

## Discovering Art Through Science: Elwyn Richardson's environmental curriculum

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### ABSTRACT

Elwyn Richardson's work at Oruaiti School from 1949 to 1962 has been almost exclusively interpreted as a unique experiment in art and craft education, partially as a result of impact of his book, *In The Early World*. The book is viewed as evidence of innovative departmental policies that allowed teachers wide latitude for experimentation, access to ample high-quality art materials and professional support. This interpretation of his work is, however, limiting as it obscures the scientific basis of Richardson's approach. The art and craft work at Oruaiti arose directly out of a scientific foundation that was shaped more by Richardson's interest in environmental study than by the dominant ideas about child art.

### KEYWORDS

Elwyn Richardson, art and craft education in New Zealand, environmental curriculum, Oruaiti School

### ARTICLE HISTORY

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## Introduction

I was basically a scientist who went teaching.

(Elwyn Richardson, personal communication, April 2008)

Elwyn Richardson's work at Oruaiti School from 1949 to 1962 has been almost exclusively interpreted as a unique experiment in art and craft education. While this perception is due in part to the fact that the success of the Oruaiti School experiment provided an important rationale and showcase for the ongoing reforms in art and craft education in the 1950s and 1960s for the Department of Education, it is also partially a result of the strong visual impact of his book, *In The Early World* (Richardson, 1964). The remarkable art and craft work featured throughout the book is viewed as evidence of innovative departmental policies that allowed teachers wide latitude for experimentation, access to ample high-quality art materials and professional support.

While these factors created a fertile context for Richardson's work, the interpretation of his work as an experiment in art and craft education is limiting as it obscures the scientific conceptual basis of Richardson's approach. An analysis of Richardson's philosophy and pedagogy suggests that the art and craft work at Oruaiti arose directly out of a scientific foundation that was shaped more by Richardson's interest in environmental study than by the dominant ideas about child art promoted so effectively by the educational administration of this period.

Although fostering individuality and creativity through the arts was a common goal of most progressive educators committed to art and craft education in the 1950s and 1960s in New Zealand, Richardson chose a unique entry point, and proceeded in a distinctly different pedagogical fashion from his contemporaries. Indeed, Richardson's scientific approach was to offer opportunities for



extension that a programme based on an expressionist approach to child art could not have afforded.

### **Bush, Beach and Sky: Richardson's Early Education**

During his 12 years as principal of Oruaiti School, Richardson developed an integrated curriculum that was anchored in a programme of in-depth environmental study. He discarded the official syllabus and turned instead to the children's lives and immediate environment for the basis of his curriculum. Using the children's natural curiosity and interest, Richardson taught them how to look closely at the world around them and to observe and record their new discoveries and their own responses to these. From here, he developed a dynamic programme that was anchored in the children's surroundings and real lives. Through environmental study, the children learned the basis of scientific method, and brought these skills to bear on studies that spanned all subjects.

Richardson viewed his childhood immersed in nature and the influence of an unlikely mentor as formative influences (MacDonald, 2010). His first eight years were spent on Waiheke Island in Auckland's Hauraki Gulf. At 26-kilometres long and 19-kilometres across with gently sloping hills, the sparsely populated island provided a remote and panoramic playground for Richardson. He roamed with his cat, fished for eels in the beach inlets and played with his imaginary friend at the periphery of farm activities. Richardson's family were largely self-sufficient farmers. They had no electric power and grew much of their own food, including wheat, which they had milled in Auckland. Dairying provided the main source of the family's income and was supplemented by shearing work.

The arrival of Walford Outram Moffat Camille Fowler as a 'remittance man' on the farm when Richardson was three years old was to have a profound influence on his ideas about teaching and learning. The disgraced son of an Earl, Wal was expelled to the colonies by his family for a minor misdemeanour, rumoured to be of romantic origin and paid a remittance by his father to settle away from England. Apparently a graduate of Oxford University with a Master's degree in zoology, Wal was initially of limited use on the farm, often confusing human supplies with cow feed. His engaging personality, love of books and vast scientific knowledge were, however, appreciated by the family who often assembled around the table in the evenings to view his exquisite pencil drawings of insects, trees, flowers and fruits and his insect box with specimens pinned in place. Richardson remembers being enchanted with Wal's drawings of the New Zealand weta and being taught by him how to let the large insect safely climb over his hands and arms (Richardson, personal communication, April 16, 2007).

Wal formed a close friendship with Richardson who was intrigued by his insect collections and stories and followed him around in his work on the farm. Wal, in turn, enjoyed Richardson's insatiable curiosity and companionship and took over his early education, which was augmented by boxes of books his brother sent over twice a year from England. By the age of four, Richardson was able to fluently read his older brother's standard one 'Blackie readers' and had made his own pin-board insect collection (Richardson, personal communication, July 29, 2007).

Wal was a provocative teacher, who modelled a sensitive style of examining the world about him. When appropriate, he played a naïve enquirer to the problems that Richardson encountered as he struggled to build dams and wheels—which he called 'fluttermills'—that spun over the dam spillways in the streams and drains of the dairy farm. Wal was happy to introduce an instrument, such as two pieces of wood with a length of wire between for cutting clay out of banks, but always let Richardson figure out how to use it to best advantage. Wal's was an approach that Richardson absorbed and identified in later years of his life as 'scientific method'. It encompassed 'construction, experimentation, frustrations overcome, sudden or quiet happenings observed, questions raised in the mind, discoveries followed by new and further ones and so on to a conclusion' (Richardson,

personal communication, September 27, 2005). In his mind, he called this strategy ‘the unworded question’:

Wal was wonderful at this—the, ‘What will we do? What are you going to do, Elwyn? What are you going to do?’ I remember when we were discussing the blades on the fluttermill: ‘What are you going to use?’ and I said, ‘Grass.’ And he said, ‘Oh—You try it.’ He didn’t say, ‘It won’t work.’ And immediately (I could read him, you see, even though I was a little boy), I said to myself, he knows that it won’t work, but he’s too nice a man to tell me. I mean I must have had an element of abstraction, in me, an ability to see in concept that some of the stuff was abstract .... (Richardson, interview, October 9, 2005)

Richardson was led by Wal to keep building and succeeding, a process sustained more by Wal’s questions about the failures and the limited successes of the fluttermill than by directions:

Wal was a helper. He assisted me to surmount problems, but only in extremis. For example, the wall collapses in the dams. He told me about reinforcing, but in terms of what was available such as dry flax flower stems. He left everything else to me. (Richardson, personal communication, September 29, 2005. Emphasis in original)

After his first successful dam was swept away in a flash flood, Wal asked Richardson if he would build a new one. Richardson replied that he didn’t know, but he’d think about it. In the end, he told him that if he did, it would be only ‘for fun’. ‘I meant that I’d discovered all there was to find. Wal nodded. He did a lot of nodding ... saying nothing’. (Richardson, personal communication, September 29, 2005)

### *A Scientific Approach*

Richardson’s early commitment to experimentation as the basis for developing his own thinking was coupled with a deep appreciation of the aesthetic qualities of scientific phenomena. Beginning when he was a preschooler accompanying Wal, Richardson had learned to view the structure of natural things aesthetically. Later at Oruaiti School, Richardson’s memories of his fluttermill experiments became his metaphor for scientific study. He did not consciously follow his early mentor Wal in his teaching, but looked at every situation as openly as he could:

I never gave the game away, but I asked questions like Wal, which led to actions and conclusions. Where is the current fastest at the bend of the creek? Why? How? What does it do? Is it still fastest anywhere when it straightens out? And beauty was always there. What’s good about this? What do you like best? Why? Can you use any of these observations? Why is it cold at the creek? (A deep idea—the moving water may create air movement). How can we test and tell? (Richardson, personal communication, September 23, 2005)

Richardson’s attention to the aesthetic qualities of the natural environment would lead to an expansion and richness of meaning for his students that spanned all subject areas. Out of a study of wasps, for example, came poetry, pottery, linocuts, creative writing and mathematics. Using environmental study as a medium for learning, all of the different properties of a phenomenon under study were open to investigation in a detailed and dynamic way (Figure 1).

As he progressed, Richardson became increasingly aware of the limitations of language as a medium for children to express their understandings of the world around them, and of the great opportunity the arts provided for students to find their own symbols. His cognisance of the limitations of an individual medium coupled with his belief in the progressive structure of a learning experience—in a Deweyan sense—led him to develop his educational theory of integration, which was to become the corner-stone of his educational philosophy.<sup>1</sup>

Richardson’s experimental approach at Oruaiti School was founded in a pragmatic mode of enquiry where events were not viewed in isolation but in relationship to context. It was a methodology that he followed in the development of his environmental curriculum and that fundamentally shaped his own educational philosophy. His scientific approach meant that an



**Figure 1.** Wasp study, clay plaque, Oruaiti School, [Reproduced permission of Elwyn Richardson]

appreciation of the aesthetic qualities of the phenomena under study was viewed as a prerequisite for a deep understanding. The scientific was not abstracted from the aesthetic and the aesthetic was viewed as fundamental to the scientific explanation. The pedagogical expression of this belief can be seen at Oruaiti in the development of thematic learning that was predicated on genuine interest, and in the growth of aesthetic standards based upon shared values.

### Science as a Segue to Art

As a scientist who had learned to love his botanical specimens as a child, Richardson found that he had a personal aesthetic desire to understand the beauty of nature and he taught so that his students were able to discover, recognise and witness these values. As he progressed, Richardson sought, and struggled to find, a path that would bring together the scientific and the aesthetic:

I recall a constant philosophical dialogue going on in my mind over months and months, terms and terms. Am I a scientific teacher? Is this creative art yet? When will I know? What will come first? ... I kept this up and it was the ruler with which I measured all art, all poetry, all dialogue about science. Looking back as I did then, as much as now, I was grateful for the values this gave me. It seemed so Wal-like. He did this kind of assessment too ... I had to maintain this balance between, say science and creativity; poetry and the arts and so on ... Every move was guided by the heart, had I merely humanised creativity? Turned it into 'heart feeling'? (Richardson, personal communication, April 8, 2008)

Richardson's difficulty in putting his 'humanised', scientific orientation into words remained an ongoing challenge for him. His struggle to reconcile two different ways of using mind—that of the 'romantic narrativist' and the 'classic scientist'—was not new. It was also a central philosophical concern of romantic scientists, such as Alexander Romanovich Luria (1902–1977) and neurologist Oliver Sacks (1933–2015), who wrestled with this dilemma in the case studies they wrote of their patients.

Luria, a Russian neuropsychologist and developmental psychologist, wrote meticulously researched clinical case studies that combined classical science with a sensitive portrayal of the lives and personalities of his patients. In these, he was seeking, he said, to develop a 'new synthetic method that would reconcile art and science, description and explanation' (1979, p. 6).<sup>2</sup> His romantic orientation meant, for example, that instead of his case history, *The Mind of a Mnemonist*, being a treatise on the intricacies of a 'grossly hypertrophied memory', it became a 30-year collaborative work between Luria and his patient, S. V. Sherashevsky (1979, p. 178).<sup>3</sup> Luria observed that in fact, 'a description of Sherashevsky would have been inadequate if it had been limited to his memory. What was required was a careful analysis of how his fantastic memory influenced his thinking, his behaviour, and his entire personality' (1979, p. 181).

The tension between artistic and scientific expression, between description and explanation, also troubled Richardson, who rejected such dichotomies, maintaining, 'I have not categorised emotion, nor science—"emotion recollected in tranquilly" has always appealed to me as the best definition I know.'<sup>4</sup> I float between my science and my art as I observe it.' (Richardson, personal communication, January 12, 2006). It was out of an effort to reconcile these different ways of mind that Richardson developed his theory of integration, which emerged out of his environmental curriculum.

### **Streams, Tide and Weather: Developing an Environmental Curriculum**

Richardson brought to his teaching work a commitment to the detailed observation of the natural world and an in-depth disciplinary knowledge of palaeontology and geology. When he arrived at Oruaiti, his desire was to find his curriculum in the valley and the wider environment beyond the school:

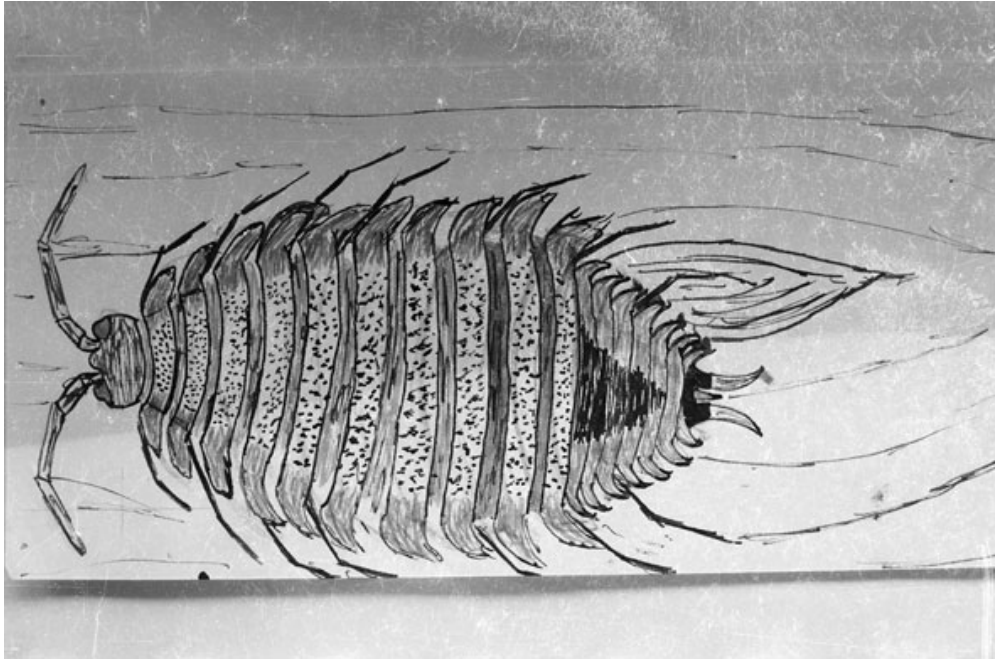
It was my closeness to the land, forest, the farm, the sea and nature ... all the environmental things, which I wanted to make the basis of my school. I had a strong passion to record our associations and emotional responses to living and loving. I dwelt a lot on just plain looking. We looked and turned things over in the hands and between our toes—we became passionate environmentalists! Art had to be invented to clarify, to express—one gave rise to the other. (Richardson, personal communication, November 2, 2006) ... Somehow I felt the need to show my tamariki [students/children] these things, so that they knew what made up the geomorphology and geology of Oruaiti ... I began teaching observation of trees, weather, grasses, river, wind, fire, birds, insects, centipedes, bugs et al. ... We talked each day about what we saw, heard, felt, and thought. It was so vital to the programme. This was the initial breakthrough when we started work. (Richardson, personal communication, March 19, 2008)

Richardson's environmental work was anchored firmly in an experiential basis, and he approached his curriculum in this way, experimenting, observing the results and constantly revising his ideas about curriculum, teaching and learning (Figure 2). He proceeded on the basis of 'hunches' and 'innate feelings responses about what was right'. These ideas, he said, were 'dwelt on, tested, evaluated ... philosophically' (Richardson, personal communication, April 8, 2008). His approach was a kind of radical empiricism, where all knowledge stemmed from personal experience, close observation and experimentation rather than from abstractions.

Richardson's progress was closely tied to his observation of his own process, both in terms of testing ideas about the substance of his curriculum and his aims and purposes as a teacher. He saw himself as 'a door-opener to the aesthetic world' as he directed his students to observe aesthetic things (Richardson, personal communication, March 19, 2008).

He viewed his curriculum as a 'work in progress' in which the interests and needs of the children and the 'urgencies' of the environment could influence the daily plan on an ongoing basis. A storm, a visitor, a new bull in the paddock next door, the discovery of a wasps' nest or other spontaneous event could all change the day's programme: This spontaneity, Richardson said, led to remarkable creative expression:





**Figure 2.** Slater study, pen and ink, Oruaiti School, [Reproduced permission of Elwyn Richardson]

We moved as the spirit and nature did about us: the gorse study, the cabbage trees, the salty river science and so on. I remember many others: kotuku the heron in our swamp; gum trees; starlings where our chimney trapped them for us in the fireplace. We put numbered rings on their legs, fed them up and let them go. We sent out circulars asking people to ring in or write if they spotted one of them. We found a wide distribution pattern. They were very busy birds! (Richardson, personal communication, May 16, 2006)

In his effort to construct a curriculum that was related to the children's lives and environment, Richardson largely disregarded the official syllabus (Figure 3). Although he believed that the 'problem based' method suggested in the official science curriculum was sound, he found that the examples given were 'improbable choices'. 'Schools didn't want to move into the unknown. It had to be book to mind, teacher to pupil stuff. Boringly failing.' (Richardson, personal communication, January 11, 2006). As well, he believed that the science curriculum failed to teach scientific method which represented a 'gross inadequacy' (Richardson, personal communication, January 23, 2006). In



**Figure 3.** Starling study, Oruaiti School, [Reproduced permission of Elwyn Richardson]

broad terms, however, Richardson was doing what the curriculum suggested, finding science in the environment:

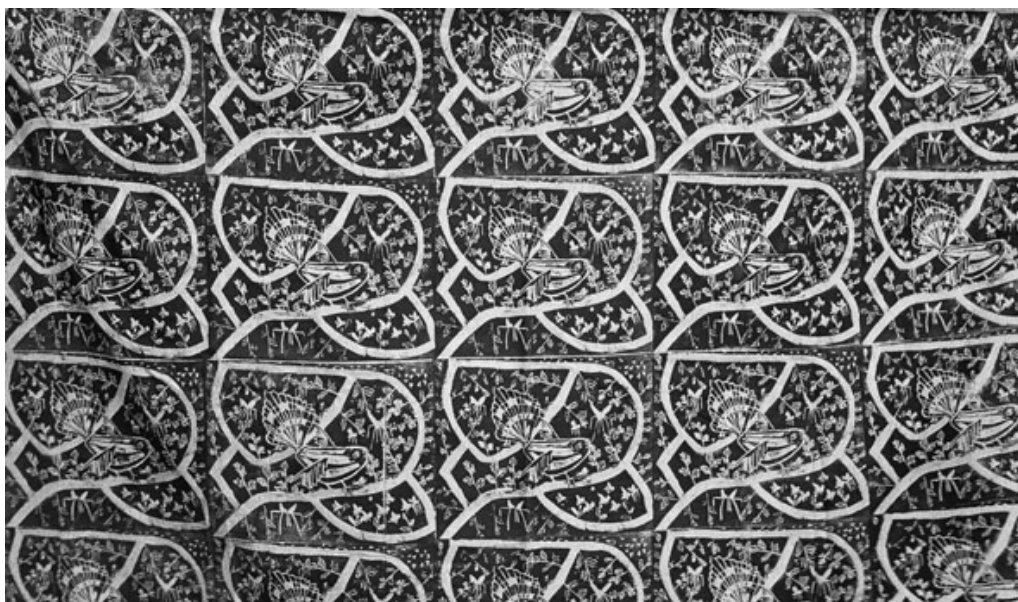
Environmental science that focussed on real problems required considerable teacher understanding, and because of his scientific background, Richardson was able to bring this to the problems the children studied. He was careful, however, not to adopt the position of 'the expert' in front of the children, but would volunteer complex scientific information when asked, or at appropriate times:

I remember explaining after a study of rounded boulders, after I'd gotten all I could about the object from the tamariki et al., I'd say: Do you want me now, to tell you what I know? I would ramble off with an on site explanation/ questioning approach exposing exfoliation of the rock from weathering. (Richardson, personal communication, April 30, 2008)

As the students searched for new ecologies moving through the Oruaiti valley, he found that they began to think and work in terms of the established practices they had built up. Discoveries were expressed in poetry, prose writings, drawings, pottery, collections of objects and paintings. He found that there was a 'fuzziness about the boundaries of science, which allowed for considerable drawing records of objects and creatures. I would call it good art stimulation, which was good scientific study. The products were clearly stated and quite unfuzzy!' (Richardson, personal communication, May 23, 2008) (Figure 4).

### Discovering Art through Science

For Richardson, who became a malacologist 'because of the aesthetics of perfection of molluscs', and a scientist because he was fascinated by the 'difference in shape, form, texture that separated species and subspecies', scientific study was synonymous with art appreciation. (Richardson, personal communication, September 23, 2005). His conception of the structure of natural things as art led him to view art as an entrance point into a deeper understanding of the natural world. Because of this, there was an organisational basis to the children's artwork at Oruaiti that was configured around the scientific processes of 'looking, feeling, relationships, colour, wear, line and shape' (Richardson, personal communication, May 23, 2006). He saw himself, he said, 'as a scientist working to lead my tamariki into its arts' (Richardson, personal communication, May 6, 2008).



**Figure 4.** Fantails, lino print on fabric, Oruaiti School, [Reproduced permission of Elwyn Richardson]



This foundation was clearly different from the orientation to child art promoted by many of the art and craft advisors at this time who largely followed the expressionist interpretation of child art promulgated by the Department of Education. Unlike his contemporaries, Richardson did not use 'motivations' such as teacher-led stories for painting lessons, or to facilitate group work. There were never, for example, 20 paintings on 'swimming in the sea', or 'Christmas' displayed on the walls of his classroom. Nor was there a discernible stylistic trend in Oruaiti students' artwork. This stands in contrast to some of the art produced by students taught by art advisors working under the auspices of the Art and Craft Branch, whose influence was shaping child art in New Zealand, as the following comment indicates.

Gordon Tovey, the New Zealand National Supervisor of Art and Craft in Richardson's time as a teacher, interpreted children's art as unconcerned with 'factual details' or with a 'realistic approach' and this interpretation shaped his approach to the materials supplied to schools. Large sheets of paper, bold colours and big brushes were standard issues and lent themselves to a particular mode of expression. As one Art Advisor at the time observed, '[w]e were led to believe, and in turn led teachers to believe, that 'small' was out, as were pencils or pens. Boldness was a criterion of excellence, and excessive attempts at 'realism' were rather to be discouraged' (MacDonald, 2010, pp. 162–63).

A discernible 'child-art' style was similarly visible in the work of international child art educator Čížek, who has been criticised for knowing what child art was supposed to look like, and knowing how to get children to produce it. So too his followers, such as Natalie Robinson Cole, who was dubbed 'the American Čížek'. Cole followed many of Čížek's methods. The work of students was characterised by the consistent use of black outlines, folk art-style human figures that reach from the top to the bottom of the page, large paper size and bold colours (Cole, 1940).

At times, Richardson felt that his students were 'artists expressing science, and at other times scientists expressing art' (Richardson, personal communication, January 23, 2006). Essentially, he viewed his school as 'an environmental one with art arising out of all studies' (Richardson, personal communication, April 30, 2008). Richardson did not 'teach' art as such, and he was opposed to the idea of art purely as an outlet for emotions if it was in the spirit of what he regarded as 'undisciplined squads of emotion', or what Dewey called critically a 'spewing forth' (1934/1980, pp. 61–62). This stood in contrast to the conceptual emphasis in the Department of Education's 1945 Tentative Art Scheme for Primary Schools, where art was viewed as a vital outlet for emotions and unconscious attitudes of mind.

Although Richardson was careful not to influence the children's artwork, there was an organisation to the process that arose directly out of the students' scientific enquiry of the natural world and from their emotional responses to these experiences. Richardson observes:

I fostered the aesthetic perfection element in living things and also in erosion water, light, smoke and almost everything about us. Environmental sources I called them, and, I had a regular theme selected from our valley— it might have been smoke from fires, clouds, rain, a storm, wind, light, shadows and so on. I'm sure that science drove us—we moved from season to season, one weather pattern to another, storms within that—then we'd suddenly study poplars ... Art just arose from our environmentalism. (Richardson, personal communication, July 30, 2008)

Despite the fact that Richardson favoured science, he viewed scientific and artistic enquiry as complementary and epistemologically analogous. Both were ways of knowing based on a process of enquiry and experimentation which were resolved through making abstractions concrete. In this sense, Richardson conceptualised art as a process of enquiry, which was in harmony with the aims and purposes of scientific enquiry. If, for example, he had viewed his students' art as an affective triumph of self-expression, as the child-centred progressive educators had, he could not have arrived at his theory of integration, which was predicated upon an attempt to reconcile aesthetic and scientific ways of knowing.



Significantly, it was art, he believed, that ‘unlocked language’ and affected how his students looked at their science. As a research tool, art led to clearer understanding and more astute observation. For example, environmental study revealed the geomorphic history of pebbles and boulders, while artistic expression provided a means for these revelations to ‘become concrete’ in the minds and feelings of the students. Both were ways of knowing that were anchored in the experiential, the level at which Dewey (1934/1980) suggests aesthetic education begins.

‘In an experience’, Dewey explains, ‘the flow is from something to something. As one part leads into another and as one part carries on what went before, each gains distinctness in itself. The enduring whole is diversified by successive phases that are emphases of its varied colours.’ (1934/1980, p. 36) Dewey’s view resonates with that of romantic scientists Luria and Sacks who recognised the preservation of the enduring whole as the aim of scientific observation. In their view, for example, emotion, empathy and intuition were viewed as critical to a deeper understanding of the neurological pathologies of their patients. Richardson’s theory of artistic activity in children originated from a similar conceptual basis from which he sought to establish a unity between the cognitive and the affective. He looked first to the environment—the river, the aspens, the birds, the chimney smoke in the evenings—as the basis for his curriculum in art education, and proceeded from this basis to ‘look for moves in expression which indicated abstraction’ (Henderson, 1998, p. 156).

### **Richardson’s Theory of Integration**

Richardson recognised that language alone was not enough to resolve problems in art. The non-verbal quality of art meant that students engaged and modified their art-works based upon what they felt emotionally, so that both the choice of medium and the development of the art product were adjusted depending on what ‘felt right’. For Richardson, however, art was about seeking precision in expression, recognising connection and understanding relationship. His aim was not to create future artists, potters and scientists, but to teach the students how to identify problems and find solutions. Like the romantic scientists who believed that the properties of a system cannot be ‘reliably obtained from a study of its parts operating in isolation’ (Luria, 1979, p. 11), Richardson believed the problems they studied should be explored in a non-reductionist, flexible and interactive way. Accordingly, he saw the pupils’ creative work not simply as expression, but as a process of evaluation of personal feelings about a theme or topic. In this regard, Richardson’s art pedagogy positioned students as active participants in the construction, development and evaluation of their own knowledge and understandings.

In the early stages of his programme, Richardson began as his mentor Wal had with him as a child—placing an insect, shell or seed head in front of his students and encouraging them to ‘get close to it in their feelings’, and to ‘look at it as a whole and take it in’ (Richardson, 2001; p. 11). He then directed them to move from the contemplation of the whole to the outlines, and then to the internal forms. Once the children had learned how to look in these ways, Richardson found that ‘emotional involvement’ took over and that the students did not need such direction in other subjects (2001, p. 11). He saw this as ‘a process of learning to admire and love’ that extended far beyond his simple but effective lessons (2001, p. 11). It was a process he felt was at the very core of his philosophy of education. As he progressed, he found that surprising developments arose:

Print one led to print two, painting one to poem one to story two ... The process intrigued me. I called the movement integration. I defined it in my mind and observations as the way a child developed feelings for expression of a personally felt kind. These claimed attention and led more often to an initial expression in arts. It seemed, I thought, that the feelings engendered by an initial expression in say a poem, were such that the writer needed to say something of his intensely felt subject in another way, perhaps story, perhaps in a painting and so on. I called the move an ‘integrated process.’ It is as if the dealings of one level of study including general curriculum, engendered an emotional response and needs, which spurred the pupil to want/need to ‘say’



those feelings in another way: language to an art form; to a dramatic poem; to a narrative, and even back to another art form. (Richardson, personal communication, April 16, 2007)

Richardson believed integration was a personal process, which was motivated by 'the way in which the writer or the artist felt strongly and emotionally about the contemplation of varied situations, natural objects, or things' (Richardson, 2004, p. 3). It was a process of language/art refinement, which led to a series of developmental expressions. For example, a beach study led to the students assembling a tableau of beach wreck. Richardson recalls that this topic included some science of tides and the wearing away of the shell banks; various genera and species in collections; seaweed samples (agar agar); and pieces of worn wood as natural sculptures. The sounds of the sea occupied many, as did the memory of historic happenings such as Māori battles. Many of the children wrote small haiku-like poems, such as:

I stood by the sand ripple marks  
Of yesterday's tidal reach  
And in the quiet between wave slaps  
I thought of warriors' feet in wet sand.

(Richardson, personal communication, May 23, 2006)

Integration was not, as Richardson has pointed out, what is commonly termed curriculum bundling, subjects combined for the economy of curriculum coverage (2004). In fact, it was often a lengthy process with some students' selected themes continuing for three weeks at a time. Richardson discovered that for most children, there was a 'great deal of difficulty in saying everything in language alone' and that the process of integration helped students develop precision of expression and resolution of ideas through both language and the arts (Richardson, personal communication, August 9, 2008). Accordingly, he advised students not to try and say everything in one medium (Richardson, personal communication, April 16, 2007). Instead, he suggested that they select the whole or part that was 'vital to their emotional needs'. He found that this process encouraged selectivity:

Some of my people were astounding in the ways in which they sought out their topic from a mass of experience. To be one's best, the person had to find in the mind the highly felt emotional level for resolution whether in language or in the arts. (Richardson, personal communication, September 16, 2005)

## Conclusion

Richardson's theory of integration arose out of his belief that there was more than one way of knowing. Like the romantic scientists, he rejected any firm lines between aesthetic and scientific judgement, the subjective and objective. He viewed scientific knowledge as providing a hospitable framework for learning through the arts.

Richardson's students' detailed drawings of the natural world and integrated studies on environmental topics are evidence of an approach that ran counter to the paradoxical non-interference method promoted by proponents of child art at this time. His work was not simply an exemplar of the new approach to art and craft. The expressive work at Oruaiti School arose out of a strong scientific basis which offered possibilities for student-led extension and development that would not have been available had Richardson followed the dominant expressive orientation to art.

To interpret Richardson's work solely as an experiment in art and craft education not only eclipses the primary importance of his scientific orientation towards teaching and learning, but also masks his effort to address the critical question of what it means to approach art as a scientist.

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## Disclosure statement

No potential conflict of interest was reported by the author.

## Notes

1. Dewey acknowledged 'Hegel's synthesis of subject and object, matter and spirit, the divine and the human', which he found to be 'an immense release, a liberation', by its 'dissolution of hard-and-fast dividing walls' (1930, p. 19, cited by Pring, 1971, p. 179).
2. Romantic science is a term coined by Alexander Romanovich Luria (1902–1977), a Russian neuropsychologist and developmental psychologist who is best known for his pioneering work on cognitive function, in particular problem-solving, perception and the pathologies of memory. His books include *The Mind of a Mnemonist: A Little Book About a Vast Memory* (1968) and *The Man with the Shattered World* (1973). It was Luria's work that inspired Oliver Sacks, a well-known British neurologist and writer, to develop a similar style of narrative case history writing.
3. Luria, 1979, p. 178; see also Luria, *The Mind of a Mnemonist: A Little Book About a Vast Memory* (1987) Cambridge, Massachusetts. Harvard University Press.
4. It was William Wordsworth who commented that poetry was 'emotion recollected in tranquillity'.

## Notes on contributor

Margaret MacDonald works as a human rights specialist in the field of social and economic rights monitoring. She won the New Zealand Association for Educational Research Sutton- Smith Doctoral Award for her PhD thesis on Elwyn Richardson in 2011. The New Zealand Council for Educational Research published her book, *Elwyn Richardson and the Early World of Creative Education in New Zealand*, which is based on this work, in 2016. She currently lives and works in Wellington, New Zealand. Email: [margaretmacd@gmail.com](mailto:margaretmacd@gmail.com)

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