

# Book of Nature Part III

Beauty and Wonder in Nature and Science



# Lecture outline

- I. The experience of beauty and the book of nature
- II. The problem of disenchantment
- III. The sense of wonder between emotion, neuroscience, and spirituality
- IV. Wonder, beauty, and contemplation in nature and science
- V. The value and limits of beauty and wonder



# I. The experience of beauty and the book of nature




# The greatness and beauty of nature

- “From the **greatness and beauty** of created things comes a corresponding **perception of their Creator.**” (Wisdom 13:5)



- St Cyril of Jerusalem, *Catechetical Lecture 9*:
- "The divine nature then it is **impossible to see with eyes of flesh**: but from the divine works it is possible to attain to some conception of His power, according to Solomon, who says, For **by the greatness and beauty of the creatures proportionably** (ἀναλόγως) **the Maker of them is seen** (θεωρεῖται).
- "He said not that from the creatures the Maker is seen, but added **proportionably** (προσέθηκεν, ὅτι ἀναλόγως). **For God appears the greater to every man in proportion as he has grasped a larger survey [contemplation] of the creatures**, and when his heart is uplifted by that larger survey [contemplation], he gains a greater conception of God."





## St. John Paul II

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- “for those who have attentive ears and open eyes, creation is like a first revelation that has its own *eloquent language*: it is *almost another sacred book* whose letters are represented by the multitude of created things present in the universe.” (General Audience, January 30, 2002)

# Benedict XVI

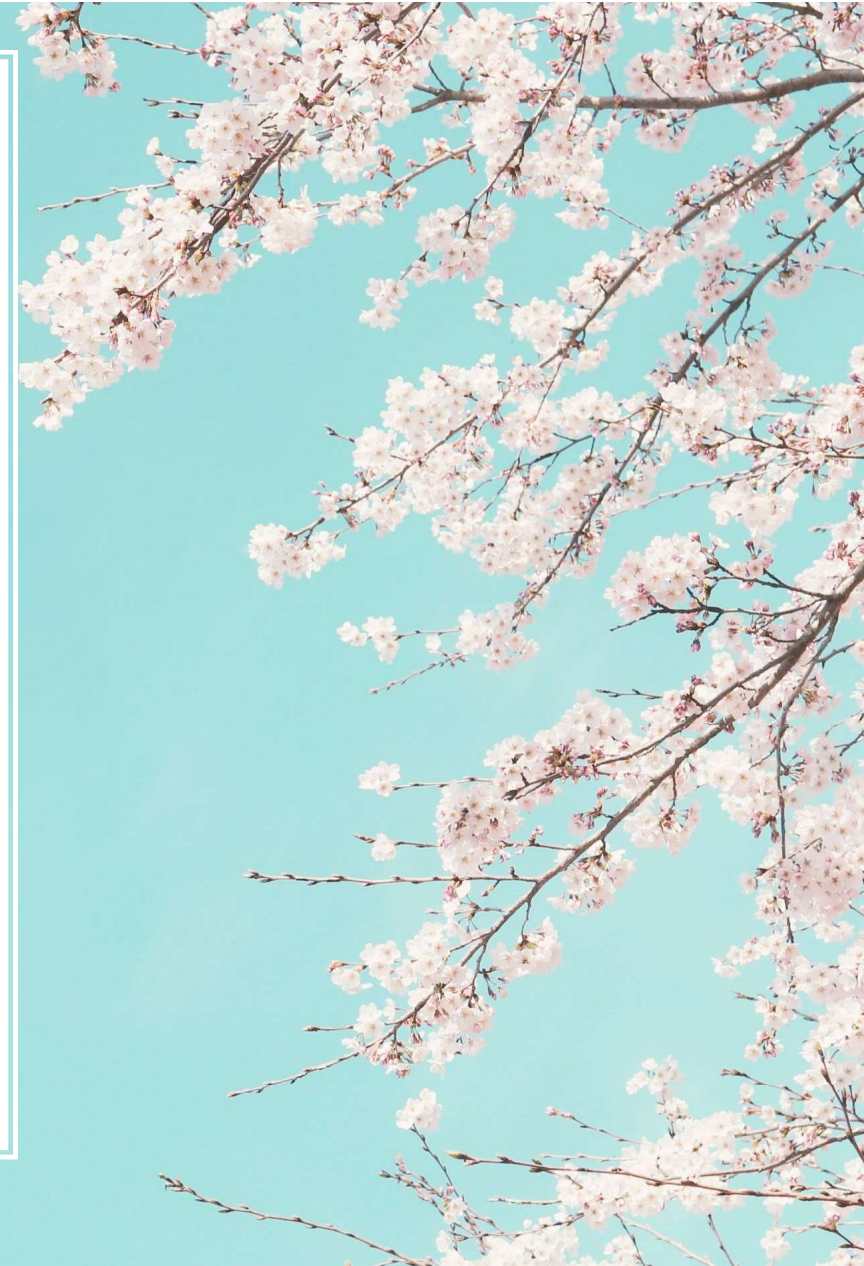
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- Verbum Domini, 7:
  - “While the Christ event is at the heart of divine revelation, we also need to realize that creation itself, the *liber naturae*, is an essential part of this symphony of many voices in which the one Word is spoken.”
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# Francis, *Laudato si'*

- “Saint Francis, faithful to Scripture, invites us to see nature as a magnificent book in which God speaks to us and grants **us a glimpse of his infinite beauty and goodness.**” (n. 12)
- ‘God has written a precious book, “whose letters are the multitude of created things present in the universe”.[54]’
- ‘The Canadian bishops rightly pointed out that no creature is excluded from this manifestation of God: **“From panoramic vistas to the tiniest living form, nature is a constant source of wonder and awe. It is also a continuing revelation of the divine.”**[55]’
- ‘The bishops of Japan, for their part, made a thought-provoking observation: **“To sense each creature singing the hymn of its existence** is to live joyfully in God’s love and hope”.[56]’







## Basil's *Hexaemeron* – reading the book of nature

- “We were made in the image and likeness of our Creator, endowed with intellect and reason, so that our nature was complete and we could know God.
- “In this way, **continuously contemplating the beauty of creatures**, through them as if they were letters and words, we could read **God’s wisdom and providence** over all things.”

# Transcendentals and Divine Names

- The one, the true, the good – and the beautiful?
- 'Horizontal' dimension and 'vertical' dimension





## Participation and Discovery

- 'Downward' and 'upward' the vertical dimension
- Metaphysics: the gift of being
- Epistemology: *glimpses* or *ciphers* of transcendence?

## Beauty – hard to define?

- Thomas Aquinas:  
integrity/completeness, proportion,  
luminosity (ST I q.39 a.8)
- Fran O'Rourke:  
"Beauty is the fusion of truth and  
goodness. It is the epiphany of reality  
as it illuminates the mind and pleases  
the will. It is the pre-eminent  
adumbration and foretaste of the  
Transcendent."

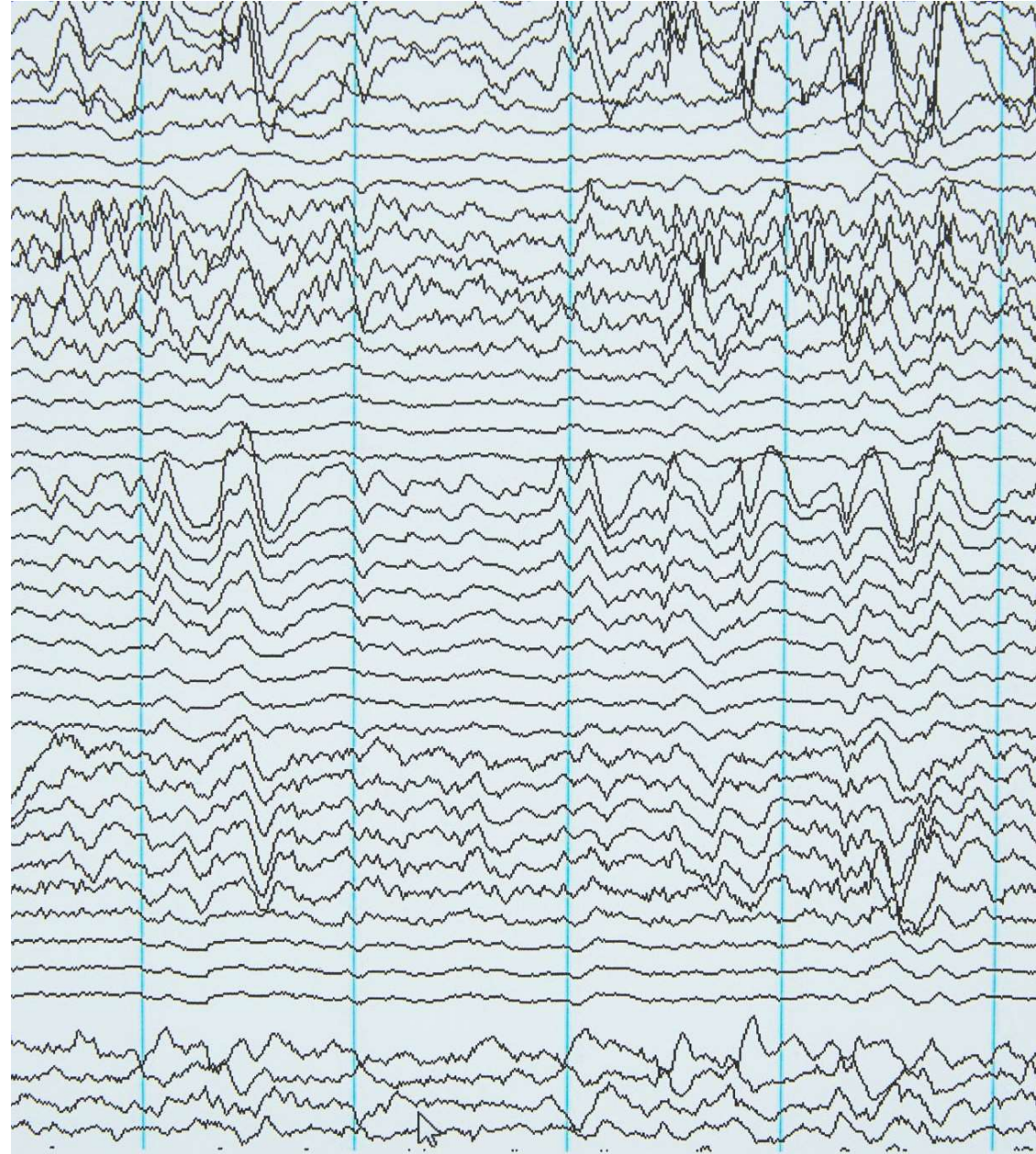


## II. The problem of disenchantment



# Max Weber, *disenchantment*

- Modern times – rationalization, efficiency, functionality
- Effect – the “disenchantment of the world” (*Entzauberung der Welt*)
  - a feeling of disappointment about someone or something you previously respected or admired; disillusionment.
- See also Charles Taylor, *A Secular Age* (2007)





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## A loss of transcendence?

- Irish poet Seamus Heaney: ‘The biggest shift in my lifetime has been the evaporation of the transcendent from all our discourse and our sense of human destiny.’ (2010 interview)
- Paul Hewson (U2’s Bono): ‘It is becoming clear that the material world is not enough for anybody. We had a century of being told by the intelligentsia that we’re two-dimensional creatures, that if something can’t be proved, it can’t exist. That’s over now. Transcendence is what everybody, in the end, is on their knees for, running at speed toward, scratching at, kicking at.’

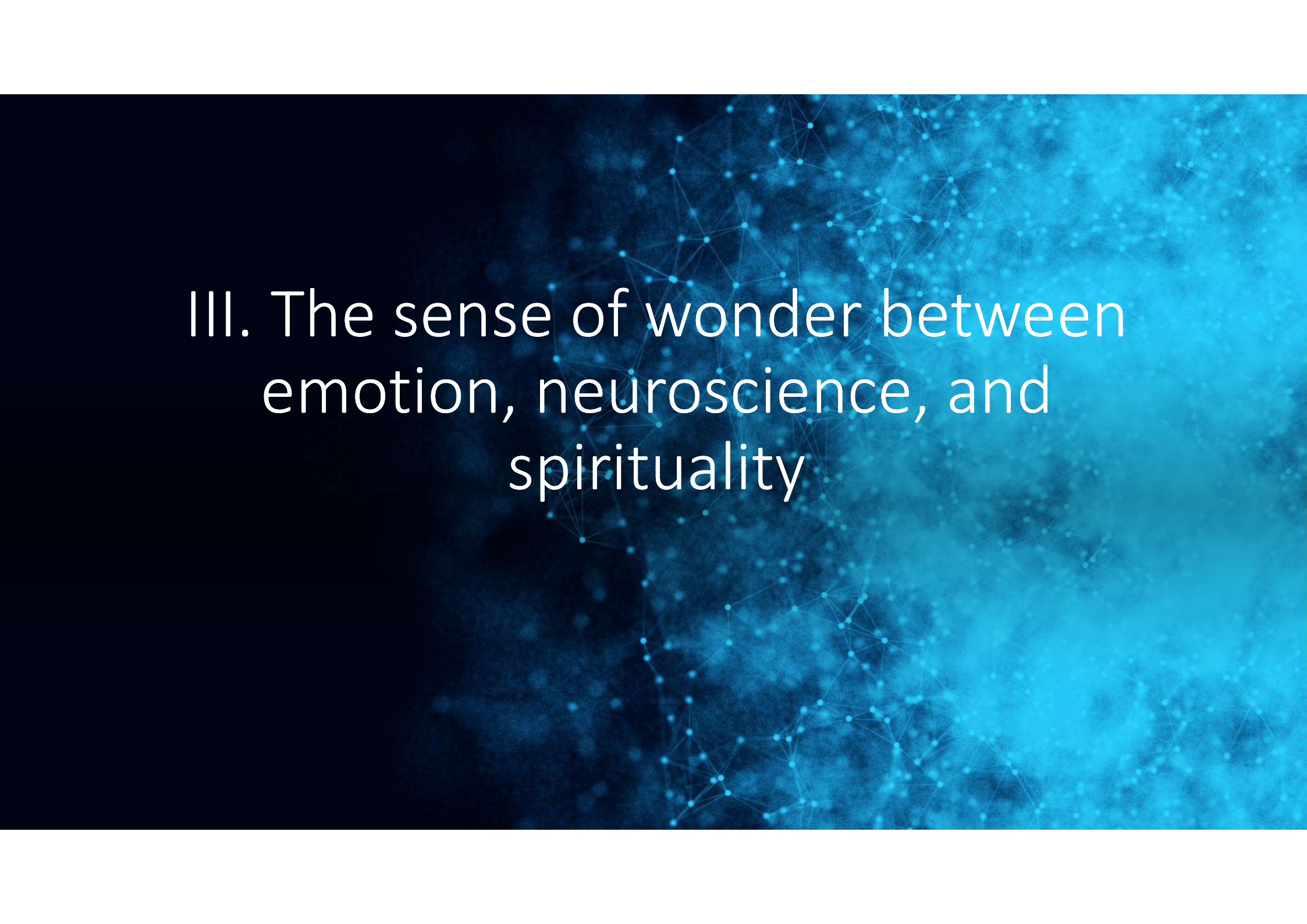


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## Conversation

- Do you agree with these assessments? Would you like to qualify them in some way?
- *Disenchantment* – can you think of some experiences of this kind?
  - When and why did you feel like that?
  - Did anything help to overcome it?
- Does disenchantment matter? Why?
- How would you try to guide or advice something who feels that way?





### III. The sense of wonder between emotion, neuroscience, and spirituality



## Some recent literature

- Robert C. Fuller, *Wonder: From Emotion to Spirituality* (2006)
- Alister McGrath, *The Reenchantment of Nature* (2002)
- Also Rachel Carson's classic, *The Sense of Wonder* [1956] (1998)
- And Haydn Washington, *A Sense of Wonder towards Nature* (2019)

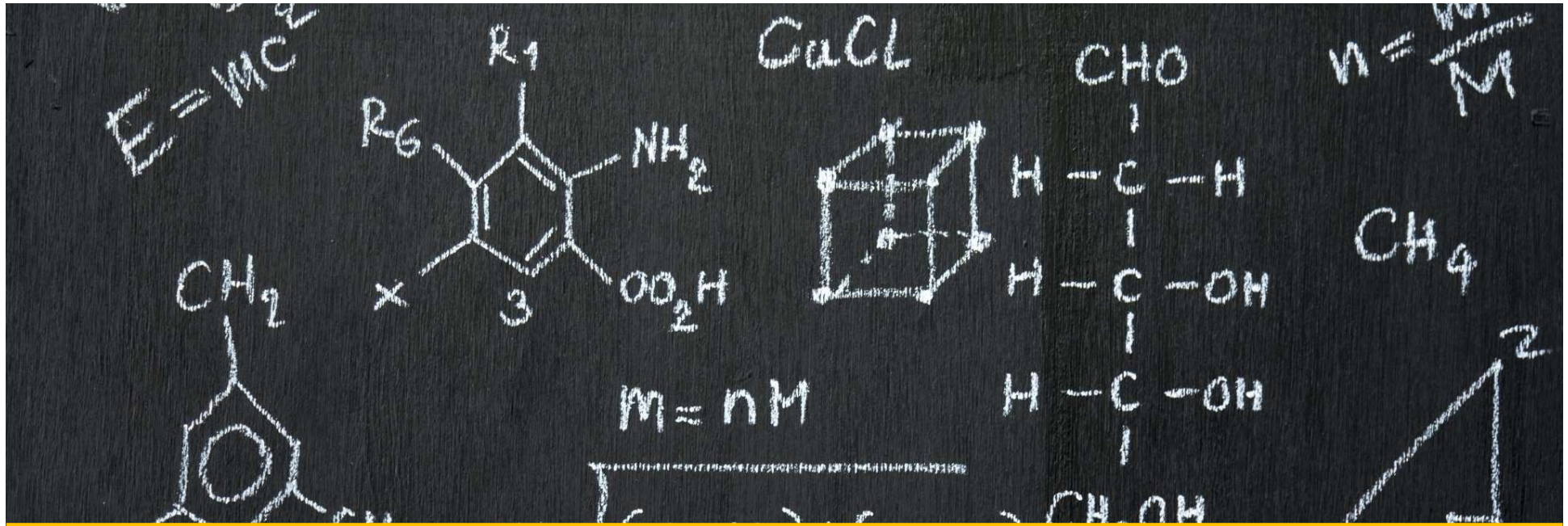


## Two dimension: a proposal

- Neuroscience and brain lateralization – openness ('nature')
  - Activities like walking in nature, contemplating the night sky...
  - Listening to music...
- The spiritual dimension – gift of contemplation and faith ('grace')
  - Prayer,
  - Humility, detachment (asceticism)
  - Rectitude of intention...

IV. Wonder, beauty,  
and contemplation  
in nature and  
science





Wonder,  
philosophy and  
science

"Wonder (*thaumazein*) is the feeling of a philosopher, and philosophy begins in wonder" (Socrates in Plato's *Theaetetus*, 155D)

"It is owing to wonder that men both now begin, and at first began, to philosophize - - -" (Aristotle, *Metaphysics* 982 b 12 ff.)



Wonder and  
the book of  
nature

"They wondered ... about the **phenomena of the moon** and those of the **sun and the stars**, and about the **origin of the universe**. And a man who is puzzled and wonders, thinks himself ignorant...

"Hence, even the lover of myth in a sense is a lover of wisdom or a philosopher, for *the myth, too, is composed of wonders.*"

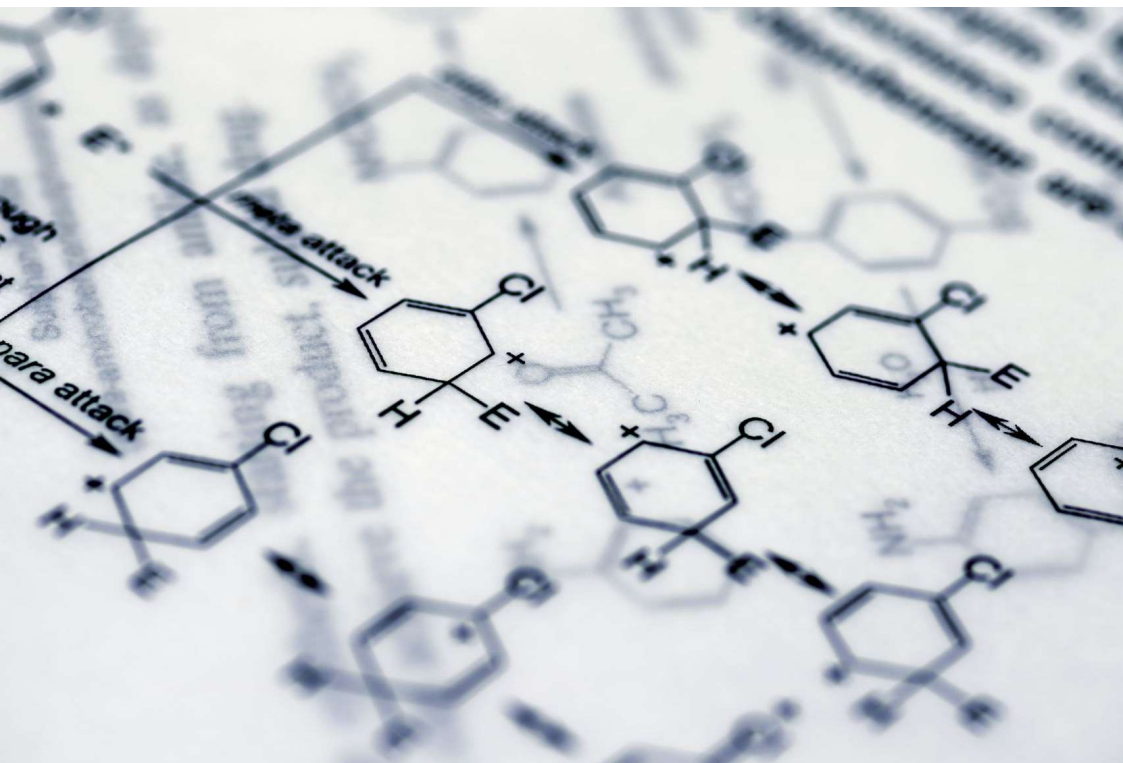
Aristotle, *Metaphysics* 982b12 ff.

# Philo of Alexandria

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- “For man’s faculty of vision, led upwards by light, discerned the nature of the heavenly bodies and their harmonious movements. He saw the well-ordered circuits of fixed stars and planets, how the former moved in unchanging orbit and all alike, while the latter sped round in two revolutions out of harmony with each other. He marked the rhythmic dances of all these, how they were marshalled by the laws of a perfect music, and the sight produced in his soul an ineffable delight and pleasure. Banqueting on sights displayed to it one after another, his soul was insatiate in beholding. And then, as usually happens, it went on to busy itself with questionings, asking What is the essence of these visible objects? Are they in nature unoriginate, or had they a beginning of existence? What is the method of their movement? And what are the principles by which each is governed? **It was out of the investigation of these problems that philosophy grew**, than which no more perfect good has come into the life of mankind.” *De opificio mundi*, 54.



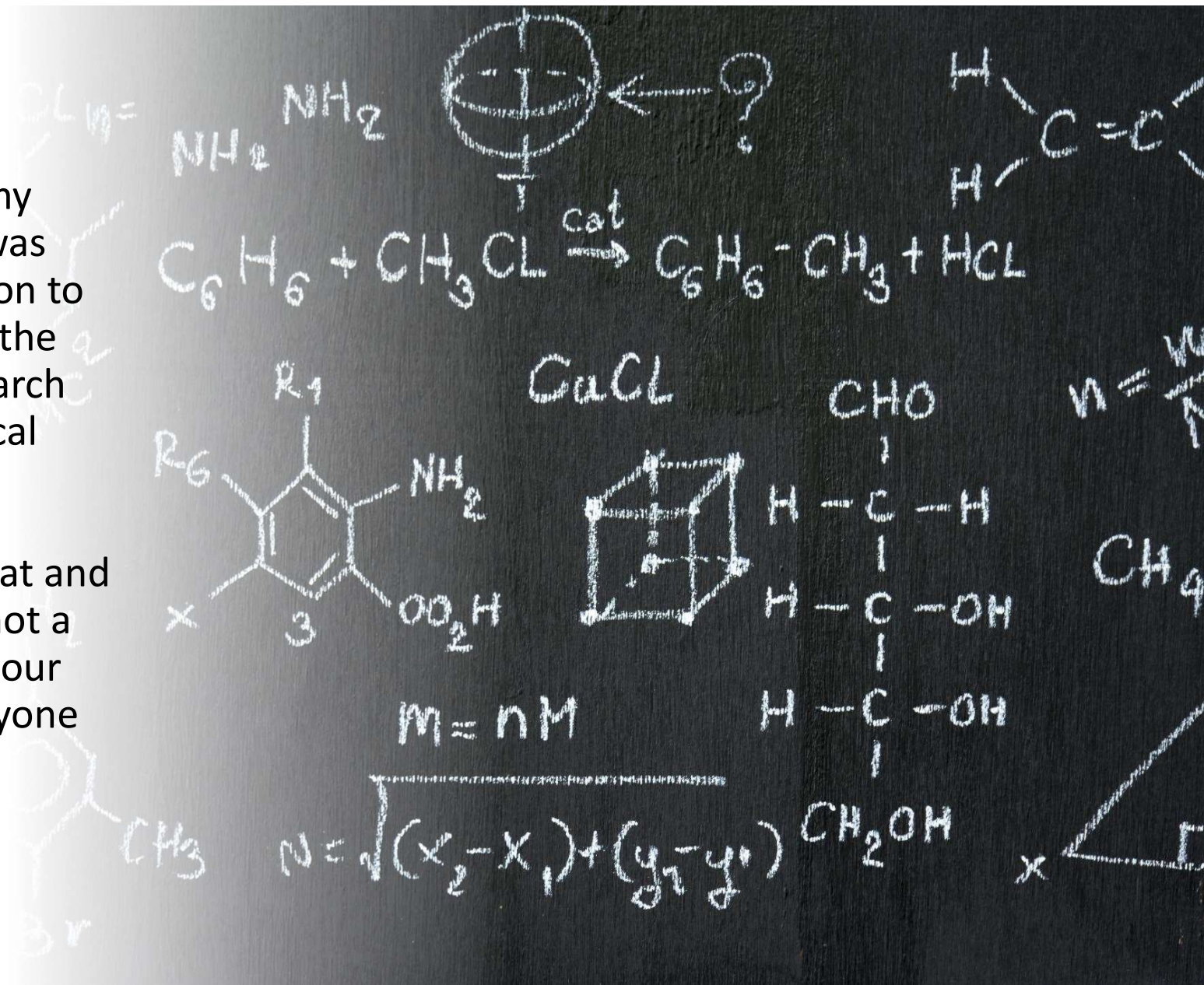


## Chemistry and the Sense of Wonder

- Rubin Battino (1969), *Journal of Chemical Education* 46(1), 38-39.
- *When I was an undergraduate taking physical chemistry the following conversation took place one day with my friend Ren, who was then a senior in chemical engineering.*
- *"I understand you're taking physical chemistry."*
- *"That's right."*
- *"What are you studying now?"*
- *"We're taking up the Clausius-Clapeyron equation now. It. . . ."*
- *"The Clausius-Clapeyron equation? How wonderful! That was one of the best parts of the course. The derivation is just lovely. Have you used it to..."*



- "To me and most of my fellow students this was just one more equation to plug numbers into in the seemingly endless march of equations in physical chemistry. That an equation might be something to marvel at and stand in awe of was not a thought that crossed our minds. How could anyone get excited by an equation?"



A person is sitting on a rock in the foreground, looking out over a calm lake. The sky is filled with vibrant, streaked clouds in shades of pink, orange, and blue, reflecting in the water. The background shows a dark forest line under a twilight sky.

# Contemplation

- *Theoria physike*, the contemplation of nature
- Contemplation: “the activity of the spirit that knows **the intelligible reality** of things without stopping at their **sensible appearance.**” (Jean Daniélou)
- An activity – Ascesis
- A gift – Holy Spirit

Philip Ball, *The Beauty of Chemistry: Art, Wonder, and Science* (2021)

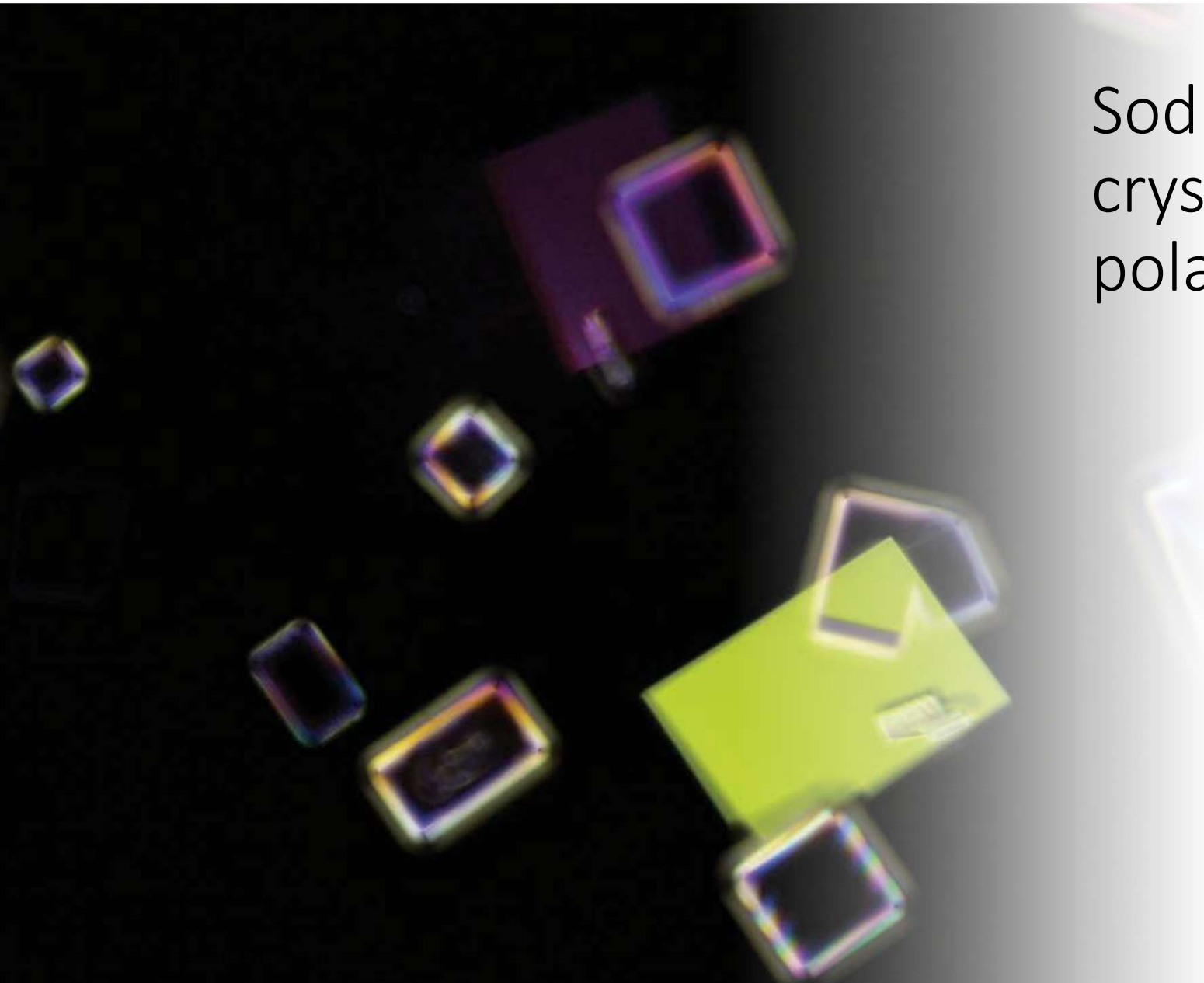
Instead of (or in addition to) learning how to calculate and manipulate – how about facilitating a contemplative attitude?



Orderly: the  
charm of  
crystals

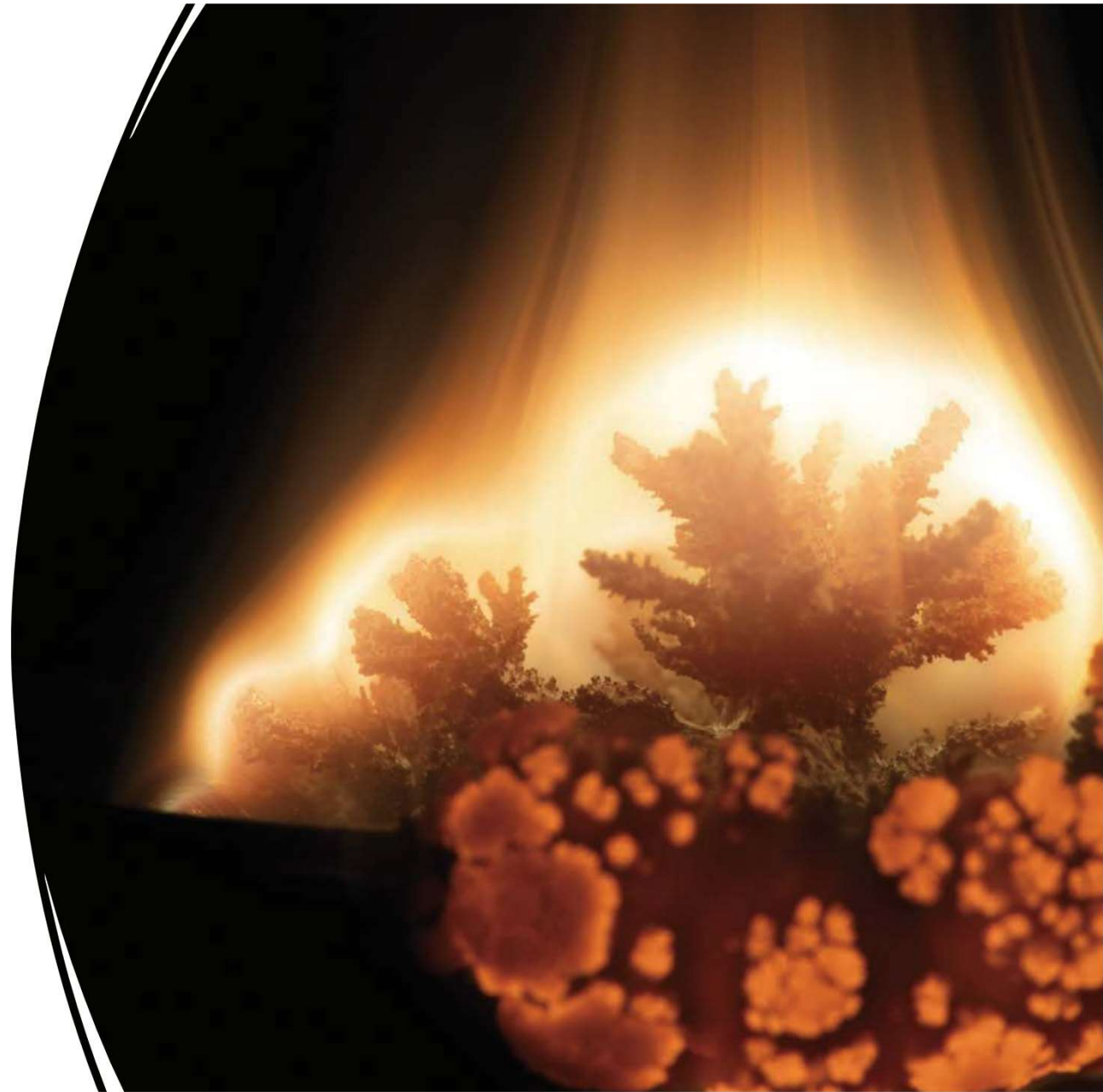


Sodium chloride  
crystals in  
polarized light



Incendiary: the  
fascination of  
flames  
(combustion of  
lithium)

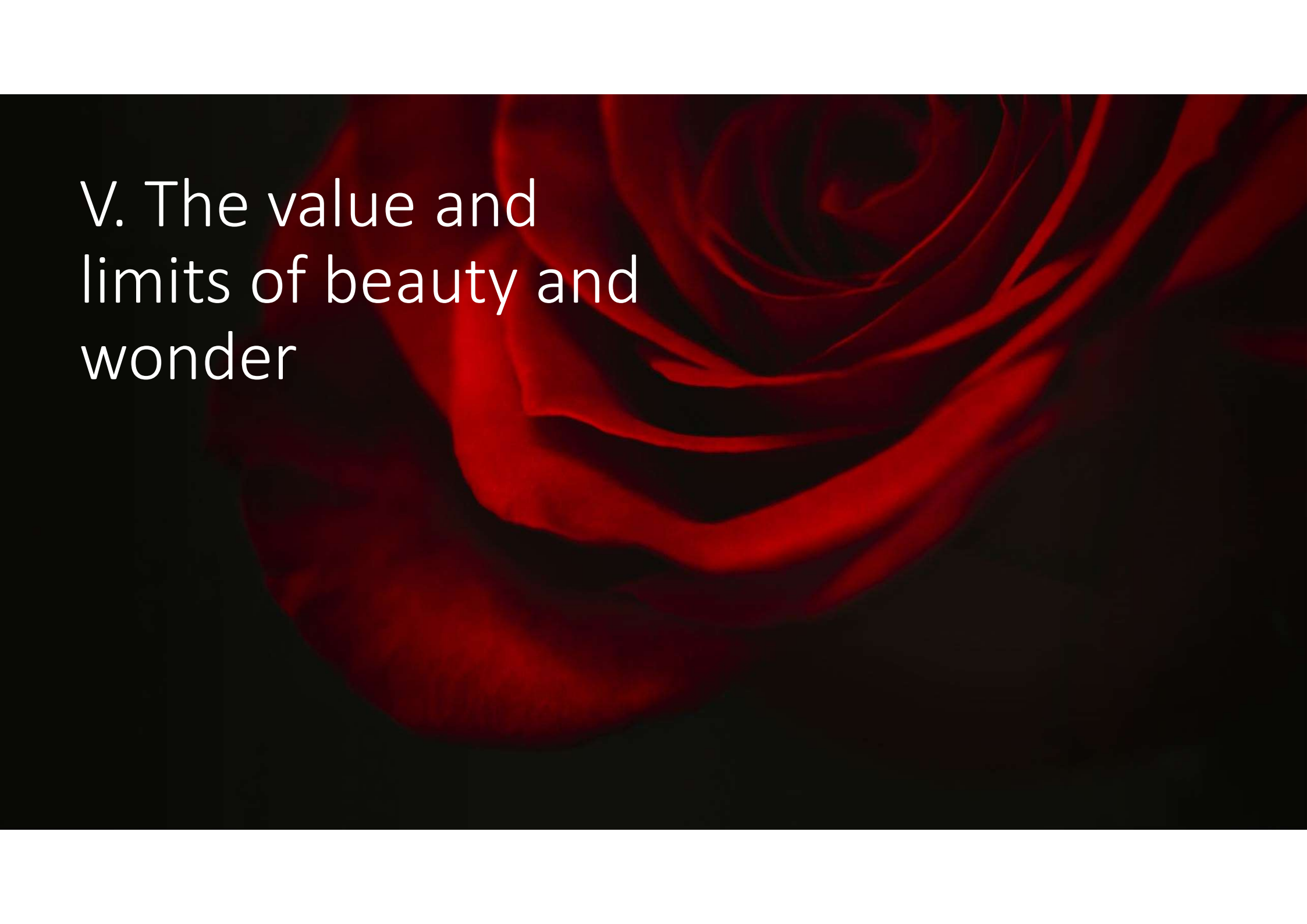
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# Galvanizing: the enchantment of electrochemistry

- Reduction of potassium permanganate by sucrose



V. The value and  
limits of beauty and  
wonder



# Beauty as a road to God (E. Stump)

- "What is a road?"
- "A road to Oxford is a means for you to get to Oxford; a road to God is a means for a person to get to God."
- But – "The destination of the road of beauty will be not a place but a relationship."



# Walking the road of beauty

- "Beauty as a road to God will have both an objective and a subjective component."
- "Beauty will draw us nearer to God only if what moves us is the beauty itself."





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## ‘Ciphers of transcendence’

- A cipher: a secret or disguised way of writing; a code
- Karl Jaspers – ciphers are "the language of transcendence"
- Irish philosopher Patrick Masterson on beauty etc:  
They are "experimental clues that enable us to attain a rational or philosophical affirmation of God. But they are ciphers which, as such, cannot directly disclose his existence. They have to be 'deciphered' by philosophical argument which argues that his existence can be affirmed as a theoretical truth condition of these features of experience."



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Limits: *aesthetic experience* as an idol?

- An end in itself or a springboard to something higher?
- Nature-based spirituality – may be stuck in the 'horizontal' dimension (immanentism)?
- Stump: "Beauty will draw us nearer to God only if what moves us is the beauty itself."



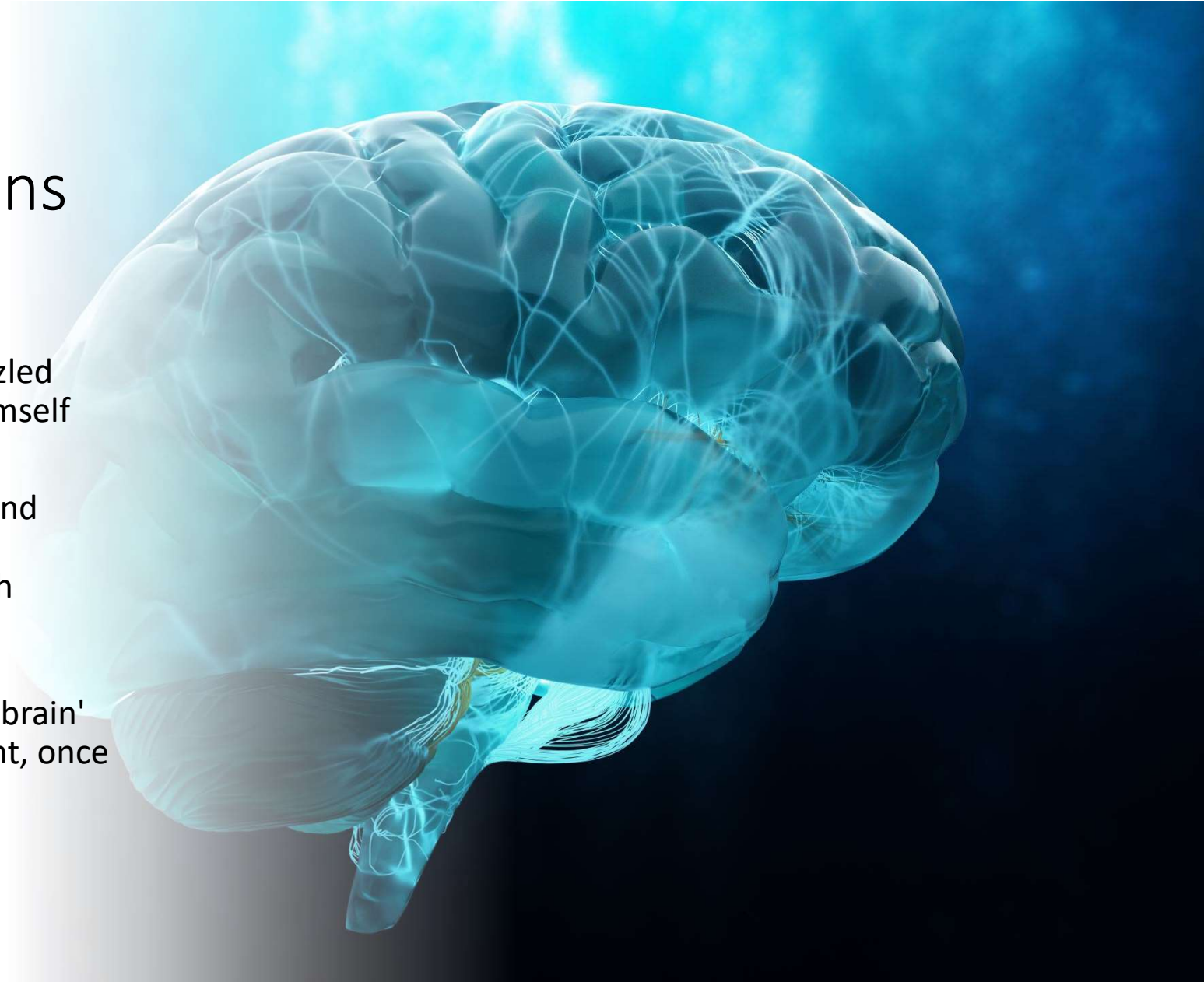
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## Wonder: Does it lead to God?

- Patrick Sherry (2019), "Einstein, Dawkins, and Wonder at the Intelligibility of the World"
- Richard Dawkins – autobiography *An Appetite for Wonder*
- Popular illustrated book *The Magic of Reality*
  - "the wonder and joy of science . . ."
  - "an inspiring beauty which is all the more magical because it is real and because we can understand how it works"
- Unweaving the Rainbow –
  - "feeling of awed wonder that science can give us ... a deep aesthetic passion to rank with the finest that music and poetry can deliver"

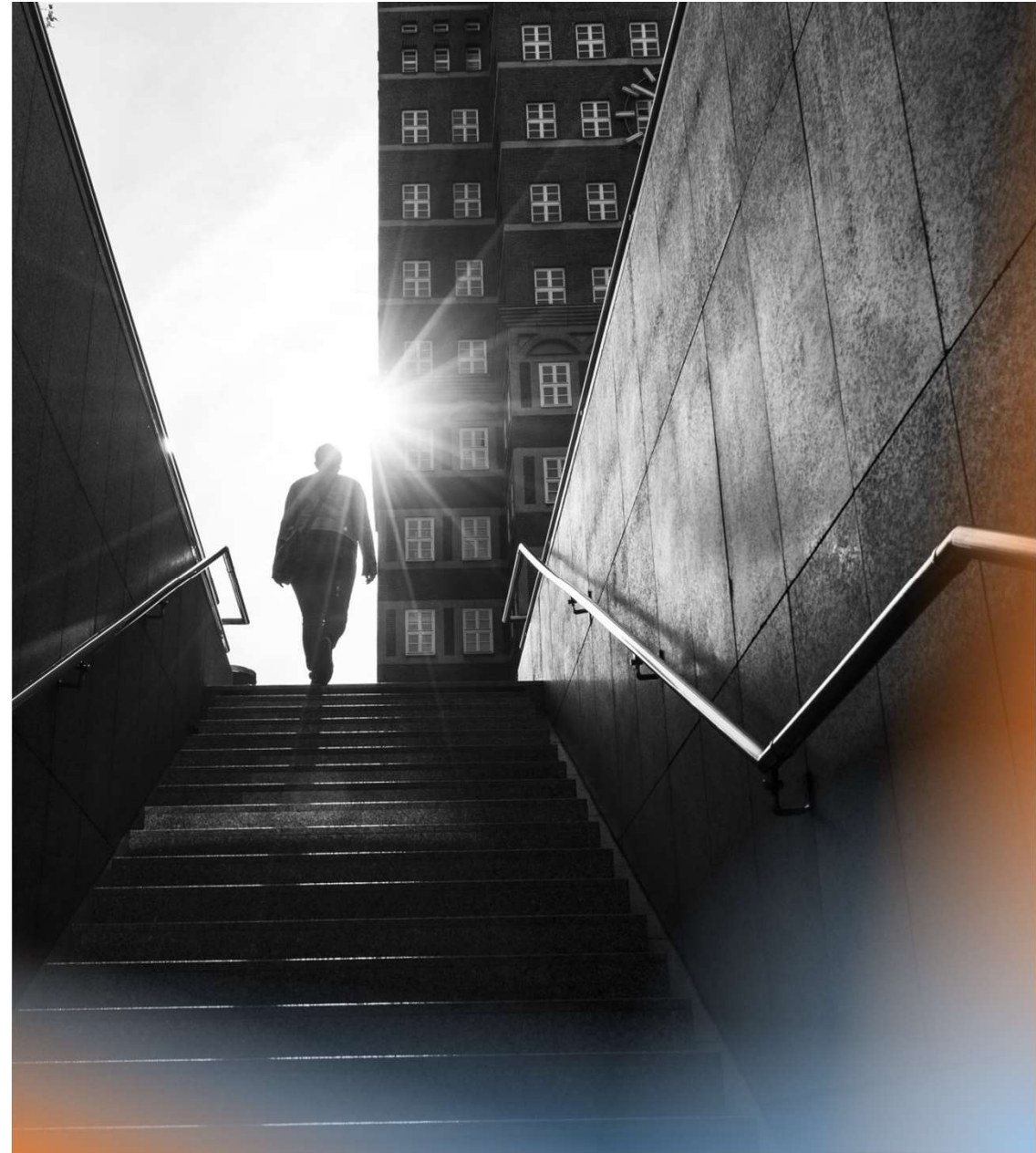
# Possible reasons

- Remember Aristotle:  
"And a man who is puzzled and wonders, thinks himself *ignorant...*"
- Dawkins' supposed awe and wonder – humility before nature, or fascination with *theories and speculations* concerning nature?
  - (Maybe, the 'divided brain' perspective is relevant, once again?)



## St Thomas on wonder (*admiratio*)

- Wonder ‘**a kind of desire** (*desiderium*) for knowledge; a desire which comes to man when he sees an effect of which the cause either is unknown to him, or surpasses his knowledge or faculty of understanding’ (ST I-II 32, 8)
- Wonder is ‘**a kind of fear** resulting from the apprehension of a thing that surpasses our faculties: hence it results from **the contemplation of the sublime truth**’ (II-II 180, 3 ad 3)



# Suggested readings

- P. Ball, *The Beauty of Chemistry: Art, Wonder, and Science* (Cambridge and London: MIT Press, 2021)
- R. Battino, Chemistry and the Sense of Wonder, *Journal of Chemical Education* 46(1) (1969), 38-39, [https://www.researchgate.net/publication/244470730\\_Chemistry\\_and\\_the\\_sense\\_of\\_wonder](https://www.researchgate.net/publication/244470730_Chemistry_and_the_sense_of_wonder)
- R. Carson, *The Sense of Wonder* (HarperCollins, 1965)
- R.C. Fuller, *Wonder: From Emotion to Spirituality* (Chapel Hill: University of North Carolina Press, 2006)
- A.N. Hunt, Ciphers of Transcendence: Cognitive Aesthetics in Science, *Heythrop Journal* 49 (2008), 603–619
- A. McGrath, *The Reenchantment of Nature* (New York: Doubleday, 2002)
- F. O'Rourke (ed.), *Ciphers of Transcendence* (Newbridge: Irish Academic Press, 2019), Introduction and chapter 3, <https://franorourke.ie/wp-content/uploads/2020/10/Ciphers-of-Transcendence-proof-2.pdf>
- P. Sherry, Einstein, Dawkins, and Wonder at the Intelligibility of the World, *Heythrop Journal* 60 (2019), 5-15
- E. Stump 2017, Beauty as Road to God, *Sacred Music* 134(4) (2007), 13-26, <https://appearedtoblogly.files.wordpress.com/2011/05/stump-elenore-22beauty-as-a-road-to-god22.pdf>
- H. Washington, *A Sense of Wonder towards Nature* (London and New York: Routledge, 2019)