction (Rudd, 2012)
- The “small self” effect (Bai, 2017)
- Decreased materialism (Rudd, 2012)
- Orients us to higher, more prosocial values (Jiang, 2018)
- Lower stress, including post-traumatic stress (Anderson, 2018)
- From time poverty to time wealth (Rudd, 2012)
- Increased humility (Stellar, 2018)

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The impact of awe on our brain & body

- Decreased chronic inflammation (Stellar, 2015)
- Decreased activation of the default mode network (DMN)
- Decreased activation of the parietal lobe
- Decreased activation of the subgenual PFC
- Unique brain wave “signatures”
- Simultaneous PNS and SNS activation

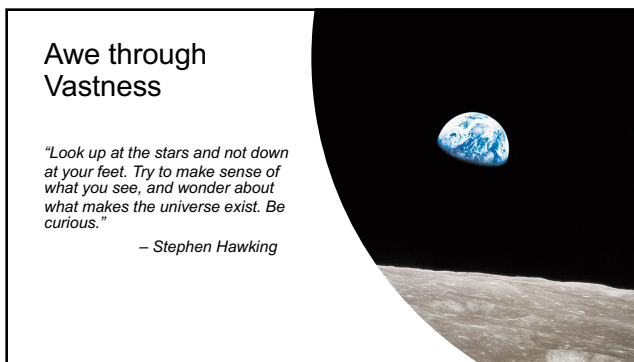
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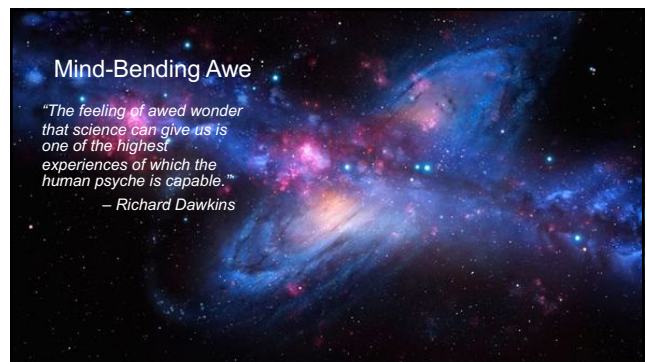
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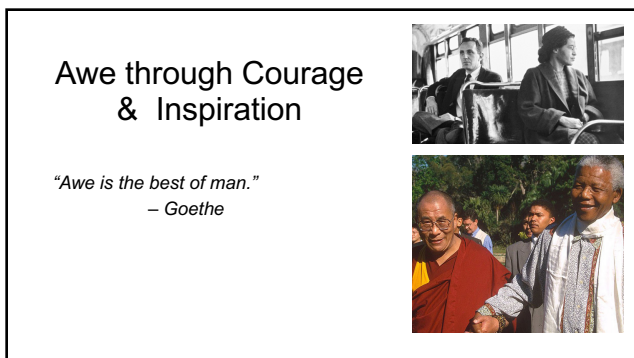
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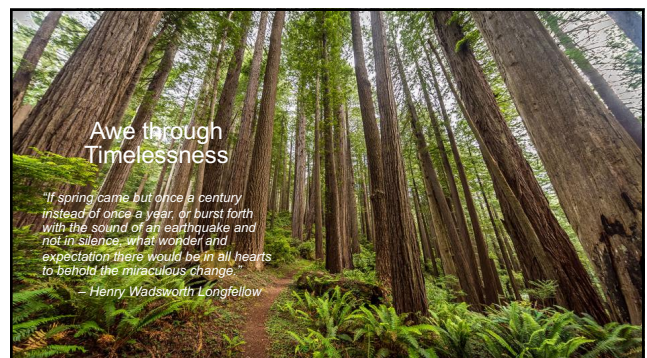
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"Gratitude bestows reverence, allowing us to encounter everyday epiphanies, those transcendent moments of awe that change forever how we experience life and the world."

— John Milton

Awe from Gratefulness

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Awe in the Present Moment

"Dwell on the beauty of life. Watch the stars, and see yourself running with them."
— Marcus Aurelius

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Awe in this Moment



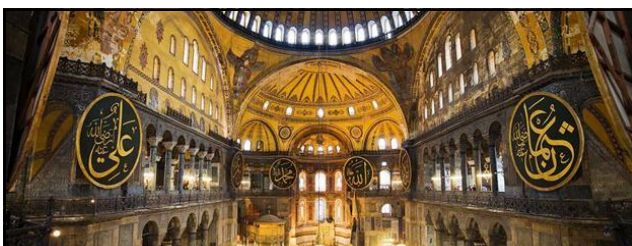
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Awe through Social Connection

"The most beautiful thing we can experience is the mysterious. It is the source of all true art and science. He to whom this mystery is a stranger, who can no longer stand rapt in awe, is as good as dead: his eyes are closed."
— Albert Einstein

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Awe through Creativity & The Arts

"Beauty will save the world."
— Fyodor Dostoevsky

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An Ancient Solution to a Modern Problem

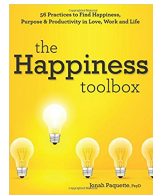
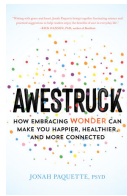
People have never been more:

- Stressed
- Socially isolated
- Short on time
- Depressed
- Materialistic
- Polarized

Awe helps us to:

- Relieve stress
- Connect with others
- Feel "time rich"
- Improves mood
- Connect with deeper values
- Become kinder towards others

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