

An abstract painting depicting a jellyfish in a turbulent sea. The jellyfish, with its bell-shaped body and trailing tentacles, is rendered in shades of green and blue, floating amidst swirling, golden-brown and blue waves. The overall composition conveys a sense of movement and the vastness of the ocean.

ex Oceano

we are from the Ocean ~ the Ocean sustains us

Matthew Dewey Symphony No. 2, 2013



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Matthew Dewey Symphony No. 2, 2013
Czech National Symphony Orchestra
Jan Kučera conductor

Movement 1	14'34"
Movement 2	7'39"
Movement 3	11'02"
Movement 4	12'18"
Duration approx	46'00"

Ocean scientists understand that the world's Ocean provides something extraordinary, on scales almost beyond the mind's grasp – an interaction between ocean, atmosphere and land that supports all life.

This is a narrative on a grand scale, reminding us we are dependent on vast, sustaining planetary systems: *we are from the Ocean – the Ocean sustains us* – but the Ocean is changing in response to human activities.

ex Oceano is a collaboration between different disciplines and different understandings.

Ocean scientists expressed their science to a composer: the composer expressed that science back to them in sonic form – through the making of a symphony.

ex Oceano is the outcome of a Lynchpin Arts-Ocean Science Collaboration based at the Institute for Marine & Antarctic Studies, University of Tasmania, Australia.

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Artwork by Michaye Boulter and Sue Anderson.

Recorded at the Rudolfinum, Dvořák Hall, Prague.

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ex Oceano

we are from the Ocean ~ the Ocean sustains us

Asked what he sees when he looks out at the wide, blue horizon, the oceanographer replies *there is only one answer – life! The Ocean sustains life. It connects all things. It is the thread that binds the web of life together.* How many of us see what the oceanographer sees – and could it be important that we do?

In an effort to advance understanding by conveying knowledge to the community in new ways, interdisciplinary initiatives that try to harness the communicative power of the arts are growing globally.

ex Oceano is the collaborative commitment of people from different disciplines and understandings. Ocean scientists express their science to a composer: the composer expresses that science back to them in sonic form – through the making of a symphony.

Great music has the power to break *through the carapace of presumptions and defences*¹, creating a hinge or pivot between the intellect and the world of the senses – *a place of potential transformation*².

Immersing us in sound, *ex Oceano* seeks to express aspects of the powerful, complex and vital role of the ocean as it underpins life itself. The finale calls on us to grapple with the concept of the Anthropocene – the epoch in Earth's history marked by the impact of human activities on its complex ecosystems.

The work stands in support of the scientists who

observe and collect the ocean data we urgently need to understand. Amongst them, we remember the late Dr Shirley Jeffrey, A.M., F.A.A., the *Mother of Chlorophyll c.*, Chief Research Scientist and Acting-Chief of the CSIRO Division of Fisheries Research. A specialist in phytoplankton – the lynchpin of our Ocean story – Dr Jeffrey initiated what became the Australian National Algae Culture Collection, oversaw the CSIRO Collection of Living Microalgae and co-edited the UNESCO-published *Phytoplankton Pigments in Oceanography*. She also performed and loved great music.

ex Oceano is the second symphony of Australian composer, Matthew Dewey. Recorded by the Czech National Symphony Orchestra in the Rudolfinum's Dvořák Hall, Prague, the score will be accessible to orchestras around the world through the Australian Music Centre, National Library of Australia³.

Sue Anderson

Coordinator, Lynchpin

References: ⁽¹⁾ Dowrick, Stephanie (2009), *In the Company of Rilke*, Allen & Unwin, p17. ⁽²⁾ Romanynshyn, Robert D., *Ways of the Heart: Essays Toward an Imaginal Psychology*, Trivium, Pittsburgh, 2002, p129. ⁽³⁾ See: National Library of Australia: <http://catalogue.nla.gov.au/>; the Australian Music Centre: <http://www.matthewdewey.com/catalogue/>. References correct at 01.08.2014.

the Composer writes

Who knows where inspiration comes from. Perhaps it arises from desperation. Perhaps it comes from the flukes of the universe, the kindness of the muses.

I feel this quote about inspiration, attributed to the Chinese/American writer Amy Tan, sums up much of what has gone into this collaboration.

As Amy Tan suggests, so it is for me. Each piece I compose seems to come about through some unpredictable change in life that directs me to a style of expression. Just as a chance involvement with a play by the Tasmanian playwright, Tom Holloway, led me to compose my first symphony in response to the Port Arthur Massacre, so it was that unexpected correspondence from Lynchpin Coordinator, Sue Anderson, led me to compose my second, about the significance of the Ocean.

At the time of writing this note in Australia in January of 2014, it has become politically and socially awkward to hang one's hat on a belief in anthropogenic climate change. This is not to say that the science is unclear – the international science community has in fact built a strong consensus on the issue. *ex Oceano* supports one aspect of that consensus, the marine science that understands the role of the Ocean as life blood of the planet.

It is important that we focus on the tasks at hand: promoting awareness of climate change, supporting research, helping those that wade into this science every day and who are all too aware that change is taking place – so that they might keep strong and not despair, for occasionally, they will.

If there is one thing that I hope to have achieved with this symphony, it is to provide a conduit for the emotions, passions and concerns of those scientists to the listener. Every note comes from many hours spent in discussion with these remarkable people. I dedicate the music to all of those that have been inspired to live a life given to this science, whether their dedication has arisen *through desperation, the flukes of the universe or the kindness of the muses.*

notes on the Music

The first movement sets the scene for the entire symphony, introducing the musical characters and the central themes – we hear the voice of the Ocean, its mighty currents and sense the enormity of its scale and influence.

The second movement is characterised by a shimmering, active surface and a slower, calmer, deeper core, expressing the movement and character of the vast biomass of phytoplankton blooms visible from space. These remarkable microscopic creatures underpin planetary metabolism.

The third movement is emotionally rather complex – it's a love letter written as if to a loved one we know we will lose – or perhaps have already lost. It's at once sad, longing, tender, sentimental and conflicted. It's a description of that most precious and vulnerable concept of love, the love of anything that is most important to the self – be it partner, children, family; or it could be something or someone

else. It is that which you cannot abide the thought of losing, such is the intensity.

This is the most important message of the symphony. We stand to lose what we cannot imagine being without – the cusp between beauty and loss; joy and fearful desolation. Simultaneously intense and spacious; personal and universal; immediate and timeless. Life and death.

The final movement is a large piece that gives voice to the passion and doubt that one might feel when thinking about the world changing in this manner. It is an attempt to pull together all of the emotion of the preceding movements into one giant and powerful expression of dismay – just as one might scream into a storm, there is a sense of horror and hopelessness.

But, this story is not over. Whilst the music points to what might be, it leaves space for a conclusion not yet reached. As the horror reaches its apex – the tumult of being brought to what we might term *the living edge* – there emerges an unexpected and uneasy calm.

This is the sound of what opportunity we have to make change.

There may not be much time, but we have to hope that there is still time.

Matthew Dewey
Sydney, January 2014

the Science Narrative

The world's Ocean provides something extraordinary, on a scale almost beyond the mind's grasp – an interaction between Ocean, atmosphere and land that supports *all life*. This is a narrative on a grand scale, reminding us we are dependent on vast, sustaining planetary systems.

Let's begin at the beginning. Few of us today fully appreciate our close connection to and dependence on the Ocean – yet it is the Ocean, carrying heat, nutrients and oxygen that is the life-blood of our small blue planet.

The Ocean covers over 70% of the Earth's surface and is inextricably linked to our land and atmosphere through the complex processes that drive our climate.

The temperature of the Earth is regulated by the balance between the energy coming in to it from the Sun, energy from the Earth's interior and the energy radiating back out from it into space. The Ocean stores the majority of this heat and moves it around the planet. Acting like a great conveyor belt, the warm water of the tropics is drawn up and cooled at the poles, then circulates back to the warm tropics, in a never-ending loop.

The Southern Ocean is the flywheel of the global climate. It is unique in the world, able to store more heat and CO₂ than any other latitude band on Earth. The Antarctic Circumpolar Current (ACC) also has global reach. Connecting the Indian, Pacific, and Atlantic Oceans, the ACC

drives global ocean circulation patterns that are key in regulating the Earth's climate. Through this connectivity, the Southern Ocean influences 40% of all ocean circulation¹.

Central to the life-giving role of the Ocean are the phytoplankton [phyto = plant-like, plankton = drifter]. Invisible to the naked eye, yet visible in vast blooms from space, they are responsible for producing more than half the oxygen on this living, breathing planet – and much more besides.

Life evolved in the Ocean more than 3.5 billion years ago, but it wasn't until about 200,000 years ago that modern humans evolved. Amongst the earliest life forms, phytoplankton are where the process of photosynthesis began. These microscopic organisms have gone on to almost solely produce the atmosphere we breathe, allowing plants and animals to move onto land and gradually evolve into trees and dinosaurs – and, eventually, into we humans. Every second breath we take is thanks to these versatile, tiny plants. They are carbon sinks. As cloud seeders they protect us from the Sun's rays. They form the base of the marine food chain – we eat the fish and other animals that feed on them. We build our houses with calcium carbonate cement derived from the chalk skeletons of particular phytoplankton and our cars and industries are powered by burning oil – much of which originates from the fossilized remains of their long-dead ancestors.

Our growing understanding of ocean chemistry tells us that carbon dioxide arising from human activities is both heating the Ocean and making it more acidic. Our use of fossil fuels not only changes the composition of our atmosphere, it also changes the physics and chemistry of the Ocean, with devastating consequences for marine ecosystems. Fish, other animals and plant life, including the microscopic phytoplankton, all are affected.

The Ocean has changed more rapidly in the past thirty years than during the whole of human history². Of the carbon emitted by the burning of fossil fuels, about 50% remains in the atmosphere; 20% is absorbed by the biosphere (all living things) and 30% by the Ocean¹.

Adding carbon dioxide to seawater not only makes it more acidic, but it also makes it harder for animals to extract oxygen from the water. Subtle changes in the pH that trigger metabolic processes, such as spawning and growth, are altered by ocean acidification and, in a process similar to osteoporosis, corrosive seawater leaches the calcium carbonate out of shells and skeletons. The result is that our Ocean is becoming increasingly inhospitable to life as we know it; less favourable for fish and generally more favourable for jellyfish and the jelly-like creatures that once dominated the ancient Ocean³.

The Ocean is also warming. About 90% of the

the Science Narrative (continued)

extra heat that's been stored by the Earth's systems in the last 50 years is in the Ocean, so when we talk about global warming we're really talking about ocean warming¹.

The Southern Ocean is not only warming, it is also becoming less salty and less dense. The volume of Antarctica's deep currents that drive the world's great currents has more than halved since the 1970s¹.

This warming has a feedback effect as it begins to wash underneath the Antarctic sea ice and ice shelves: increasing ice melt rates, diluting the seawater and leading to more rapid changes in ocean circulation and sea-level rise. In the northern hemisphere, Arctic ice melt is unprecedented in recorded history.

A thicker layer of warm water is beginning to form on the world's Ocean. This means there is reduced mixing of oxygen down into the deeper layers. Warm water is unable to hold as much dissolved oxygen as cool water. Areas that have very low levels of oxygen are expanding, squeezing the habitable space for animals that demand a lot of oxygen².

It is unlikely that all life in the Ocean will disappear or that phytoplankton will simply cease to exist; rather it is likely our marine ecosystems will undergo a series of radical simplifications³.

What is certain however, is that the rate and extent of change will ultimately be determined

by human decisions and innovations regarding greenhouse gas emissions⁴.

Our wide blue Ocean is adapting, shifting, changing.

The question is: Are we?

Robert Johnson^a and Nicholas Roden^{a,b}
PhD Candidates, 2013

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Online references: ⁽¹⁾ Dr Steve Rintoul: News@CSIRO <http://csironewsblog.com/2013/01/31/ice-ice-baby-ships-and-antarctic-voyages/> and <http://www.antarctica.gov.au/about-us/publications/australian-antarctic-magazine/2011-2015/issue-23-december-2012/science/antarctic-bottom-water-disappearing/>; ⁽²⁾ Prof Callum Roberts: <http://www.abc.net.au/radionational/programs/scienceshow/the-coming-crisis-for-the-oceans/4735314>; ⁽³⁾ Dr Lisa-ann Gershwin: <http://www.abc.net.au/radionational/programs/scienceshow/the-rise-of-slime3a-jellyfish-and-algae-thrive-in-new-oceanic-4838478>; ⁽⁴⁾ Prof Chris Field: http://carnegiescience.edu/news/future_warming_issues_magnitude_and_pace; References correct at 01.08.2014.

Full science narrative and science reference materials; artwork panel quote references all available at: www.lynchpin.org.au

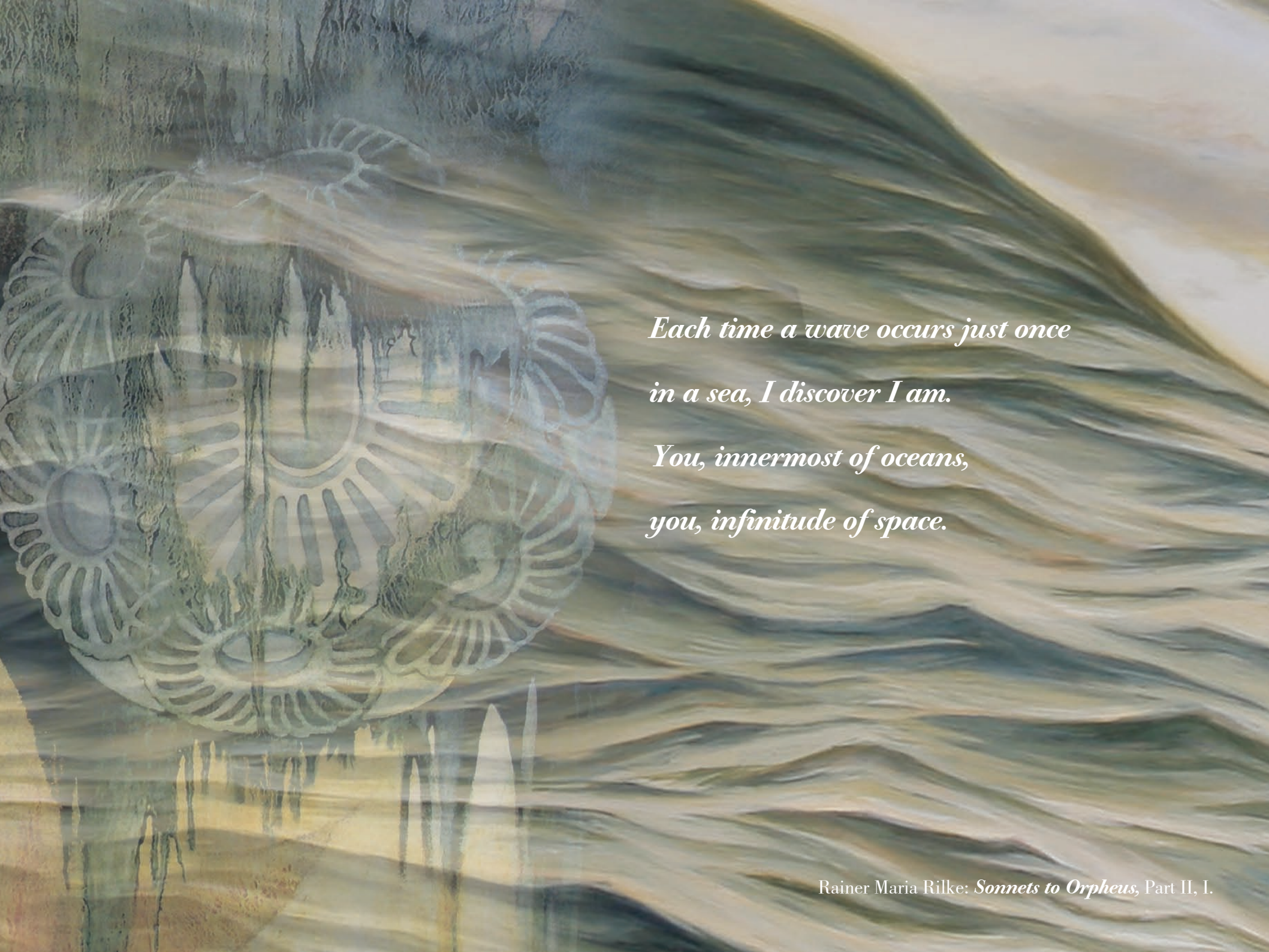


Breath, you invisible poem!

Pure, continuous exchange

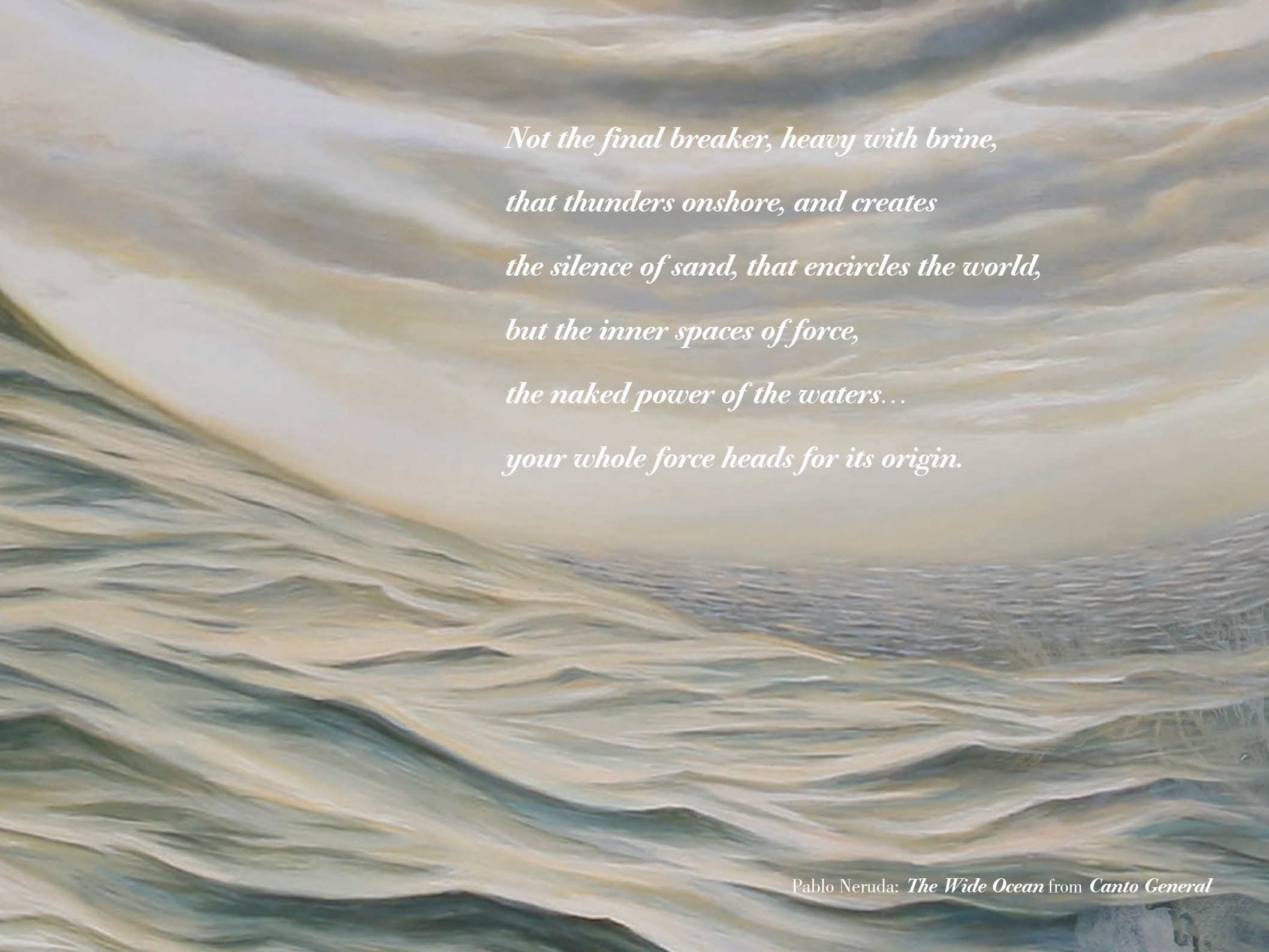
with all that is, flow and counter flow

where rhythmically I come to be.



*Each time a wave occurs just once
in a sea, I discover I am.*

*You, innermost of oceans,
you, infinitude of space.*

The background is a dramatic painting of a sea under a stormy sky. The sky is filled with heavy, swirling clouds in shades of grey, white, and pale yellow. The sea below is depicted with powerful, dark, and turbulent waves, showing a mix of deep blues, greys, and white foam. The overall mood is one of immense natural power and drama.

*Not the final breaker, heavy with brine,
that thunders onshore, and creates
the silence of sand, that encircles the world,
but the inner spaces of force,
the naked power of the waters...
your whole force heads for its origin.*

Pablo Neruda: *The Wide Ocean* from *Canto General*



*we are from the Ocean
~ the Ocean sustains us*

~ the Ocean is changing