

## **Ripple Architectures: exploring the memory-rooms of Allen Fisher's *loggerheads***

A loose inner slip is inserted inside the first pages of Allen Fisher's book *loggerheads* (Spanner, 2018). It shows a strip of unnamed sheet music headed with the phrase 'As if drawing from the grey sea'.

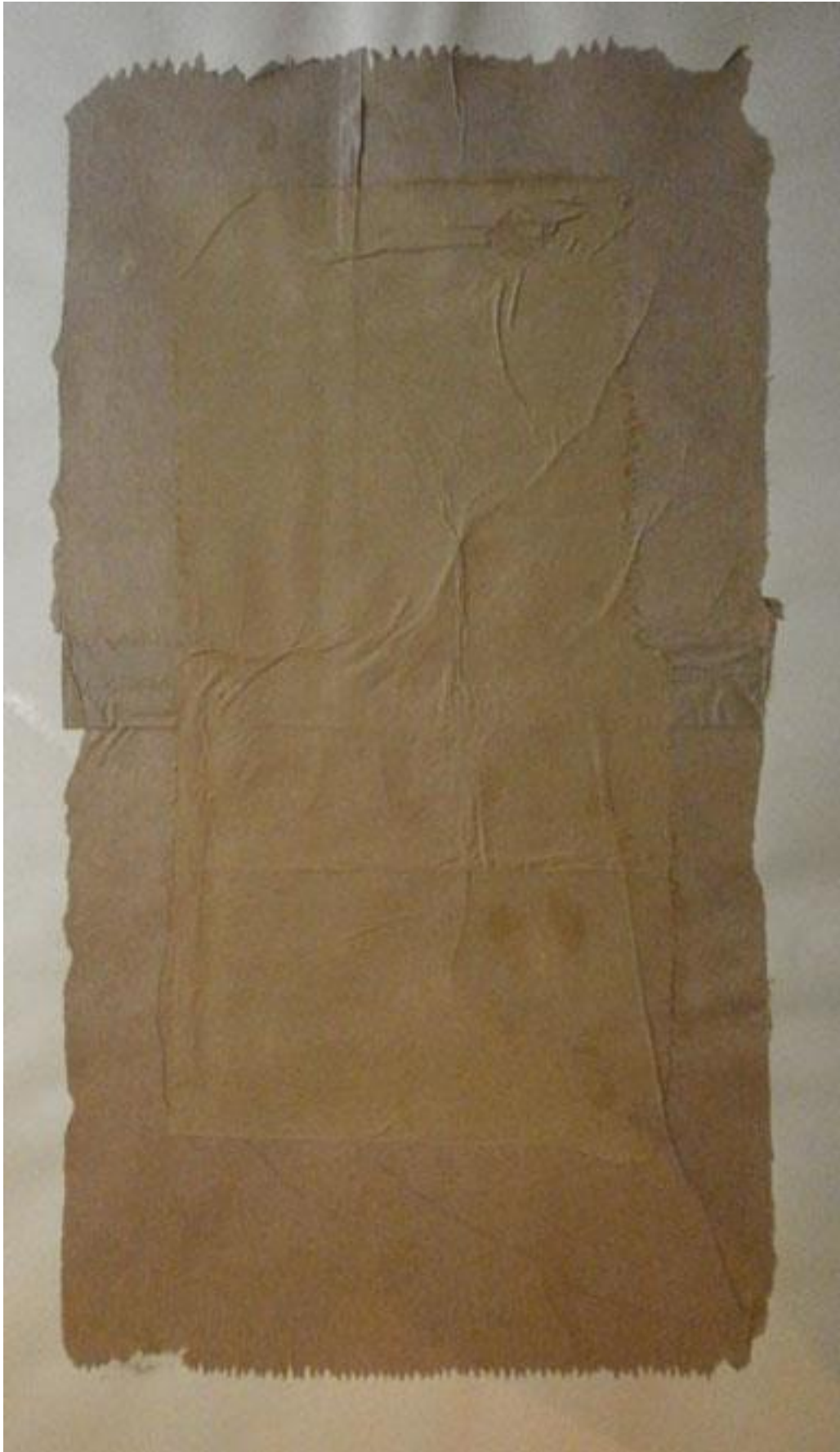
The phrase 'As if drawing from the grey sea' is a fragment from the Greek lyric poet Alcaeus. This phrase drew my attention to the etymology of the verb 'draw'. From the Germanic for 'drag', it originally meant 'to pull' and was only later associated with making marks on paper. To draw is to draw out or draw forth, like drawing water.

To draw water, you use a container such as a bucket in order to contain the water. Drawing on paper can be seen to be a similar process, using the page as a way of containing and framing the patterns of mark-making.

In the sequence 'drawn rooms', Fisher uses the page as a way of containing and framing various acts of mark-making: marks made by creases in crumpled paper, marks made by shadows of coils of wire. Framing them on the page draws them forth.

Just as drawing is about mark-making and pattern-making, the interweaved 'Learning the craft of thought' sequence explores how memory and consciousness function by drawing forth and framing or containing patterns. Learning happens through the making of patterns and connections, containing and shaping information in order to make use of it.

A parallel sequence 'Landscaping the crumble tip' demonstrates this pattern-making function of consciousness by subjecting a series of observational stanzas about daily life to processes of collage transformation, creating an interplay of patterns of recurrence and recognition of words and phrases across the pages.



*Figure 1 Fisher, 'drawn rooms' series 1, loggerheads, 2018*

## ‘drawn rooms’

Reading ‘drawn rooms’, I find myself paying more attention to the surface of the paper material. I notice the torn edges, creases, areas of shading, graininess, imperfections, specks, textures, creases, folds, rips. (See Fig. 1).

In a series of lectures (available on YouTube) on the mechanics of wrinkling, folding and crumpling, Narayanan Menon gives examples of a broad variety of wrinkle architectures: kale leaves, cabbage leaves, lichen; various animal skins: elephant, sea urchin, human, dog; fabric, crushed paper, graphene; the earth’s skin. The brain is also covered in wrinkles and creases, the folds of the cerebral cortex that are formed as grey matter grows within white to form a wrinkled surface.

Reading ‘drawn rooms’ I identify patterns of waves, where smooth and small deformations have delocalised over a patch of space and look like waves. These are called wrinkles or ripples.

In other places on the surface I identify sharper patterns, folds that run up and down, and corners where those folds meet. These are called ridges or vertices.

And finally places where the material is permanently deformed: deep lines where the paper has been pinched into a deep fold and the fold has touched itself. These are called creases.

Wrinkles and creases in paper demonstrate how memory is a property of physical matter, information stored in the material, the arrangement of particles. The ripples on water are not recorded; the information dissipates quickly. Paper has more memory than water; it retains traces of information. Waves passing across the surface are recorded as wrinkles and creases.

Physicist Max Tegmark suggests that consciousness is a state of matter:

‘For a substance to be useful for storing information, it clearly needs to have a large repertoire of possible longlived states or attractors... Physically, this means that its potential energy function has a large number of well-separated minima. The information storage

capacity (in bits) is simply the base-2 logarithm of the number of minima. This equals the entropy (in bits) of the degenerate ground state if all minima are equally deep. For example, solids have many long-lived states, whereas liquids and gases do not: if you engrave someone's name on a gold ring, the information will still be there years later, but if you engrave it in the surface of a pond, it will be lost within a second as the water surface changes its shape.' (Tegmark, 'Consciousness as a state of matter')

Whether matter is perceived as solid or liquid, Tegmark explains, is not dependent on the atoms themselves but on the pattern in which they are arranged. The water particles are the same whether the water is ice, liquid or steam; it's just that they are arranged differently. Tegmark proposes that consciousness may be the same: not a property of the individual particles and atoms of which our brains are made, but the different patterns in which these are arranged.

Tegmark argues that consciousness is an emergent property, like a wave on a pond – or like a ripple, a wrinkle or a crease in a piece of paper. Waves have properties like wavelength, frequency and speed that are independent of the substrate of particles. A wave can cross a pond while the individual water molecules are just going around in tiny circles. When a sheet of paper is crumpled, it's not the particles themselves that change but the pattern in which they are arranged. Thus something that is physical can feel non-physical, like consciousness, because like a wave or ripple it is independent of its substrate.

Neurophysicist Susan Greenfield also compares consciousness to the ripples on water. She describes consciousness using the image of ripples emanating from a stone thrown into a puddle. Neuronal connections are imagined as a stone, the neurotransmitter chemicals are the puddle and the ripples are consciousness. The stone is a definite, fixed object but the ripples are transient. The stone is relatively small but the ripples it evokes are large.

Ripples leave traces which can be imagined as creases. If these wrinkles are pressed for a long time they deepen into folds, ridges, vertices, and eventually into creases that are more or less permanent. They become the deep-set creases of habit and routine. Creases in paper can be seen as the hard-wired neuronal patterns in the brain, the neuronal stone of fairly fixed creases of habits, routines, connections, habitual behaviour.

Greenfield highlights how neuronal assemblies function through patterns of connectedness: ‘...by accessing your personalised neuronal connections, and thereby using your mind, you are able to appreciate the world beyond the face value of the senses...’

‘...neuronal connectivity allows you to appreciate meaning and symbolism, to see one thing as standing for something else...’ (Greenfield, *A Day in the Life of the Brain*, p. 129)

Neuronal connectivity allows us to see something as something else: to discern faces in clouds; to attribute luckiness to an object, pairing two otherwise unrelated events as a sign or portent; to see neuronal assemblies as ripples on a pond; to make connections in patterns of words between one page and another.

Greenfield goes on to explain that creativity deconstructs the preexisting connectivity of neuronal assemblies, in order to form new associations and further connections that give meaning (129-30). Creative activities (such as poetry, drawing) break our stone-set neuronal patterns (like crumpling a sheet of paper) to allow new threads to be forged.

‘drawn rooms’ series 3 illustrates this with glimpses of fragments of words and phrases on the crumpled pages: ‘a / gap’, ‘in the wall a gap / the lined / where a’, ‘in the / bags of / [uncooked rice?]’, ‘extended from’, ‘in the flap / a letterbox’, ‘newspaper’ (see Fig. 2). Like the fragments of the Greek lyric poetry of Alcaeus, the scraps of text drawn up from the grey sea of time, these glimpsed fragments of text on crumpled-up pieces of paper are isomorphic of memory’s ‘inherent damage shift’.



Figure 2 Fisher, 'drawn rooms' series 3, loggerheads, 2018

### 'Learning the craft of thought'

Many of the drawings in 'drawn rooms' (the 13 images that comprise series 1 of sequence) make use of brown paper bags – a material known as 'Kraft' paper. There is a pun here on 'craft', as in the sequence 'Learning the craft of thought'. Craft, from the German for 'strength', means skill or prowess. Craft as a skill requires tools ('tools of thought', to use CH Waddington's phrase), and traps (containing structures like paper or buckets for drawing forth). Craft is a device, even a deception, as in 'crafty': these tools and traps allow us to conceptualise, but can also be dangerous illusions. Tools of perception now include quantum traps for observation, which have shown us that the observer is not just the reader but the environment itself; you don't have to be conscious to be an observer – it's about information transfer.

Learning something, acquiring a skill or craft, is about developing a neuronal pattern or assembly, a hard-wired hub of connectivity, which is a kind of trap – a way of trapping, containing and shaping information in order to make use of it. Thought is architectural.

As well as being 'drawings', these 'drawn rooms' are 'rooms'. Fisher highlights the space of the page as a room, a containing structure, by filling it with a photograph of another piece of paper. The brown paper bags have been unfolded to reveal their compartments, squares and rectangles that resemble blueprints of rooms; architectural plans are 'drawn up'.

In *loggerheads* memory is place – 'placement and location the map of material', 'patterns in order to know' – consciousness functions through spatial patterning. Mary Carruthers explains that in ancient mnemotechnic, architecture was considered to provide the best source of memory locations (Carruthers, *The Craft of Thought: Meditation, Rhetoric and the Making of Images, 400-1200*). Books and churches were tools that people used for social purposes such as symbol-making. Memory work was a social, civic activity, the building materials common to all. Constructions were seen as a foundation to be built upon, not a completed structure. Carruthers promotes a constructional view of memory as a machine for invention. Creative thought builds on remembered structures 'located' in the mind as patterns - association-fabricated networks of 'bits' in one's memory that must be 'gathered' into an

idea. Remembering becomes a task of 'finding' and 'getting from one place to another' in your thinking mind.



*Figure 3 Fisher, 'drawn rooms' series 1, loggerheads, 2018*



Fisher's *loggerheads* can be seen as a set of 'synaesthetic architecture structures and constructions'. Navigating the interleaved sequences is a 'process to gather / in a compartmented bag'. The texts provide patterns or foundations, making mental 'locations' for 'gathering up' and 'drawing in'. The reader explores where to 'hook' each bit into the linked chains of our neuronal 'places'.

The sequence 'Learning the craft of thought' is a patchwork of fragmentary phrases. With no punctuation, the phrases are arranged by spacing. This allows for more open-ended connections to be made between the fragments. Fisher has arranged word-patterns from these fragments, and as a reader I absorb and assimilate the ideas by making my own patterns out of them, finding connections.

The first poem in the sequence begins 'in the daylight', the prepositional phrase implying a concrete setting, and suggesting that something will continue after it, something will happen, occur in the daylight. The phrase is echoed a few pages later in 'delight gathering' (p. 16) building a complex of recurrences – gathering up, drawing in.

It is succeeded by an isolated noun phrase, 'a complex of sun and its reflections'. The syndetic pairing of 'sun' and 'reflections' connects back to 'daylight' creating a pattern, a neuronal assembly related to sunlight.

The noun 'reflections' sets up pattern of 're-' words: 'reflections', 'recognises', 'recurrence' (twice), 'response', 'recollection', 'realised'. The 're-' prefix indicating repetition, something happening again, notions of memory, replay. Neuronal assemblies begin to build up through repetition, learning.

Fisher continues on page 16, 'co-locative reminiscence reft of nostalgia requires structural / dispositions in the pond map / from which and into which collecting proceeds'. To 'co-locate', locate together, in 'reminiscence' (memory), involves structural dispositions (architectural spatial arrangements) in the 'pond map' – consciousness as a body of water, as explored in the related aquatic imagery of Greenfield and Tegmark, and Alcaeus' 'grey sea'.

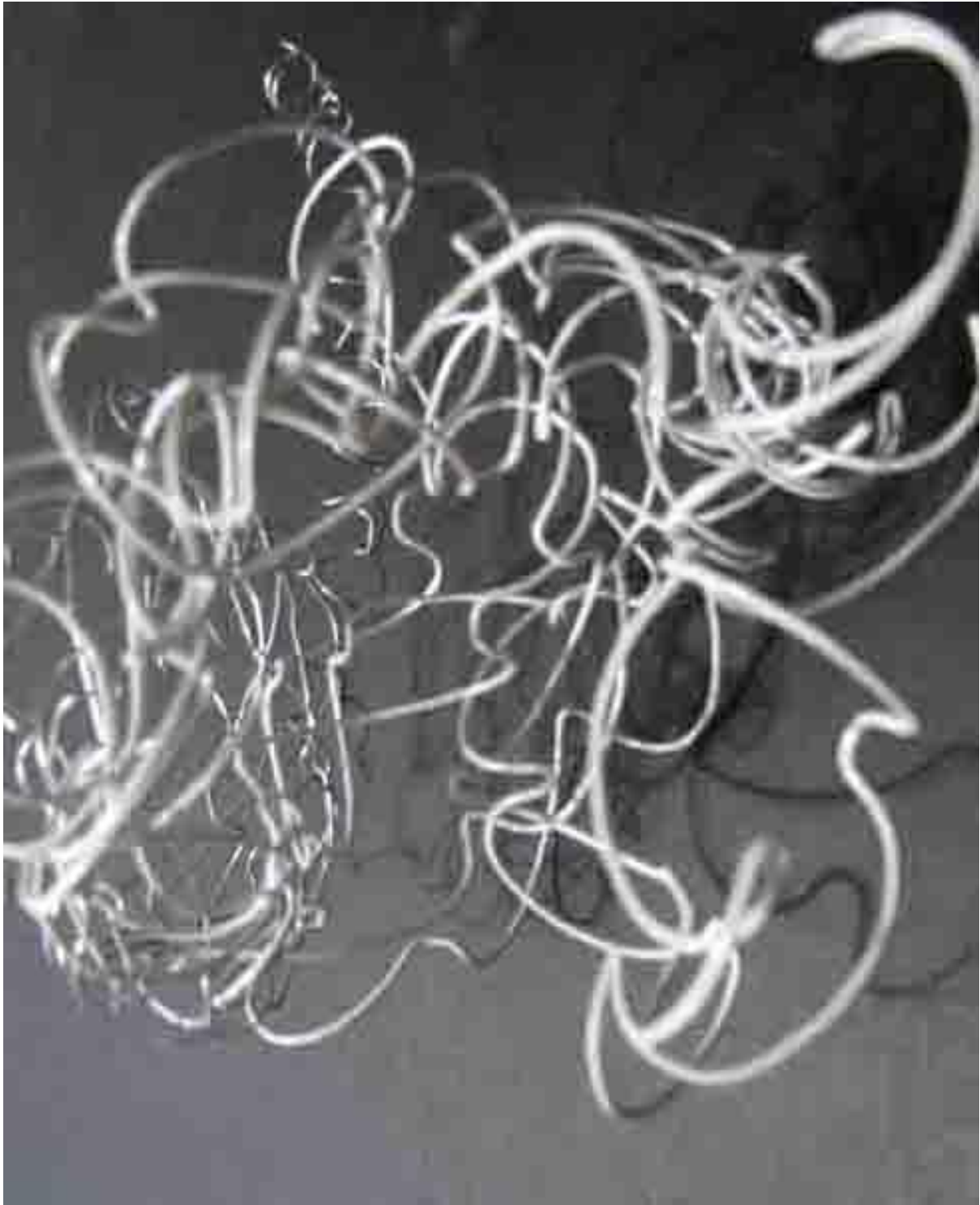


Figure 4 Fisher, 'drawn rooms' series 2, *loggerheads*, 2018

*loggerheads* is about creating the new by inventing from memory: 'invention and cognition / aspects of the possible realised with what was already apparent'. As Greenfield explains, creativity deconstructs preexisting neuronal connections, in order to form new associations. Fisher demonstrates this in the couplet, 'memory has inherent damage shift' (p. 8) / 'money

hast repellent ravage lift' (p. 10). Here is an example of 'abliteration in lieu of the ken to alliterate and obliterate' (p. 16), repetition and damage giving rise to new patterns and connections. The transformations of the rhymed stanza on page 10 are like a shadow of the stanza on page 8. There are invariants that alert us to the isomorphism (the phonetic echoes of 'memory' and 'money', 'inherent' and 'repellent', 'damage'/'ravage', 'shift'/'lift'). As the text alliterates and abliterates, a doubling occurs that shares a likeness with the blurring in the wire photographs of 'drawn rooms' series 2 (see Fig. 4).

Reading *loggerheads* involves the social practice of constructing categories, concepts, interpretations as structures, in order 'to ask what is social in the face of categories', to question 'what [is] ethical in the standing of it', because reading and interpretation are also exclusionary: what is included and what gets left out, 'its debris its losses' (what doesn't fit the interpretation, the categories).

The noun 'standing' reminds me of the etymology of 'stanza' as 'standing place'. Each stanza of this sequence is a room, a damaged neuronal architecture. Fragmented lines break our hard-wired chreods, and the act of reading then becomes an attempt to make new connections, to build from the foundation set down, gathering up and drawing in (like I'm doing here in trying to abstract this interpretation), finding our way from place to place, from one provisional standing place to another.

\*

#### 'Landscaping the crumble tip'

Fisher tells me that the strip of sheet music on the insert slip is apparently a few bars of Elliott Carter's Fifth String Quartet, a composition that plays on the conversational *loggerheads* of the ensemble performance. *loggerheads* was initially written in response to an invitation to contribute to a journal dedicated to the music of Elliott Carter.

In Carter's String Quartet 5, between each movement the musicians try out ideas that will emerge in later movements. Carter explains this in his composer's notes:

‘One of the fascinations of attending rehearsals of chamber music, when excellent players try out fragments of what they later will play in the ensemble, then play it, and then stop abruptly to discuss how to improve, is that this pattern is so similar to our inner experience of forming, ordering, focussing, and bringing to fruition — and then dismissing — our feelings and ideas. These patterns of human behavior form the basis of the 5th String Quartet. Its introduction presents the players, one by one, trying out fragments of later passages from one of the six short, contrasting ensemble movements, at the same time maintaining a dialogue with each other. Between each of the movements the players discuss in different ways what has been played and what will be played.’ (Carter, Composer’s Notes, 1995)

Carter’s emphasis on the dialogue between these fragments is important to Fisher’s approach in *loggerheads*. As a reader, I naturally try to find connections between the different sections, though the book never indicates how they should ever be resolved into a whole. They remain at loggerheads.

Just as the patterns of memory and consciousness function through likeness, similitude, the sequences in *loggerheads* echo each other in a dialogue of transformations. ‘Learning the craft of thought’ is shadowed by a parallel sequence entitled ‘Landscaping the crumble tip’. The title itself is an isomorph (‘learning’/‘landscaping’, ‘craft’/‘crumble’, ‘thought’/‘tip’), like the wire shadow drawings of ‘drawn rooms’ series 2 (Fig. 4).

In ‘Landscaping the crumble tip’ observational meditations are composed of language marks that act as isomorphic of perceptions. Things have shifted from sensory perception into language, like the shadow of a coil of wire or the creases in paper.

Phenomenological report of concrete nouns and colour adjectives is compressed through concision, elision, collision: compression forces and surface tension giving rise to waves, ripples.

These stanzas are filled with imagery of state transitions of water to gas or ice, and there are many references to grey, as in Alcaeus’ ‘drawing from a grey sea’: ‘bright grey light’, ‘grey and blue air’, ‘dark grey hills’, ‘dark greens lit against vibrant greys’, ‘grey mist’, ‘skirts of mist’, ‘mud river’, ‘cow pond’, ‘flood field’, ‘pond’, ‘lawned reservoirs’, ‘river’, ‘day ice’, ‘foreground frost’, ‘floating of vapour’. The poems draw attention to ‘the craquelure surface /

skin patterns', wrinkles like on the crumpled paper of 'drawn rooms', like ripples on water, neuronal ripples in the mind, or the 'redbrown earth'.

The sequence plays with memory from page to page - recurrence of poems, recognition of lines from other pages - often transposed superimposed over the top of another page and intercut with new material.

The Alcaeus fragment, 'from the grey sea', emerges intercut into one of the 'Landscaping the crumble tip' stanzas. It is part of the phrase 'from the grey sea of my being / set us at loggerheads' which appears on page 45 in a sequence titled 'loggerheads', where lines from 'Landscaping the crumble tip' (page 51) are interleaved with new material in red font, layered over a page from a textbook on explosives and radioactive materials. 'Set us at loggerheads' is one of the red lines cut into a poem which appears on p. 51. Fisher seems to be cutting into the 'crumble tip' poems with fragments from Alcaeus. (See Fig. 5)

The juxtaposition is at loggerheads: that these different things exist. The background of the page is filled with charts and diagrams from the radiation textbook, various traps for perceiving radiation waves that we would not otherwise perceive, like an invisible medium that the page swims through. We assume the page is a blank and empty medium (a grey sea), but these superimposed pages draw attention to it as a material, like the crumpled pages of 'drawn rooms', like the seemingly blank and empty air that contains many different waves that we do not ordinarily perceive.



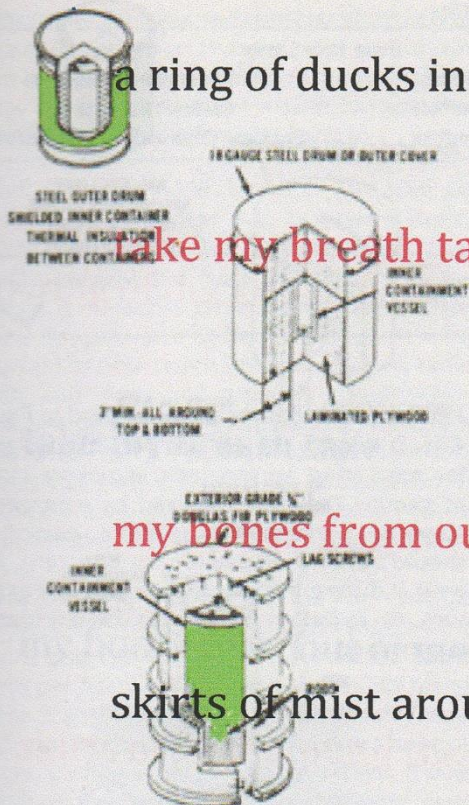


Figure 4-15. Typical Type B packaging. Courtesy of Department of Transportation.

**Label Requirements.** The label that must be applied to the package is dependent upon the type of material and the quantity. Labels are required for packages that require a specific label.

**Transport Index.** The regulations prescribe that the maximum permissible dose rate at contact with the accessible exterior surface of any package of radioactive materials offered for transport shall not exceed 200 mR/hr, or 10 mR/hr at three feet (0.9 meter). The latter value is equal to the maximum transport index. Higher dose rates are also prescribed, which are allowable provided that "sole use" of the transport vehicle is assured by the shipper.

To control the radiation level of accumulations of multiple numbers of packages once in the transportation environment, the regulations require that the carrier shall maintain certain prescribed separation distances between radioactive materials packages and other areas that are continuously occupied by persons and/or photographic film. These separation distances relate the storage time against the transport index, which was defined earlier as the dose rate in mREM/hr at three feet (0.9 meter) from the accessible exterior surface of the package.

No package offered for transport (in other than sole-use vehicles) may have a transport index exceeding 10. The establish-

Table 4-6. Type A and Type B Package Quantity Limits

Transport Group	Type A Quantity, curies	Type B Quantity, <sup>a</sup> curies
I	0.001	20
II	0.05	20
III	3	200
IV	20	200
V	20	5,000
VI, VII	1,000	50,000
Special Form	20 <sup>b</sup>	5,000

<sup>a</sup>Quantities exceeding Type B are "large quantity" (large radioactive source).

<sup>b</sup>Except for Californium-252, for which the limit is 2 curies.

Figure 5 Fisher, 'loggerheads', loggerheads, 2018

*loggerheads* makes perceptible that 'grey sea' of the page and of consciousness. A usually unperceived, seemingly non-physical medium is shown to be composed of material, a patterning of particles. In navigating its dialogic pages, we start to pay attention to the ripples on the pond.

## **Bibliography**

Carter, Elliott, Composer's Notes for String Quartet No. 5 (1995). Available online:

<https://www.elliottcarter.com/compositions/string-quartet-no-5/>

Carruthers, Mary, *The Craft of Thought: Meditation, Rhetoric and the Making of Images, 400-1200*

Fisher, Allen, *loggerheads* (Spanner, 2018)

Greenfield, Susan, *A Day in the Life of the Brain: The Neuroscience of Consciousness from Dawn Till Dusk* (Allen Lane, 2016)

Menon, Narayanan, 'Mechanics of wrinkling, folding and crumpling'. Available online:

[https://www.youtube.com/watch?v=U079iz\\_ig2M](https://www.youtube.com/watch?v=U079iz_ig2M)

Tegmark, Max, 'Consciousness as a state of matter' (2015). Available online:

<https://arxiv.org/abs/1401.1219>

Tegmark, Max, *Our Mathematical Universe: My Quest for the Ultimate Nature of Reality* (Vintage, 2014)