

# **in the wind clothes dance on a line**

**performative inquiry — a (re)search methodology**  
*possibilities and absences within a space-moment*  
*of imagining a universe*

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## **abstract**

*in the wind clothes dance on a line* is the conceptualization and articulation of performative inquiry as a research methodology within the field of education. Performative inquiry invites innovative and non-linear investigations, playing upon the multiple realities and interpretations of co-evolving worlds realized and recognized through creative action and interaction between researcher/teacher and participants/students within individual and shared, existing and imagined environments through motivating (im)pulse(s) of inquiry. Performative inquiry is elusively and momentarily balanced on the “edge of chaos” within the interstices of enactivism, complexity, interpretation, and performance.

In articulating an ecological-cognitive reading of performance, I am in company with curricular theorists who envision curriculum as a journey and expression of students’ and teachers’ shared investigations within co-evolving landscapes of action and interaction.

*in the wind clothes dance on a line* is a playful response to current conversations among researchers seeking recognition and articulation of arts-based processes as legitimate site(s) and praxis of research. Performative inquiry offers researchers — in drama education, in particular, and in education, in general, — a theoretical and practical venue to investigate their fields of inquiry through an integrated vehicle of body, mind and imagination.

This dissertation is informed by a three year science education research project (1995-1997) conducted with science educator, Karen Meyer. Our research investigated the teaching and learning of science education through drama and storytelling, culminating in a performance piece, *Light Sound Movin’ Around: What Are Monsters Made Of?* Follow-up interviews with pre-service teachers speak eloquently to the possibility and power of performative inquiry as a research tool and learning vehicle in science education. *in the wind clothes dance on a line* has been imagined “in the air” through moments realized and recognized during the science education research project and through my work as a performing arts educator. And it is these moments that set the clothes dancing in the wind.

*in the wind clothes dance on a line* is a conceptual piece, a performative work through which the reader will hopefully realize and recognize his or her own imaginings and interstandings of possible universes within education.

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***dedication***

*for children who freefall on the edge of chaos  
and are remembered with love*

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*and you,*

*whose turning of each page*

*dances this work into being becoming.*

*in the wind clothes dance on a line*

*performative inquiry — a (re)search methodology*

*possibilities and absences within a space-moment*

*of imagining a universe*



*Begin where you are. —Dorothy Heathcote*

i am now. in this moment. present.

*Time is the changing of light. —Joyce Carol Oates*

the spelling of now embodied in the changing of light.

*To write a novel is to write the lining of reality. —Jacques Daignault*

light maps my being

absence the underlining of light.

***plummeting ascent***

***skyscape one***

***a possibility***

**in this moment that is us**

**a woman, a back porch, and a clothesline**

*In our not yet known world, a clothesline hangs suspended from the back porch across the yard to a hook embedded in the trunk of a tree. Sunlight marks prison bars across the length of the wooden floor of the porch. A woman leans over the railing, a clothespin clenched between her teeth, arms reaching to gather in sheets. In the wind, clothes dance on a line.*

*She gathers in the sheets, hand over hand as if pulling nets from the ocean, angel wings caught in the folds between the interstices of net and emptiness. She gathers the light of the universe into her arms, sunbreath against her breasts.*

*She has not yet noticed the disturbance that sags her clothesline earthbound. We, our presence not yet recognized, struggle against the empty limbs of an absent husband, his flannelette nightshirt and longjohns grabbing impatiently at our parachute lines. She pauses, hesitates ... a play of light and movement beyond her grasp.*

**fragments of a landscape journeyed**

*Tuesday morning, October 2, 1997.*

*light betrays my presence to others. words unwritten written sound my absence on the page. in the gap between the written and unwritten, what happens? revolution. possibility. stop.*

The view from my window frames the mountain where a young woman died snowboarding earlier this year. In the green blue of an autumn slash-surprised by sunshine across the bay, I picture her breathless leap and tumble down a white wall of collapsing snow. I suspect that in the writing of this thesis, her presence will weigh like a shadow on my shoulder.

When leaves fall, white cruise boats sailing to Alaska will be visible  
— travelers bordercrossing unknown landscapes.

*the real voyage of discovery consists  
not in seeking new landscapes  
but in having new eyes.<sup>1</sup>*

and yet,  
i seek shifting horizons,  
co-evolving worlds, unexpected moments of interstanding,<sup>2</sup>  
fearfully fearlessly mapping my journey  
through as yet unimagined landscapes.<sup>3</sup>

Perhaps the ambitions of a room abandoned — a second floor bedroom in a rented townhouse recently exchanged for an address several blocks from the university gates — will break into sound in this new space, patterning a blank screen with lettered light. Relocation. Turn the prism and light dances colours in unimagined angles. I am waiting for words.

He phoned today.  
I confess that I've written little. Surfeit of excuses.  
*Throw everything away!*  
But I cannot. Type-frozen.  
Afterwards I pen a sign and tape it on the wall.  
The exclamation mark gives me courage.

---

<sup>1</sup> Marcel Proust, found quote. Date and source unknown. Throughout my academic voyage, both during and prior to beginning doctoral work, I have collected quotes, sayings, poems, e-mail messages, fragmentary documents of my journey, and posted them on my wall next to my computer as signposts landmarks harbingers of possibilities and imaginings which encourage motivate inspire. Many of these were accumulated prior to any personal academic requirements of sourcing and therefore fall into a collection of remembered textual moments where, unmarked by traditional academic considerations, they continue, none-the-less, to (re)play presence and possibility on a page. (See footnote 8 on page 9 for explanation of punctuation play in this thesis.)

<sup>2</sup> See Taylor and Saarinen. (1994). Interstanding is meaning-making as realized and recognized as what is possible between and co-interdependent as opposed to understanding which may be read as objective and individual.

<sup>3</sup> The use of lower case "i" speaks not to the subject "I" which may be read as dominant, separate and alone, but to the interactive "i" in action and interaction with others and landscapes as realized through shared experience. My reading of lower case "i" has been informed through conversation with Jennifer Khamasi: "I/i can be I or i, you and me both involved" [Minha (1989) as quoted by Khamasi (1997)]. I use the lower case "i" deliberately in specific texts to highlight learning realized through shared interaction and within poetic-performative moments of interstanding.

I enter into the wording of worlds — fingers imageplaying the keyboard. Gurgi, our kitten, purrs in my lap; sun spills across the rug. I write in haste, choreographing a remembered moment. I write with haste, anticipating my children's return from school, their shout at the door, "Mom!", their absence in my now as tangible as their presence. I write through haste, fearing the loss of what has not yet been spelled into being.

moving into this sentence  
    i voice my presence  
    known and unknown  
imagined, not yet real  
    unexpected welcome  
    absent suspect  
        my wor(l)de(s) in interaction with (y)ours.<sup>4</sup>

revolution in spiraling  
    cycles of possibility  
imagining into being  
    an action of stop  
        a space-moment<sup>5</sup> of crisis  
            and opportunity

this too is possible.

*fingers fall silent. motionless scream. an angel pauses in flight. my being  
becoming unwritten — absence sounds across the galaxies of sunspoken  
words.*

---

<sup>4</sup> In her doctoral dissertation, Wanda Hurren (1998) engages in semiotic play, line dancing into being the writing of wor(l)de in recognition of the interplay between we, world and word.

<sup>5</sup> A "space-moment" speaks simultaneously to a space of embodied time and place. Space-moment acknowledges Heidegger's proposal that rather than time and space being seen as separate entities, they are embodied as a single entity which he labels "time-space." See Abram's (1996) discussion of the "invisible or absence within presence" in which Abram suggests that when time is acknowledged as not separate from but embodied within space, then "Space is no longer experienced as a homogeneous void, but reveals itself as this vast and richly textured field in which we are corporeally immersed ... " (216). I choose to use the word "moment" rather than "time" as recognition of the possibilities (and absences) realized within a space-moment through which and within which creative action and interaction is realized. See also Fels & Meyer (1997).

**telephone call from a grade three teacher to a performing arts educator<sup>6</sup>**

Hello?

*It's me. Are you busy?*

No. What's up?

*I'm thinking of putting together a science unit on air pressure for my class next term and I want to combine it with some performing arts. Are you interested?*

Sure! Great idea! Uh ... what's the topic again?

*Air pressure. Can you handle it?*

Air pressure! No problem! I'll get some ideas going and we can meet next week ...

I hang up the phone and contemplate the frost-bitten window.

*Air pressure? What the heck is air pressure? And who cares?*

Imagine my surprise and delight when I discover  
within the lines of scientific text that  
air pressure is flight  
                    and melody breath-sounded  
and the unpredictable choreography  
of patterned weather.

Possibilities dance on a line  
like doves pulled from a magician's hat  
and tossed into the air.  
Imagine.

---

<sup>6</sup> In the winter of 1994, a friend and colleague, Marlene Marcon, proposed that I develop a performing arts project investigating air pressure for her grade three class. An initial telephone request proved a motivating catalyst to the journey-landscape we are now embarking upon together. See footnote 7 on page 8.

## **first flight<sup>7</sup>**

*Imagine this.* You are witnessing the promised first flight of an airplane designed and built before your skeptical eyes here on stage. You eye the ice cream container wheels and cardboard propellers with amusement. The light of your video camera is blinking red. You've run out of film. In the hurried changing of cassettes, you curse briefly. You don't want to miss a moment. Everything must be recorded. Everything is evidence.

*Fasten your seat belts.*

*Prepare for take-off.*

*Welcome aboard Flight 767 to Vancouver —*

The plane is an ambitious assembly of cardboard boxes, wires, batteries, and ice cream containers. Propellers spin with the gangly awkwardness of adolescence. Blue and red lights flash on a cardboard tail which lists at an unfortunate angle.

Quality control is the responsibility of the third grade teacher, Marlene, who commandeers the action in her husband's flight instructor outfit. Mechanics, aerodynamic engineers, electricians bustle under her directions, securing ropes, fitting wings and tails into slots, flipping switches that set the propellers in motion.

*Stand-by for clearance.*

You have already witnessed Icarus' unfortunate encounter with the sun; rocketed into space with Roberta Bondar who insisted at the last minute on ordering pizza (double cheese with anchovies); listened to the ominous radio static of Amelia's final call; and celebrated the thirteen second flight of the Wright Brothers' airplane at Kitty Hawk Beach. You have listened to music sounded on beer bottles (the labels removed) and soared with the seagulls in the wind dance. You are now preparing to witness an inaugural flight — the pilot and co-pilot are already seated in the cockpit.

---

<sup>7</sup> First Flight (1994) is a performance piece which was created and performed by a grade three class in Morison Public School in Deep River, Ontario in the Spring of 1994. Their teacher, Marlene Marcon, and I worked with the children for a ten day period, during which props were made, costumes gathered, stage scenery painted, and a script created through research, brainstorming, and improvisation to scene.

*Will it fly? Yes!*  
*Will it fly? No!*  
*Will it fly? Yes!*

I lean precariously perched on the top rung of a twenty foot ladder, conducting last minute preparations before flight. The pilot and co-pilot peer over the cockpit, their rag-doll faces set in the stitched expressions of eight-year-old fingers. I signal *thumbs up*.

*This is air traffic control. can you read me?*  
*Loud and clear.*  
*The runway is ready for take-off. start your engines.*

I glance across at Marlene who now surveys the audience from the top of a stepladder positioned beside the far end of the auditorium basketball hoop. You abandon the tripod and steady the camera in your hands, ready to viewfinder focus the action into filmed memory.

We hold our breath —

*this too is possible.*

The plane bumps along the runway and then reluctantly petulantly abruptly takes to the air.<sup>8</sup> It travels a predetermined flight path across the clothesline that Marlene and I secured between the basketball hoops the previous evening. Students cheer. Parents clap. Your camera lens zooms in to capture the moment.

Mid-point four feet above the heads of the audience  
the unexpected happens ...

---

<sup>8</sup> In the playing of sequencing words without commas, the reader finds himself/herself in a curious place of editor reader writer interpreter performer. Do you resist the urge to insert commas? Surely there should be commas between reluctantly (,) petulantly (,) abruptly (,)? What happens to a listing that abandons commas? How do we read these words in interaction and relationship? What weighting of interpretation does unexpected punctuation (or lack thereof) give the line? A punctual play which disrupts the reading, throws reader and text temporarily off-balance. In this moment of unbalance, we recognize our own participation in the text.

I pause at each gap breath stop of wordmoments and spaces between which signal a choice or risk of action between leaving a space marked or unmarked. For example, throughout the text, we read "being, becoming" or "being becoming." The difference being the presence or absence of a comma. At first, I call upon the search and replace function on the computer in the spirit of a copy editor's quest for consistency, but, in reconsidering, realize that the absence or presence of that comma matters. Its presence suggests a pause, an evolving into, a breath of recognition, whereas its absence suggests a dynamic inter-action co-evolvement in the moment "as is" and yet, simultaneously, "as becoming".



*how do i write this moment into our presence? i want to welcome you into this moment with words — but what words to capture the interruption? the stop?<sup>9</sup> the unexpected? how do i write the doublure<sup>10</sup> of a moment that moves us into shared recognition and interstanding?*

It is two-o'clock, the morning before the performance. We are test-flying our airplane. Our carefully rigged clothesline sags under its weight. Marlene and I abandon the school gym in search of a remedy and soon find ourselves sneaking onto the back porch of my next-door neighbour's house. We are looking for a clothesline attachment to prevent the clothesline from sagging. Marlene rummages around in the bottom of a clothespin bag hanging from a hook.

"Do they have one?"

"Shhhhh!" Her breath escapes in a cry of triumph. "Alright! Let's go!" Our nocturnal giggles are interrupted. A light in the upstairs bedroom window spotlights the back porch.

"Let's get out of here!"

Our shadows chase us down the street.

*a mother fails to foil the prophecy of the gods as she immerses  
her infant son in the protective waters of the river  
— her hand encircling his struggling limb leaves dry  
one spot which seals his fate. Achilles' heel.*

Mid-point four feet above the heads of the audience  
the unexpected happens ...

The clothesline attachment is plastic.  
It snaps under the weight of the airplane.  
A flight interrupted ...

---

<sup>9</sup> See Applebaum (1995). David Applebaum's work suggests that "the stop" is the moment of arrest in which a person recognizes possibilities of action which embody both choice and risk. The stop is similar to Augusto Boal's conception and articulation of "moments of crisis", in which danger and opportunity are embodied within a moment of crisis. See Boal (1995).

<sup>10</sup> Daignault (1996). See footnote 15 on page 17.

*Clear the runway! Clear the runway!*  
*The airplane is going to crash!*

Children scatter under the principal's frantic orders.

And you, peering through the camera lens, anticipate the worst.  
You continue recording.

But the plane defies our expectations.  
It does not crash nor plummet  
but gently confidently glides to a landing.  
The propellers continue to spin;  
                    taillights in Morse-code conversation.

We are awed —  
                    the little airplane that could.

A disturbance in the audience, and you swing your camera to witness. Two men, the vice-principal and a child's father, simultaneously jump to their feet. The vice-principal holds his arm aloft, as if in salute. The father points to his watch.

*The plane flew thirteen seconds!*  
*Just like the Wright brothers' airplane at Kitty Hawk Beach!*  
*Thirteen seconds!*

Past and present and possibility  
                    realized within a moment.

*Clear the runway!*

But there are only children  
sitting on a gymnasium floor.

*The plane flew!*

But it is only a winged cardboard box  
on a clothesline.

*what happens when our connection between what we imagine as the real world  
(with all its known and unknown moments) and the not yet real world (a  
pretend-world imagined into play) is interrupted, snapped like the plastic  
clothesline attachment?*

How does the not yet real flight of a cardboard airplane  
become a flight of possibility?

*the airplane flew —*

and in that space-moment first flight is spelled into being.

*It's the first time I ever went to see something at a school production  
and found myself in it.<sup>11</sup>*

*a realizing of a moment  
when flight is  
danced into presence  
on a line between.*

---

<sup>11</sup> Parent's response to performance of First Flight (1994).

**coming to this moment**

*First Flight* (1994) skymarks my journey towards an interstanding of performance, learning, and possibilities of drama within a science classroom.

*Air pressure.  
Can you handle it?*

I had not yet made acquaintance, in our spelled moment of first flight, with the theories nor terminology that now weave their presence into this telling.

(at this very moment of writing,  
a flock of unnamed birds  
fly a flight pattern  
outside my window,  
like music notes, sounding  
absence.)

*wind dance in chimes  
clothes on a line  
light spelling a moment  
embodied memory.*

Nor did I anticipate imagining into presence a research methodology that speaks to possibilities of performance as a journey-landscape of inquiry where space-moments of learning come into being and are recognized —

*but i suspected.*

In the writing of this thesis, embodied remembrance, I traveled a distance of three thousand miles and four years to encounter a place of recognition and possibility.<sup>12</sup>

*how is it we come to our thesis as if from a great distance and yet its  
immediacy is present in our actions, our conversations,  
our dancing between spaces and absences we measure by time?  
or light?*

*how do i dance knowing into presence?  
can you touch absence and become known?*

Academic and poet, Carl Leggo, writes a poem<sup>13</sup> about an uncle —

*... dreaming the new boat in the air*

*it's almost time to call  
the woods together soon.  
already I've sailed a sea or two.*

And, like Leggo's boat-builder, these past months, I have been imagining my thesis in the air; each imagining rich with academic possibilities —

a play-by-play analysis;  
a chaptered accounting of methodology and literature and data and implications;  
a conceptual dance of theoretical musing

*yet none of these satisfy my desire.*

---

<sup>12</sup> University residency requirements necessitated a relocation from Ontario to British Columbia.

<sup>13</sup> Leggo, 1995: 44.

Now I sit here in front of my computer  
crowded by journal notes, transcribed interviews, memories, taped voices.  
The not yet real thesis playfully  
eludes my grasp and challenges me —

*embody performance that is our work.*

I am reluctant to reduce complexity to linear lines.

How do I (re)imagine an academic mapping  
which honours the journey-landscape<sup>14</sup> explored?

To write in past tense is to enter into an explanatory voice,  
a voice of examination, clarification, investigation.

To write within presence is to voice  
exploration possibility absence.

To write performance onto the journey-landscape that is this thesis  
is to imagine into being interplay between  
memory possibility performance revolution  
embodied within a moment of imagining a universe.

---

<sup>14</sup> "Journey-landscape" is both action and space realized in interaction through time. The term acknowledges a recognition and reading of landscape and journey as simultaneously enacted through time, action and space, each embodied within and through the other interchangeably. To recognize a landscape is to journey within through embodied space-moments of interaction. Journey-landscape speaks of a journey and place through which a landscape is realized by both presence and absence. Neither journey nor landscape exists without the traveler(s) whose presence or absence spells a journey-landscape into being. I first understood the importance of presence and absence embodied within a landscape during a winter walk with a friend, our footsteps tracing our journey through the snow-blanket field. Our presence or absence matters in the shaping of the landscape that is us. Our absence is embodied within journey-landscapes realized in our absence which are simultaneously embodied within the presence that is not us.

*I will tell you a story.*

*once upon a time a student cornered a professor in his office —*

“There are too many books! I can’t possibly read them all.” She impatiently sweeps her fingers along his shelved bookcase, spines biting fingertips. “Look, I spent two hours doing a library search on the computer.” She pulls the printout from her satchel, columns of printed lines streaming down the pages, presenting them as evidence of academic diligence.

“You don’t look for books that way,” the professor reproves mildly. “Go to the library. Wander the stacks. Pick out books at random. Riffle their pages. Smell them. That is how you do a literary search.”

She runs to the library. She follows his instructions, becomes lost in the stacks, lost in intertextual worlds. She pulls books out at random, shaking pages paragraphs sentences words free. Hidden love letters, pressed flowers, forgotten treasures map her journey along the stacks. Wind currents from books speaking presence scatter fragments of remembered thoughts ideas dreams into the air.

The heated aroma of a good literary search percolates through the library’s air-conditioning system.

*i breathe.*

*I will tell you a story.*

*once upon a time a student raised her hand at a doctoral seminar ...*

Trapped in a September moment. Students sit around the conference table. We introduce ourselves, laying down the blueprint of our work, concealing revealing speaking identity between the ruled lines. She is crouched in the corner, frantically taking notes, decoding language, hair pooling in a dark shadow over her notebook. She frowns. Hesitates her furious writing. An unknown word. Raises her hand.

*I’m sorry to interrupt but how do you  
spell praxis?*

*I will tell you a story.*

*once upon a time an academic came to a university to speak about his work ...*<sup>15</sup>

In his hands, between his toes, under his fingernails, he carries notes, hundreds and hundreds of notes. Notes spilling a haphazard path to the podium, notes in his pockets, his trouser cuffs, his socks, behind his ears, under his collar. He has pinned notes to his jacket sleeves, they flutter in flock formation down his spine. Like a feather-tattered seagull wind-torn across the sky, his appearance suggests a tumultuous journey — although in this reality he had taken an uneventful trip in an airplane across the country from Quebec, over the Rockies to Vancouver. He leans wind-worn against the podium, as if surprised to find himself momentarily grounded in the windless room where we sit, notebooks in hand, and speaks —

*i want to speak about the landscape of educational research  
and the seven rules to create an acoustmatic text.*<sup>16</sup>

He gestures vaguely at his papered vestments.

*these are our possibilities.  
listen.*

*in our breathing together  
we will realize our text.*

---

<sup>15</sup> Jacques Daignault presented his ideas during a presentation at the University of British Columbia in January, 1996. In his talk, he spoke to five different landscapes, each a place or space of textual exploration and possibility, and listed seven rules which enable the writer to realize these spaces. During his presentation, Daignault mapped his journey as he wrote his way into his "academic book," and, by sharing his ideas, invited us to consider that this too is possible in our (re)imagining educational research.

<sup>16</sup> Daignault speaks to an acoustmatic modality. Daignault lists seven rules for writing and seven rules for editing a text which, if followed, will move the writer (and reader) towards realizing a text that listens. I hesitate to "explain" Daignault's position since an explanation is the very antithesis of the hopes and desires of an acoustmatic text. It is enough, I feel, to mark Daignault's presence in educational research and writing and to invite readers to consider Daignault's ideas through his writings. See Daignault (1996).



welcome words welcome characters welcome body emotion feelings  
welcome intertextuality welcome grace welcome the unknown

try to say nothing  
listen

our text speaks  
our text sounds our presence

welcome

I sit in the front row, fallen stars  
teartrace the galaxy of my cheeks.  
I recognize the landscape. I too travel this space.

It is a relief to gather notes  
that drift to the ground like  
lost feathers of an unseen angel  
who wrestles Knowledge  
and secures release.

*realizing heavens absent into presence*

*celestial listening.*  
*i am not alone.*

*this too is possible.*

## and when turning around

Entering this academic environment  
I sought a theory for my practice as a drama educator.  
*what happens when we journey into an imagined space?*  
I wanted answers. I had expectations. I envisioned footnotes.<sup>17</sup>

Yet the theory I sought is embodied in my practice —

*what if?*

Spelling a universe that sounds our being becoming  
    laying down a path of interstanding  
        foot notes of  
            not yet imagined moments realized and recognized  
                that arrest our steps in wondering.

Phelan's suspension bridge realizing Being

momentarily suspended<sup>18</sup>

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<sup>17</sup> In the writing of this piece, the play between the text and footnotes is an intertextual conversation. I write a thought, and immediately, a response — whether an interruption by a scholar, a fragment of memory, or a clarification — leaps to my fingertips demanding audience. And am I to conceal these footnotes (which now play in my presence like notes in a musical score, or, to borrow from theatre, director's notes hastily scribbled on the edge of a script) as endnotes? Or bury them in miniscule font on the tale-ends of each page? A (re)weighting of footnotes and text seeks uneasy balance on each page of text, sometimes at the whim of an automated pager, sometimes by wit of my hand on the keyboard. I had not before imagined the play of foot notes within a text of interstanding.

<sup>18</sup> Phelan, 1993: 167. Peggy Phelan's suspension bridge is introduced in landscape one on page 54 of this dissertation.

*wanderer, the road is your  
footsteps, nothing else;  
wanderer, there is no path,  
you lay down a path in walking.  
in walking you lay down a  
path*

*and when turning around  
you see the road you'll  
never stop on again.  
wanderer, path there is none,  
only tracks on ocean foam.<sup>19</sup>*

Foot notes

resonance that soars  
into unexpected altitudes

or freefalls

into silence.

*Imagine this.*

The navigator's table is feathered with pieces of paper, each plotting a significant piece of evidence that anticipates the landscape. A flight attendant bumps into the table, disturbs my careful arrangement. Coffee spills liquid rewriting of the terrain — landscape altered, unknown, not yet realized.

*the long reaches of uncertainty draw me out, barefooted, half-dressed,  
when there is no colour in the sky.<sup>20</sup>*

This too is possible.

---

<sup>19</sup> Poem by Antonio Machado, from *Proverbios y Cantares* (1930) as translated by F. Varela, 1987: 63.

<sup>20</sup> Winterson, 1995: 55.

I approach the runway  
seated at the controls in the cockpit  
the flight plan arcing from —

Icarus' fate sounding through time  
in an eight year old's voice <sup>21</sup>

*where are you where are you where are you*

to Mario calculating the population  
of a Newfoundland outport<sup>22</sup>

*Just count the clotheslines!*

to a monster rabbit shadow-boxing  
on a movie screen<sup>23</sup>

*AHHHHH! There's a giant bunny after me!  
Don't panic! Stay calm!  
There must be a scientific explanation for this?*

to this moment now  
your shadow falling over my shoulder.  
I glance at the altimeter on the control panel.

*How high can i fly before you reach out a hand  
to halt this plummeting ascent?*

---

<sup>21</sup> First Flight (1994).

<sup>22</sup> Newfoundland role drama enacted in an oral language inquiry class at the University of British Columbia in the winter of 1995. See page 26.

<sup>23</sup> Light Sound Movin' Around: What Are Monsters Made Of? (1996). Unpublished script created and performed by UBC education students in the movie theatre in the UBC Student Union Building, in the second year of the research project (1995-1997) conducted for this dissertation, University of British Columbia, Vancouver. See page 121.

*Once, an angel, leaping out of heaven to find new worlds, his hands  
snagged on a zigzag of stars. Lucifer, whose cuts bled light ...<sup>24</sup>*

*Imagine this.*

We are reading this text together, my shadow spilling into the light of your reading. We are skybound in this adventure, the cockpit secured with seatbelts, academic dials indicating our cruise speed, wind velocity, distance from ground, fuel supply. We are here within our galaxy, star-littered with remembering of time present. We anticipate our moment of flight.

*Look here, you say, pass me the map.*

There is no map.

*But there are expectations!*

Such as ...?

I unhook my seatbelt and reach for our parachutes. *Put this on.*

On the navigator's table are notes, fragments, possibilities.

I stuff them into my pockets, up my sleeve, behind my ears.

Listen, I have a favour to ask you. You're going to have to trust.

*In what? You?*

In the moment.

I open the escape hatch. Night air chills the cockpit. We climb up out into the sky.

*Air pressure.*

*Can you handle it?*

---

<sup>24</sup> Winterson, 1995: 74.

we jump —

miniature in the breath of night sky  
our parachutes billowing sails that  
shape the drift of our slow fall to earth.

below us, dawn opens  
possibilities of a sunrise  
a blushing horizon  
seeps into a gray ocean.

an outport hugs the cliff line  
boats bob  
in an unsuspecting harbour.

a breeze sneaks  
the notes from my pockets  
and scatters them

like autumn leaves  
they seek refuge in corners of chimneys  
in potholes  
in spaces  
between  
bicycle spokes

under  
porch stairs.

we wing clipped angels  
earth bound  
position our landing gear  
our running shoes eager to secure ground

and are surprised  
to snag  
on a clothesline  
which sags under  
the weight of us

the weight of our being  
present.

**underlining moments of possibility**

*The woman pulls at the line, hand over hand, reaping the harvest of her laundry. She hesitates, recognizes the pull of resistance, an unexpected weighting. She observes wrestling angels caught on her clothesline, tangled with her husband's longjohns, a play of light and movement and sound that startles her imagination, and amused, she reaches out to intercept.*

*She has not yet recognized the possibility that is us.*

*in the wind clothes dance on a line*  
*performative inquiry — a (re)search methodology<sup>25</sup>*

*landscape one*  
*what if?*

---

<sup>25</sup> A version of this chapter is published in *jct: Journal of Curriculum Theorizing*. See Fels (1998).



*in the wind clothes dance on a line*

Mario is hamming it up in the rowboat. I recruited him as my crew for an early morning spot of cod-jigging in the bay, a decision I am beginning to regret. Oblivious to my poetic struggle to create an impoverished coastal outpost in lecture room 210, he halfheartedly pulls at the oars and sneaks copious gulps of screech from an imaginary flask, slyly winking at the audience. The class, amused, follows our conversation. Outside, the january evening weeps winter rain against the windows.

"Look, Mario." I sweep a generous hand across the horizon of blackboards. "The village looks like the broken grin of an old man's smile. Boarded up windows. Fallen fences. How many people live here now?"

Mario shrugs. Coughs. Tugs haphazardly at an oar.

"Remember that signpost outside of town, just where the road bends?" I prompt him. I am sweating under the layers of fisherman's sweater, life jacket and overalls, trying to kickstart our role drama on the fishing industry in Newfoundland. The outpost refuses to materialize. *Why isn't this working?*

"Never seen it," says Mario with another swallow of screech.

*You're wrecking the logic of the drama. Of course you've seen it! You've lived here all your life! The town is only ten houses long!*

"You know the sign." I jab him in the ribs and point emphatically at a sign that I had taped earlier in the day on the blackboard: *Come By Chance — Pop. 157.*<sup>26</sup> I am silently cursing him under my breath. *Come on, Mario, work with me on this.* But he refuses to play along with my paper props. Refuses to follow my anticipated script.

"Nope. Never laid eyes on it. But," he says, suddenly rocking the boat with unexpected enthusiasm. "I *know* how we can figure out the population."

"How?" I am suspicious. *Is he going to swamp the boat?* The class eagerly leans forward on their seats — sea vultures waiting for us to capsize.

"Count the clotheslines!" He stands triumphantly in our rowboat, pointing to the blackboard. "One, two, three ...."

And to my amazement, clotheslines magically appear — diapers, workmen's overalls, cotton dresses, woolen socks, sheets dancing in the wind. The entire population of the outpost leaps into being. Within a single moment, Mario captures the very heart soul body of the outpost and gifts us life. Realized in the choreography geography of cloth limbs dancing on lines in the wind, the outpost not yet known becomes known.

Within a moment, *the not yet known is realized and recognized*, and possibilities open to exploration.<sup>27</sup>

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<sup>26</sup> I am aware that Come By Chance, an existing town in Newfoundland, has a significantly larger population and is not the isolated outpost we imagined in our role drama. I am captivated by the town's name, reflective of our attempts to create imaginary landscapes.

<sup>27</sup> "Not yet known" describes the unknown that may become known through performance.

**within a moment, (re)searching journey-landscapes of possibility**

*and so, i stumble into the unknown landscape  
of a wind-swept outport where clothes dance on lines  
and possibilities for exploration stretch beyond  
the cold blue horizon of the atlantic ocean.*

I am emboldened by moments — moments that catch at the sleeve of my sweater as I bustle through the library, pulling books from shelves, smelling them as I have been instructed, looking for words images ideas that arrest time.

Moments, insistent taps of Morse code, that interrupt as I hunt among the volumes of research methodologies — semiotics, ethnography, hermeneutics, phenomenology, narrative inquiry — looking for resonance.

Moments that startle as I move awkwardly dangerously hopefully through drama in the classroom, looking for —

(what does a drama researcher-educator seek?)

*wait, the moment whispers,  
you know me.  
this space-moment resonates.  
go to your being, becoming.*

The research methodology we embrace shapes our understanding of our journey-landscape(s), our questions, our ways of being, becoming.<sup>28</sup> A research methodology is the lens through which we engage in our field of inquiry. Methodology betrays our communion

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<sup>28</sup> This dissertation is in playfull response to conversations among researchers who are seeking recognition and articulation of arts-based processes as legitimate site(s) and praxis of research (See Barone & Eisner, 1997). Elliot Eisner, an early advocate for the incorporation of arts-based processes in educational research, writes about "the potential of different forms of representation to uniquely influence our experience and, thus to alter the ways in which we come to understand our world" (1995: 1). In recent years, drama educators are being encouraged by practitioners in the field to articulate theoretical and methodological approaches to drama processes that may give insight into their work and its implications (Taylor, 1996; Somers, 1996). The establishment of The Institute of Drama Education Research which had its beginnings at a conference in Brisbane in 1995 speaks of a shared commitment "... to the ongoing and sustained inquiry into drama and arts education ... to canvass, debate and challenge the character of research activity" (Taylor, 1996: ix). Drama educator, Joyce Wilkinson (1996) queries, "If the arts in and of themselves are research, how do we explore and define what our own research methodology is? ... What is the Drama Education research paradigm?" (31). In my own efforts to conceptualize and articulate a theoretical positioning of drama research processes within educational research, I echo drama researcher, Sharon Grady (1996) who writes, "... if the function of research is to create new knowledge for the field, we need to accept that the knowledge we are creating via our choice of research methods are always 'interested,' partial and fleeting. How we arrive at our research designs and our written accounts is less a matter of continuing to perpetuate the qual/quant debate than attempting to arrive at 'something else' — something just on the tip of the tongue waiting to be articulated" (23). *in the wind clothes dance on a line* is an articulation of "something else", a performative sounding which hopefully resonates for the reader curious about the possibilities of performance as a research vehicle. While I have joined this conversation through the field of drama education, my focus is that of curricular concerns, challenges, explorations and investigations cross-curriculum within the field of education. An understanding of the possibilities and potential of performative inquiry need not be limited to the field of education. Performative inquiry as a research methodology may realize moments of interstandings not yet imagined in other disciplinary areas.

with our world(s)<sup>29</sup>; opening us (and our world) to inspection and intraspection, expectation and interspection.<sup>30</sup> To choose a research methodology is to throw off our clothes and hang them on a line, exposing our passions, our imperfections, our expectations, our blind spots, our anticipations, our hopes, our failings, and yes, our quest.

There are many research methodologies which invite thoughtful investigation, questioning, mapping of journey-landscapes of known-unknown world(s). The question that I, as researcher, must ask is —

*which research methodology will voice sound illuminate move  
within through my work as researcher and educator towards  
moments of interstanding that are my hope and ambition?*

*and so i realize performative inquiry  
and, in that moment,  
recognize a landscape of possibility.*

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<sup>29</sup> Knowing that we live not in a single linear one-dimensional world but multiple temporal dynamic world(s) of actions and interactions, possibilities, and multi-dimensional relationships.

<sup>30</sup> It is interesting to note that an etymological reading of method gives us “a shared (*meta*-) way (*-odos*)” (Davis, 1996: 26); a meaning (and practice) quite different to that which evolved during the seventeenth century. Method, as originally conceived was “... an approach to knowledge that foregrounded the place of common action and accord rather than the questing to erect an autonomous truth — the process rather than the goal” (Davis, 1996: 26-7). To envision method(ology) as a shared process is a (re)imagining of methodology as is currently practiced within conventional quantitative and/or qualitative models of research. Research methodologies such as action research, hermeneutics, and performative inquiry play research as research was once etymologically imagined. See Davis (1996), Lather (1991).

Performative inquiry is a (re)search methodology that recognizes explores honours the absences, journey-landscapes, and space-moments of learning<sup>31</sup> realized through performance. To entertain performative inquiry as a (re)search vehicle is to recognize the risk, the unexpected, the stop embodied in action and interaction through performance that opens us to possibility.

My understanding of performative inquiry as a research methodology has evolved through my praxis in performing arts education and through a shared conceptualization and articulation of *academic performance*, a theory of performance as learning, which will be described in the following pages. By embracing performative inquiry as a research methodology, I am proposing that performance as (re)search is a journey of “knowing doing being creating”<sup>32</sup> and that it is through performative inquiry that we may come to interstanding of our journey-landscape(s) that is the imagining of our universe —

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<sup>31</sup> The terms “space-moment of learning” and/or “space-moment of possibility” are used interchangeably in reference to the “aha!” moment of interstanding that occurs when the not yet known becomes known within the interstices of the real world (known and unknown) and the not yet real world or imaginative world of performance. A space-moment of learning speaks to the educational and/or curricular possibilities and opportunities realized and recognized through performance. A space-moment of possibility reflects the dynamic freefall within co-evolving new worlds and/or unfolding horizons realized and recognized through performance. It is important here to understand that I am not proposing a dichotomy or binary relationship between real and not yet real worlds. The imaginary world(s) of performance are interactive, dynamic, temporal, elusive, momentary (as are the so-called “real” world[s]). It is within the actions and interactions of imaginary and “real” play/performance/life, that performative inquiry aligns its quest.

<sup>32</sup> The concept of knowledge as “knowing is doing is being” is explored by Davis et al. (1996). I include the word “creating” in their trilogy to embrace our imagining of the not yet real which is embodied within our being becoming. I have, in an earlier paper, explored cognition as “knowing doing being creating” in which creating is seen as creative and critical action and interaction with others. See Fels (1995).

Understanding has become impossible  
because nothing stands under.  
Interstanding has become  
unavoidable because  
everything stands  
between.<sup>33</sup>

This dissertation seeks to illustrate the possibilities and interstandings which may be realized through performative inquiry as a (re)search methodology. What follows is an interplay of fragments, moments, interruptions — a danced choreography-geography on the edge of chaos. Remember that our journey-landscape of interstanding is not yet realized — it is as yet un-marked by your presence.<sup>34</sup>

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<sup>33</sup> Taylor & Saarinen, 1994: Interstanding 2.

<sup>34</sup> Perhaps we can pause for a moment and consider our reading of this text which is in itself a performance — performance which hopefully invites encourages seduces your participation. This work, both in its playfull quest and in its writing, is one of performative response to traditional modes of interpretation and expectations of documentation. The standard literature review has been replaced by a (re)play of intertextual moments that seek inter-connections, inter-relationships, inter-spacings between fields of curriculum, drama education and performance studies. Within your presence, this dissertation will co-evolve into a new possible world of performative doing knowing being creating that is imagining a possible universe that is us. If you momentarily slip off balance, embrace the moment of disequilibrium. It is our space-moment of possibility.

## performative inquiry — a (re)search methodology

*in a dramatic moment  
when the unimagined is imagined  
a sudden breath of possibility  
stops us mid-step.*

*we breath-dance  
unexpected journey-landscapes into being  
and in the space-moment of dance  
recognize absence  
embodied in our choreography-geography  
on the edge of chaos*

*and are momentarily awed.*

Performative inquiry explores and maps unexpected journey-landscapes of possibility that twist in sudden gusts of *breath becoming* like clothes dancing on a line in the wind.<sup>35</sup> In the opening minutes of our Newfoundland drama, Mario's clotheslines did not exist in our imaginary world<sup>36</sup> (although the population sign taped on the blackboard did). Nobody said,

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<sup>35</sup> I have chosen metaphors of journey, landscape, mapping for two reasons. First, these metaphors speak to the choreography-geography of performance within which imaginary worlds are created and played. Secondly, the metaphor of journey-landscape hopefully suggests the topographical and ecological sounding and presencing of performance inherent within new co-evolving worlds of possible exploration. A potential problem, however, with geographical metaphors, as suggested by Hurren (1998) is the perceived or implied impersonal viewpoint, overview, and/or bird's-eye view suggested by mapping which distances participants, researcher, and reader from the breath, touch, smells, taste, sound, play of journey-landscape embodied.

<sup>36</sup> An "imaginary world" or "not yet real world" is the performative or imaginative world(s) created by researcher and/or participants through performance or imaginative play (e.g., role play, improvisation, tableau, i.e., a variety of possible dramatic processes, conventions, and activities). Participants are aware of the imaginary world they are creating, a not yet real world that interacts with the "real world(s)." For the purpose of this dissertation, both the not yet real world(s) and the real world(s) are understood as a multiplicity of dynamic temporal worlds folding one into the other, within which the known and unknown, absence and possibility exist simultaneously. I do not wish to suggest a dichotomy nor the existence of two

“Oh, by the way, Mario, in this role drama the outport has clotheslines.” And yet Mario calls into presence our elusive outport by counting its clotheslines and

*in the spelling of that moment,  
we recognize a space-moment of possibility.*

Performative inquiry is a (re)search vehicle that embraces performance in creative action and interaction<sup>37</sup> as a space-action of learning and exploration. Its tools of inquiry are our bodies, our minds, our imaginations, our experiences, our feelings, our memories, our biases, our judgments and prejudgments, our hopes and our desires — simply, our very *being, becoming*. The catalyst for inquiry may be a question, an event, a theme, an issue, a feeling, a line of poetry, a fragment of lived experience, a narrative quest, a human condition: any phenomenon which we wish to explore through performance. Analysis<sup>38</sup> and

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separate worlds. An imaginary or not yet real world(s) is not a separate entity from the real world(s) but co-evolving in creative action and interaction. It is the interstices of these worlds (real and not yet real) in which “aha!” moments — i.e., space-moments of learning — may be individually or collectively realized-recognized. The “not yet known” refers to the possibilities absences within presence of the unknown becoming known. See footnote 90 on page 57 for discussion on absence.

Interactions between participants encompass interactions of real world(s) and not yet real world(s) as experienced by individual participants and embodied within the action-interaction of performance. A space-moment of learning may be unique to one of the participants but, in the shared remembering, may become part of the group mapping of the journey-landscape performed. What is known in my world(s), for example, may be unknown or not yet known in another’s real world(s) and in their not yet real world(s). The real world(s) is not a universal rendering nor static positioning but speaks to the multiple realities and possibilities within our experience of being, becoming.

<sup>37</sup> Understanding that creative action and interaction (i.e., performance) embodies critical thought and reflection.

<sup>38</sup> How odd to use the word “analysis” within the context of performative inquiry. One of the challenges of this work is (re)imagining a language of research which resonates with the praxis of performative inquiry. Analysis for this dissertation means reflection, response, and (re)imagining possibilities for (re)search as realized and/or yet to come.



motivation are questions: *What if? What matters? So what? Who Cares? What happens?*<sup>39</sup>

These questions are not separate from but embodied within performance.

Tugging his drowned grandfather's sweater over his head, the fisherman thrusts it into the startled hands of the business tycoon. "We had dreams and you stole them from us. Here. Take it! I don't believe that my grandfather will sail home, the cod leaping in his bow waves — take his dreams and mine with you back to the city." Nobody speaks. Nobody moves. The silence is deafening. And then the moment erupts into action.<sup>40</sup>

I have to tell you I was so full of emotion when you threw in your sweater. When I came up to get you, I was almost in tears. I could feel your despair, your final act. You had lost all faith in your world, and were cashing in the chips. I really had to come and help you. I felt that it was my duty as a fellow fisherman to come to your aid. It was very very powerful for me. If there was a dramatic moment in the course, that was it for me.<sup>41</sup>

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<sup>39</sup> I wish to thank Karen Meyer for introducing me to these three questions: *What if? What matters? So what?* which underline her work in science education. These questions resonate with my own (re)search and understanding of performance as an investigative vehicle which explores, experiments and (re)imagines world(s) of possibility. *What if?* is an invitation to imagine other possibilities, new scenarios, alternative perspectives. In science, the question, *What if?*, invites the scientist to alter variables. For example, let us examine an object floating in a glass bowl of water. What if we change the shape of the object? What if we change the liquid from water to oil? What happens? The question, *What matters?*, invites us to look at the entire system under investigation. Using the same example of buoyancy, what matters in the system is the bowl, the liquid, and the object. We must also consider whether the size of the object, its shape, weight, material matter in terms of the object's buoyancy. Similarly, does the material of the bowl matter? Does the amount of liquid in the bowl matter? The question, *So what?*, places the experiment and our learning about buoyancy within a context and environment of application. Knowing, for example, that shape or weight subject to water displacement affects an object's buoyancy is useful in the understanding of buoyancy and its application. The question, *Who cares?*, was contributed by my son, Marshall, during a session investigating shadows conducted by Karen Meyer with his grade five class. If political or personal action is to be considered, the question, *Who cares?*, helps us to locate those with whom and among whom action may be instigated.

<sup>40</sup> Teacher-in-role, Newfoundland role drama, created in a drama education class, University of British Columbia, July 1995.

<sup>41</sup> Student, extract from written reflection, Newfoundland role drama, July 1995.

That the drowned grandfather's sweater represents a symbol of hope is established by the fisherman during a teacher-in-role monologue initiating the drama. The fisherman explains that he wears his grandfather's sweater when he goes cod-fishing because he imagines

... someday, you know, I'll be out fishing and I'll see my grandfather's boat returning to harbour. And he'll be bringing the fish back with him. Millions of them, jumping in the bow waves. And he'll yell, "Boy, hand over that there sweater of mine that you've been wearing. It's darn cold out here."<sup>42</sup>

The sweater becomes a symbol of hope lost in the final moments of the drama. By relinquishing his grandfather's sweater to the business tycoon (who has betrayed the community), the fisherman signals not only his dismay at the turn of events but also the loss of the community's dreams of self-sufficiency and recovery — a recognition which erupts in communal silence among the assembled villagers and invites a fellow fisherman's tears. The moment is a powerful and poignant moment for a community of students who must ask

*How do I (we) respond? What action is now possible?*

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<sup>42</sup> Teacher-in-role, Newfoundland role drama, July 1995.

Mapping-in-exploration<sup>43</sup> is multi-dimensional as students (re)act in role and as themselves, imagining “what if?” and questioning “what matters? so what? who cares? what happens?” within their individual and shared journey-landscapes and through reflection, come to interstanding.

*clothes on a clothesline  
silence that mourns the loss  
of a grandfather's life and  
an outport's dreams*

*these are space-moments of learning realized through  
performance and recognized by participants and researcher  
individually and/or collectively.*

*space-moments of possibility  
playing on the fingertips of unsuspected  
angels*

---

<sup>43</sup> “Mapping-in-exploration” resonates with Schön’s (1983) articulated “reflection-in-action” which informs the work of a number of drama researchers (see Taylor, 1996). Within performative inquiry, mapping-in-exploration (or “map-explores” or “map-exploration”) embodies both critical and creative action and interaction through personal and communal reflection, shared remembering and conversation, writing (in or out of role), (re)imagining, and questioning, both within and during the performance and following — understanding, of course, that, like the jostling of molecules that announces sound, there is no end dance to performative map-exploration. Map-exploration invites continuing action and interaction, a temporal trespassing through possible new worlds.

Enactivists, influenced by Eastern philosophy, speak of “mindful awareness” within action and interaction (Varela et al., 1993) which guides a performative researcher to careful response. The mapping of aha! moments within journey-landscapes requires the mindful awareness and presence of the performative researcher within and through the inquiry, particularly in terms of participating, reframing, reimagining, questioning that anticipates, shapes, and reshapes performance and mapping-in-exploration.

Researcher and participants explore co-evolving worlds of light and darkness, sound and silence, movement and stillness, tension and release, experience and imagination, relationship and isolation within creative interlogues that invite the magic and possibilities of performance.<sup>44</sup> Our interest and investigation(s) in performative inquiry lie in those performances called into being through improvisation, role drama, creative movement, soundscapes — performance embodying journey-landscapes within an inquiry suggested by the researcher and/or participants.

The researcher-participant<sup>45</sup> is an adventurer, a facilitator, an experimenter, a catalyst who invites encourages dares exploration through “the laying down of possible new worlds.” The challenge of the performative researcher is to map-explore the elusive, to honour recognize (re)imagine the *what if?* realized into being.

Performative inquiry is a risk-taking venture that promises no final destinations, only new possible horizons to explore. Theatre director, Alan Hancock advises, “We are not working towards a fixed goal, [or] through a process which continually narrows down rather than opens up the scope of the project ....”<sup>46</sup>

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<sup>44</sup> It is interesting to note that in the study of physical sciences, light, sound, and motion are key elements of inquiry. Scientists explore these phenomena through experience and imagination (i.e., experimentation and theory) within a creative interlogue with the phenomena, recognizing the possibilities and magic of science that elude explanation.

<sup>45</sup> The term “researcher-participant” implies that a performative researcher is simultaneously researcher and participant. The creative action and interaction of research plays in the interlogue-interaction between. The term, “researcher-participant(s),” includes both the performative researcher and the participants involved in the inquiry.

<sup>46</sup> Hancock (1994). No page number.

*Not a narrowing down but an opening up.*

Through performance, researcher-participant(s) realize-recognize<sup>47</sup> journey-landscapes of possibility, simultaneously and co-currently map-exploring unexpected space-moments of learning through reflection, writing, (re)imagining,<sup>48</sup> questioning. Our map-exploration is dynamic, unfolding, co-evolving — spell dancing traces of ever spiraling circles of interstanding<sup>49</sup>

*a space-moment of learning arrests  
and pausing, we hear the wind's absence.*

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<sup>47</sup> I hyphenate “realize-recognize” to indicate the near simultaneous space-moment of learning that happens when a “new possible world” is realized through performance and recognized (aha!) by the researcher-participant(s). The recognition that occurs through performative inquiry speaks to the communal and/or personal mappings of those aha! moments by the researcher in reflection with participants.

<sup>48</sup> (Re)imagining that is performance.

<sup>49</sup> See Linds (1998) for a playfull spiral diving into performative possibilities.

## knowledge not as product but as action-verb

*Intellect's light sees but is powerless to do.  
The body's light sees and is able to do.*<sup>50</sup>

*The red-winged blackbird flies in us.*<sup>51</sup>

Critical to understanding performative inquiry as a research methodology is the notion that it is *through performance* that cognition or learning may be realized.<sup>52</sup> The theory of cognition underlining performative inquiry gives flight to the possibilities of performance as a research process and/or learning vehicle. Our question then is, *what is cognition?* How do people learn? And how is it possible that performance dances us to space-moments of learning?

Traditional cognitive theories evolved from 17th century Descartes' mind-body duality which located learning in the mind, and delegated the body to the simple task of housing the mind; a concept which influenced many Western cognition theorists to define knowledge primarily as a "... mental representation: the mind thought to operate by manipulating symbols that represent features of the world or represent the world as being a

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<sup>50</sup> Appelbaum, 1995: 121.

<sup>51</sup> Susan Griffin, as quoted by Cameron (1996). No page number.

<sup>52</sup> The conceptualization and articulation of performance as cognitive action is a joint exploration by myself and Lee Stothers (See Fels & Stothers, 1996). Our work co-evolved through conversations in which she introduced Japanese philosophy and knowledge of Noh theatre and I contributed notions of enactivism, etymological, and experiential readings of performance in education.

certain way.” Twentieth century technology provided the perfect metaphor: “... the central tool and guiding metaphor of cognitivism is the digital computer.”<sup>53</sup>

When translated into educational practice, traditional cognitive theories proposed that learning could be described as the transmission of information from teacher to student, a process similar in action to a humanized computer networking system (albeit with the bulk of data generated by the teacher). Working with the metaphor of the human mind as computer, I am reminded of an exchange during a humanities education conference<sup>54</sup> in 1995:

The presenter unveils a computer program designed for teaching fine arts. “Students work through the program themselves. There’s no need for any teachers,” he proudly announces.

A fine arts professor attending the session, argues against the replacement of teachers by computers in arts classrooms. In reference to students, she declares passionately, “Those are *living minds* sitting there!”

The image of pulsating brains seated on classroom chairs interfacing with a teacher causes me to giggle behind my program notes. I am also repulsed. *Wait a minute*, I want to interject. *They’re living bodies, bodies that want need ache to dance.*

Descartes’ mind-body duality is problematic: the separation between body and mind inherent in traditional cognition theory suggests a division between “doing” and “knowing,” a dichotomy which belies the experience of learning. In the riding of a bicycle, for example, how does the body and mind co-ordinate the necessary knowledge and action to achieve the

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<sup>53</sup> Varela et. al. 1993: 7, 8.

<sup>54</sup> National Association for Humanities Education Conference, March 30-April 1, 1995, Cincinnati, Ohio.

balance, forward momentum, spatial awareness, and road sense to negotiate the landscape?<sup>55</sup>

In the choreography-geography of dance, who realizes the dance? Body or Mind?

Choreographer or Dancer? And what of spatial interactions between time, movement, dance floor, dancer, and audience?

I confess, it was therefore with enthusiasm and a sweet shock of recognition that I discovered enactivism, an epistemology which envisions cognition as embodied within the knower through action and interaction.<sup>56</sup> And it is within this interpretation of cognition that performative inquiry positions itself.<sup>57</sup>

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<sup>55</sup> See Moustakas (1990) whose example of bicycle riding details the multi-faceted knowledge required to ride a bicycle.

<sup>56</sup> Enactivism is but one epistemological reading of cognition currently being voiced which challenges traditional Cartesian-influenced theories of learning.

<sup>57</sup> In the conceptualization of performative inquiry as a research methodology, I have chosen to incorporate the perspectives of enactivist theory rather than referencing phenomenological approaches to the inquiry of drama (see States, 1985; Garner, 1994). My reading of phenomenology is that our understanding (i.e., interpretations) of our world(s) is through perceptual readings of our world(s) as actualized by embodied observation. Garner (1994) suggests that within drama, world(s) are actualized through the embodiment of space by an actor (or other) and then read by the spectator's gaze or "bodied eye," an interaction within which the essence of action(s), world(s), meaning(s), or imagining may become known to the spectator. States Garner, "Bodied spatiality is at the heart of dramatic presentation, for it is through the actor's corporeal presence under the spectator's gaze that the dramatic text actualizes itself in the field of performance" (3). Garner's use of "bodied spaces" and "bodied eye" signals a phenomenological spatial reading which incorporates location, history, experience, and identity (i.e., individual and communal; e.g., racial, ethnic, cultural, gendered, sexual, social, religious, economic, political). At first glance, the similarities between enactivism and phenomenology appear as two sides of the same coin — a simple turning of a prism in the light. However, it is the word "glance" or rather Garner's term "spectator's gaze" that alerts us to subtle shading that finally seduces me into the enactivist camp (albeit momentarily, since performative inquiry dances presence in the gaps of interplay between enactivism, performance and hermeneutics). Understanding that phenomenology has, over time, realized numerous academic readings and that our own reading of phenomenology is but a trick of light which may be revisited by a twisting of our prism, it appears to me that phenomenology understands our world(s) as bodied spaces/text actualized through the perception of a bodied eye. Enactivism, on the other hand, proposes the co-actualization and co-emergence of possible worlds in inter-dependent action and interaction. Performative inquiry, as will be illustrated above, is an interplay of inquiry and performance which realizes



The works of enactivists<sup>58</sup> draw on new biology and phenomenology for an ecological (i.e., interactive, interrelational, interdependent) reading of cognition. The Cartesian duality of mind-body is replaced by the concept of embodiment which acknowledges the interactional embodiment of knowledge, cognition, and experience.<sup>59</sup> State the authors of *Embodied Mind*,

For us, embodiment has this double sense: it encompasses both the body as a lived experiential structure and the body as the context or milieu of cognitive mechanism.<sup>60</sup>

Cognition is seen not as a mental operation separate from the body in action and interaction with others but as “... *an ongoing bringing forth of a world* through the process of living itself.”<sup>61</sup>

*Knowledge is fluid, changing, and personally and situationally interdependent*

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co-evolving worlds through an interpretive ecological co-emergence in which the spelling of possible new worlds may be realized (i.e., an ecological birthing realized through performance). Finally, I am anxious to realize a research methodology that recognizes learning within the actions and interactions of the “laying down” of new possible world(s) through performance. I prefer, therefore, in declining partnership with phenomenology, to risk a turn on the dance floor with the co-evolving world(s) of enactivism, hermeneutics, complexity, and performance; embodied dancing which resonates with the ecological revolutionary spirit of my work and (re)cognition of our world(s) within through performative inquiry.

<sup>58</sup> Maturana & Varela (1992); Varela et al. (1993); Davis et al. (1996).

<sup>59</sup> See Varela et al. (1993).

<sup>60</sup> Varela et al., 1993: xvi.

<sup>61</sup> Maturana & Varela, 1992: 11, my italics.

“What we do,” Varela says, “is what we know, and ours is but one of many possible worlds. It is not a mirroring of the world, but the laying down of a world ....”<sup>62</sup>

Knowledge is “knowing is doing is being,”<sup>63</sup> not in isolation but in embodied interaction with others and environment:

Far from merely existing relatively autonomously in the same location, individual and environment continually specify one another. Just as I am shaped by my location, so is my location shaped by my presence.<sup>64</sup>

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<sup>62</sup> Varela, 1987: 62.

<sup>63</sup> Davis et al., 1996: 155.

<sup>64</sup> Davis et al., 1996: 157. Our world(s) is not realized in isolation, as Descartes proposed, but in action and interaction with multiple worlds co-emerging, co-evolving through our knowing doing being creating with others. Within our actions and interactions are gaps absences possibilities that may be danced into being becoming in action and interaction with others or, through continued absence, are the yearning, the anticipation, the not yet known that moves us, silences us, gives us pause. Who can say from where Mario called upon his clotheslines to breathe life into our imaginary outport? Perhaps he had traveled in Newfoundland and had photographed the clotheslines that populate an outport's backyards. Perhaps he remembered clotheslines from his youth, his mother's clothesline weighted with evidence of numerous offspring. Perhaps he recalled clotheslines strung like telephone lines between balconies overhanging a Montreal back alley, the loose limbs flapping sunlit conversations. When asked to imagine our Newfoundland outport into existence (*how many people live here, Mario?*), he chose the possibility of clotheslines as a means of knowing our imaginary populace. My own memories of clotheslines are from my childhood in Quebec, my mother leaning into the chilled winter air to harvest the frozen bodies of bedsheets, my father's white shirts, my schoolgirl blouses. Our colliding images startle. Of course! Through clotheslines we may come to know our imaginary outport! What may be a gap, the not yet known within our mutual co-evolving world(s), may be already realized-recognized within our individual worlds of experience, and yet, it is within the embodied interaction, that possibility absence the not yet known is spelled into being becoming. Absence dances into being a line of flannel shirts, worn trousers, a flowered print dress, a fisherman's sweater, a child's overalls, an unexpected chorusline that shouts our outport's presence, and, within that moment, our role drama voices possibility. Our shared moment is a gift, a remembering, an anticipation, a fragment of previous possible world(s) unique to individual experience that breathe presence possibility within our co-evolving world(s). And in the colliding moments of realization-recognition, our knowing being doing creating is shared and celebrated.

There are no observers in the realization and recognition of our world(s).<sup>65</sup> Observer is creative action and interaction into being becoming.

*Knowledge is a verb, creative, interactive, co-evolving in action and interaction.*

Enactivism invites us to investigate the interplay and inter-relationships between learners, object or action of inquiry, context, and environment. Enactivism challenges us also to reconsider the interplay between researcher and participants,<sup>66</sup> the site and journey of research, and possibilities arising when researcher and participants “bring forth a world together” through performance. If knowledge is realized through creative action and interaction, that is, “knowing doing being creating,” then the possibility of performance as a place of learning and consequently, an action of research, begs investigation.

*(an aside, in which the researcher protests the privileging of mind over body in the term embodied mind)*

Embodied mind. Why is the body marginalized as an adjective? Isn't there a better term for body and mind co-evolving in creative action and interaction?

Yes, the Japanese term “shinshin” or “bodymind oneness” where the movement of mind and body become indistinguishable ... of self-forgetfulness, in which consciousness of oneself as the subject of bodily movement disappears and becomes the movement itself that is dancing.<sup>67</sup>

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<sup>65</sup> See Maturana (1987).

<sup>66</sup> Questioned also is the inter-dynamic relationship of researcher as simultaneously researcher and participant.

<sup>67</sup> The Japanese term “shinshin” or “bodymind oneness” speaks from an eastern philosophy, and is a concept for which I am indebted to Lee Stothers. I am grateful for and honoured by the drawing on page 45, courtesy of June and Ted Aoki. Stothers delves into the work of Japanese philosopher, Yuasa Yasuo, to explain bodymind oneness. Yasuo talks of one of the states of Noh performance as “freedom in dancing without consciousness of its performance

## Shinshin (Bodymind oneness)

身

*mi (body)*

心

*kokoro (heart-mind)*

*It is only with the heart that one can see rightly;  
what is essential is invisible to the eye.<sup>68</sup>*

Does bodymind oneness have anything to do with enactivism and cognitive theory? May I, through performance or *creative action and interaction*, realize a place of knowing?

*Consider this. The artist is attempting to express a unique reality. This is not a conceptual reality that becomes the object of cognition — it is a pre-conceptual (... transcognitive), intuitive reality which cannot be expressed in concepts ...<sup>69</sup>*

... but which must be bodymind danced to action! And if “knowing is doing is being is creating,” do we, through *bodymind dancing* create new knowing? Is transcognition or a space-moment of learning possible within performance?

And it is this inquiry which leads us to the “edge of chaos” and multiple possibilities that are embodied within performance.

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... it is a state of ‘bodymind oneness’ where the movement of mind and body become indistinguishable ... of self-forgetfulness, in which consciousness of oneself as the subject of bodily movement disappears and becomes the movement itself that is dancing” (1993: 27 as quoted in Fels & Stothers, 1996: 258). Stothers explains, “Yuasa translates the Japanese, shinshin, as bodymind, with ‘body’ preceding ‘mind,’ in order to avoid the dualism implied in the hyphenated ‘mind-body,’ in which the ‘mind’ is prioritized over the ‘body.’ ... In the state of ‘bodymind oneness,’ however, the mind moves while unconsciously becoming one with the body” (Stothers as quoted in Fels & Stothers, 1996: 258-9).

<sup>68</sup> de Saint-Exupéry, 1982: 70. *The little prince* was first published in 1943. Note in the diagram above that “shin” or “kokoro” translates as “heartmind”: recognition of the entwined presence of heart and mind. That heart is embodied within bodymind oneness captures the essence spirit joy terror of knowing being doing creating. Without heart, knowledge-seeking is without compassion.

<sup>69</sup> Japanese philosopher, Nishida Kitaro (1870-1945) as quoted by Stothers in Fels & Stothers, 1996: 259.

**academic performance: possibilities on the edge of chaos**

*(an unexpected space-moment of learning that dances into being)*

*a space-moment of life  
being becoming  
a space-moment  
of learning  
possibility dancing  
on the edge of chaos*

*breath-dance our absence present.*

The conceptualization of performance as a possible action-site of learning is articulated by myself and Lee Stothers and provides the theoretical underpinning for performative inquiry as a research methodology.<sup>70</sup> When she first introduced the term *academic performance*<sup>71</sup> into our conversation, I turned to etymology in search of undercurrents of wordmeaning and, to my delight, realized complexity.

A playful etymological investigation realizes an unexpected reading. Although at first glance, the term *academic performance* evokes images of exams, assessment, and statistical analysis, etymologically, it speaks to performance as a place of learning within an ecological spelling of possibilities.

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<sup>70</sup> See Fels & Stothers (1996).

<sup>71</sup> The term "academic performance" was coined by Lee Stothers. See Fels & Stothers (1996).

**academy**<sup>72</sup>

- (1) name of a park near Athens from Greek *Akademeia*, the grove belonging to Akademos, a Greek hero of the Trojan War
- (2) any school or place for training

**-ic**<sup>73</sup> (adj.)

- (1) of having the nature of
- (2) having to do with
- (3) constituting or being
- (4) containing or made up of
- (5) made by or caused
- (6) like, like that of
- (7) an art or system of thought like music, logic

Plato is said to have taught under a tree  
and it is this ecological remembering  
of *academy*  
that we want  
to embrace.

The word *performance* invites  
a jig-saw puzzle approach  
with multiple possibilities  
that dance us into  
unexpected  
landscapes.

In our reading, should we weight  
*form*  
or *action*  
in *per-form-ance*?  
knowing that (d)ance is action.

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<sup>72</sup> Barnhart (ed.), 1988: 6.

<sup>73</sup> Barnhart (ed.), 1988: 503.

And the prefix *per*  
suddenly takes on  
a split-personality

when juxtaposed

with *form*  
meaning “utterly, throughout and through” form  
but also “to do away, away entirely or to [the] destruction” of form.<sup>74</sup>

*is performance action both within through and without form?*

In our reading of *performance*  
we imagine  
a creative action-interaction

a birthing and rebirthing  
simultaneously within form and through the destruction of form

and suddenly find ourselves  
in an unexpected space  
between structure and chaos

a space which complexity theorists call  
the edge of chaos  
where  
patterns of interrelations  
are continually created  
and recreated through

an “endless dance  
of co-emergence.”<sup>75</sup>

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<sup>74</sup> Barnhart (ed.), 1988: 398, 775.

<sup>75</sup> Waldrop, 1992: 12.

The “edge of chaos” is the (re)(un)balancing point between order and chaos where the “components of a system never quite lock into place, and yet never quite dissolve into turbulence, either ... the one place where a complex system can be spontaneous, adaptive, and alive.”<sup>76</sup> What happens then, when we co-emerge an etymological reading of *academic performance* with an ecological playing of possibilities?

*academic performance: a space-moment of learning  
both within and without through which action-process  
occurs utterly through form and simultaneously through  
the destruction of form.*

not definition, but possibility.

*the edge of chaos where possibilities seduce and life dances into being —*

*Aha!*

It is in this space, we suggest, “on the edge of chaos,” that performance bodymind dances possible new worlds into being. These co-evolving new worlds, or what I wish to name “aha!” moments — momentarily, elusively breath-danced into being, becoming on the edge of chaos — are space-moments of learning, realization-recognition of not yet known worlds made known through performance.

*we are always in action-interaction with our co-evolving landscape  
that is this moment.  
us. in interaction. now.  
performance — bodymind dancing on the edge of chaos.*

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<sup>76</sup> Waldrop, 1992: 12.



**aha! realizing unexpected landscapes in a danced moment of possibility**

*Singing the space  
there are meetings  
and I am transformed ...<sup>77</sup>*

“Aha!” moments are moments of transcognition — space-moments of learning that come into being in the interstices between the real world(s) and the not yet real world(s) of performance. The aha! moment realizes unexpected connections for us, illuminating the not yet known in the brilliant light of the dance. An aha! moment is not an end point in learning (or research), but a landmark or signpost in a co-evolving journey-landscape(s) that welcomes further exploration and contemplation.

Aha! moments are those moments when, within the experience of performance and/or during reflection, the participant(s) “sees the light” or “the lightbulb clicks on,” and a situation, action, idea, or relationship is understood within the context of the participant(s)’s real and/or imaginary world(s). Aha! moments come from a place of trust, where a momentary imbalance sends us scrambling to secure our footing on unfamiliar ground. An aha! moment happens when participants knowingly or innocently throw themselves into freefall, and are arrested in flight.

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<sup>77</sup> Barba, 1995: 165.

My coming to aha! moments within unexpected journey-landscapes has been through performance in my praxis as a performing arts educator *on playing fields with children and students who have gifted me with space-moments of possibility*, but it is possible to listen to resonances of others who have theorized imagined spelled new world(s) into interstanding.

Drama educator, Gavin Bolton, speaks of the “here and now,” “spontaneous,” and “existential” moments which may be found in dramatic playing which he states have two components: the descriptive and the existential.<sup>78</sup> According to Bolton, when participants “submit” to the fictitious or imaginary world they are creating, the dramatic play is “here and now”; *where, I suggest, performers straddle the not yet real and real world(s); and, in the interstices, a possible not yet known world becomes known.*

*it is in the meeting places between we become  
Here and Now, something happens.*

Theatre educator and activist, Augusto Boal, writes of the transformative possibilities within theatre through which performance is the dynamic mechanism.<sup>79</sup> In *image theatre*, for example, participants are invited to body sculpt fellow participants to illustrate something as it is or in Boal’s term, the *actual image*. They then resculpt the participants’ bodies and positionings to show their *ideal vision*. The critical moment however in the exercise is when students are asked to show a *transitional image*, to illustrate the possible movement or change from *what is* to an ideal of *what might be*. In Boal’s terms, it is the feasibility of

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<sup>78</sup> Bolton, 1992: 10, 17.

<sup>79</sup> See Boal (1985).

change and hopefully, the possibility for change that will ignite revolutionary action.

*Through within the creative-critical interaction and action of creating the transitional image  
and the following conversations participants may realize-recognize opportunities for change.*

*Pause for a moment and imagine this ...*

In performance  
illustrate life-worlds of natives.

One group  
body argues  
sculpting possibilities  
through movement  
of arms legs bodies heads.

*Show us.*

And they assemble a human totem pole.

Ah, I think,  
each one will bodyspeak his or her placement on the totem as  
one of the mythological beasts.

But no.  
The priest. The drunk. The sexually-abused. The hunter displaced. The storyteller silenced.  
Raven present in his absence.

One by one, bodies collapse at the feet of the totem pole.  
Tumbled bodies.  
Crumbled hopes.  
Disrupted life-worlds  
of a proud people.<sup>80</sup>

And if you (re)carve the totem pole...?

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<sup>80</sup> Tableau by a group of students in a drama education course, University of British Columbia, Summer 1996.

Boal describes the relationship between the two worlds postulated by Plato and Aristotle, namely, the world of concrete realities and the perfect world of ideas. Plato, he suggests, allows some participation between the world of concrete realities and the perfect ideas which they imitate. Aristotle, on the other hand, Boal argues, does not allow for this kind of participation between the two worlds. Instead, he suggests, Aristotle introduces a dynamic component in which Matter (pure potential) seeks to realize Form (pure act). The movement of things towards form is what Aristotle calls “enactment of potential.”<sup>81</sup> Explains Boal, “There are not two worlds; there is no (participation): the world of perfection is yearning, a movement that develops matter towards its final form.”<sup>82</sup>

*yearning to become known  
within the here and now of  
lightshadows dancing*

Boal suggests that “mimesis,” as articulated by Aristotle, has been wrongly translated to “art imitates nature,” when, in fact, Boal argues Aristotle’s meaning was that of “art re-creates the creative principle of created things”<sup>83</sup> where nature is read not as a noun but as an enactive verb.

The process and principle of “re-creation” resonates with my understanding of co-evolving worlds as realized through creative action and interaction or, simply, performance. “Theatre is change and not simple presentation of what exists: it is becoming and not

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<sup>81</sup> Boal, 1985: 8.

<sup>82</sup> Boal, 1985: 8.

<sup>83</sup> Boal, 1985: 1.

being.”<sup>84</sup> What is interesting within our conversation of co-evolving worlds and our etymological reading of performance is Boal’s interpretation of Aristotle’s work as one of dynamic evolution through movement. *We could, if we wanted, draw a similarity to our co-evolving worlds in which “enactment of potential” is the potential possible danced on the edge of chaos.*

Performance theorist, Peggy Phelan, proposes that “Performance boldly and precariously declares that Being is performed (and made temporarily visible) in that suspended in-between.”<sup>85</sup>

Performance ... usually occurs in the suspension between the “real” physical matter of the “performing body” and the psychic experience of what it is to be em-bodied. Like a rickety bridge swaying under too much weight, performance keeps one anchor on the side of the corporeal (the body Real) and one on the side of the psychic Real.<sup>86</sup>

Within the interdance(s) of our not yet real world(s) and our real world(s) that is performative inquiry’s “edge of chaos” — Phelan’s momentary suspension bridge of possibility imagined into being through performance — space-moments of learning are realized. *And it is within these meeting places that research through performance is possible, a seeking of disequilibrium and temporal balance that spells our not yet known world(s) into being.*

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<sup>84</sup> Boal, 1985: 28.

<sup>85</sup> Phelan, 1993: 167.

<sup>86</sup> Phelan, 1993: 167.

Theatre director and actor, Eugenio Barba, suggests that performance seeks to create-destroy equilibrium. On the individual level of the actor, a precarious balance must be established if “life action” is to be realized: “The aim is permanently unstable balance.”<sup>87</sup> Performance as improvisation then is a possible altercation of balance in which the real world is thrown off balance by an imagining of a possible not yet real world that challenges the known. This newly achieved transitory balance in disequilibrium throws the status quo momentarily askew and, in the attempt to secure (temporarily) new balances, the unexpected happens. *To perform is to work within and through form and simultaneously through the destruction of form, a precarious balance that realizes patterns-possibilities in the wind that dance clothes on a line suspended between.*

It is within this space-conflict of temporal imbalance that the dramatic existential moment is born — the aha! moment that is our learning, our knowing, our being becoming. And it is these communal and individual space-moments of possibility that performative inquiry seeks and maps, charting unexpected waters with the navigational skills honed by terror and risk and possibility.

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<sup>87</sup> Barba, 1995: 19.

## exploration in the interstices

*The essence of theatre (and drama) is within a mystery called “the present moment.” “The present moment” is astonishing. Like the fragment broken off a hologram, its transparency is deceptive. When this atom of time is split open, the whole of the universe is contained within its infinite smallness.<sup>88</sup>*

Space-moments of possibility momentarily mark our presence within an uncharted galaxy of interstanding. *We are here now in this moment. And something happens.* Space-moments of possibility cannot be anticipated nor engineered nor plot-narrated by the well-meaning researcher. The “present moment” teases the diligent researcher, slips between holes in the net, fleetingly blush-paints the cheek of unsuspecting adolescence, and wing-dances uncaptured through a carefully calculated field of inquiry. Stalking a dramatic moment requires the patience of a fly-fisher, the wiliness of a coyote, the breath of a winged angel.

*The performative researcher is haunted by absence, troubled by silence  
— resonance sings presence into welcomed discord.*

Performative inquiry is an ecological interstanding that recognizes co-evolving world(s) of performance and cognition in a transformative dance. Through performative inquiry as research methodology, we, as researchers, seek aha! or dramatic or existential moments: what Bolton calls “moments of spontaneity [which] occur ... when suddenly something seems ‘real’ to the actors, when there is a sense of ‘it is happening now’ .... *It is an important feature of existential occurrences that they cannot be repeated.*”<sup>89</sup>

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<sup>88</sup> Brook, 1993: 97, 98. My parentheses.

<sup>89</sup> Bolton, 1992: 9.

*Unrepeatable. Unexpected. Elusive.*

Performative inquiry realizes unexpected space-moments of possibility through creative action and interaction with an environment (real and imagined) and others (both “as is” and “in role”).<sup>90</sup> We freefall into interstices between the real and the not yet real worlds where absence<sup>91</sup> (i.e., the not yet known) becomes present. We embody these moments to

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<sup>90</sup> Understanding that there is no clear demarcation between. An individual “in role” is simultaneously embodied “as is,” the two mutually informing and responding to the parameters of the drama. Even within so-called “real life,” an individual plays numerous roles depending on the context, environment, and presence of others. The interactions between may result in unexpected tensions. In role drama, for example, it is not uncommon for a participant to undertake an action or response congruent to the situation of the drama and the role which she or he is playing, and yet, if that same participant was faced with a similar situation outside the drama, he or she might opt for an alternative response or action, given personal convictions or desires. Role drama invites participants to “try on” possibilities, actions, and interactions, sometimes by choice, sometimes in unanticipated response. During a role drama (January 1998) in which participants imagined themselves victims of war who had escaped to a refugee camp, one participant announced that he would not stay in the camp, his intention was to return to his embattled city to seek revenge. During debriefing, this student reported being disturbed by his response, since he had always imagined that his reaction in such a situation would probably be one of non-violence or pacifism. He surprised both us and himself by his response in role, opening an unexpected place for exploration. I remember the chill of the hairs on the back of my neck rising at his words, only to be startled yet again by a voice beside me. “I too will return to our city. But I do not seek revenge. I call it justice!” These words rang out in the silence that gaped before us when the first student announced his murderous intentions. Revenge or justice? We suddenly freefall into a space-moment of rethinking our own interpretations, responses, proposed actions. It is the tension between these actions (the expected and the unexpected; the imagined and the not yet imagined; the imaginary and real world[s] of experience), and our ensuing embodied conversations that present possibilities for new interstandings.

<sup>91</sup> In current academic discourse, absence is generally understood (following Derrida), as the “deferred, the naturalized, the literalized, the taken-for-granted” (Davis, 1997, in conversation). For the purpose of this dissertation, I understand absence as potential or possibility which may be enacted through performance and recognized — and through recognition, become present and known, i.e., embodied. Of course, what may be ‘absence’ or ‘invisible’ in the experience/knowing of one person within their multiple worlds, may be already known and explicit to others. However, it is through embodied action and interaction with others, journey-landscapes of possibility, that absence becomes visible, i.e., realized and recognized, within a co-evolving co-emerging world(s). See Abram’s (1996) discussion of the “invisible or absence within presence.” This reading of absence includes the spelling that is possible through performance in which the not yet known becomes known, as when Mario’s clotheslines came into being, sounding presence by Mario’s counting.



map-explore the journey-landscape of knowing doing being creating. And in the mapping, possibility enters our language of action and interaction.

*Performance is the breath-blood that dances  
possibility and interstanding into being.*

Performative inquiry is realized on the edge of chaos within which dramatic interactions, patterns, and forms offer researcher-participants the opportunity and response/ability<sup>92</sup> to play into interstanding the not yet imagined. Twist the prism of dramatic exploration, and light falls in unimagined patterns across a danced inquiry.

*Form must be fluid, flexible, co-evolving, and always present.*

We are interested not in dichotomies (which are not possible within an ecological reading) but in interactions between. To undertake performative inquiry is not to investigate performance but to illuminate transcognition. It is through the interdance between the not yet real world(s) of performance and the real world(s) that

silence

absence

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<sup>92</sup> See Felman & Laub (1994). Shoshanna Felman plays on the word, *responsibility*, breaking it into two: *response* and *ability*. In the telling of a story where the teller and listener "bear witness," we must consider the ability of both the teller and listener to respond to the testimony; and the responsibility each must take for the telling/listening and subsequent response. See also Salverson (1995).

the gap,<sup>93</sup>

the not yet known

becomes known —

transformed into interstanding.

And through the sounding of silence, the performative researcher galaxy-traces possibility.

*horizons colliding  
creating possible new worlds  
absent in their presence  
present in their absence*

*transcognition  
absence voices presence  
a space-moment of learning*

A space-moment of learning is called into being when Mario counts invisible clotheslines that become visible in the counting. This moment of the not yet known becoming known precariously suspended-in-between realizes possible new worlds to map-explore through reflection, writing, (re)imagining<sup>94</sup>, questioning.

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<sup>93</sup> Taylor & Saarinen (1994) inter-stop with the London tube's gentle warning to "mind the gap," a physical space between the platform and the train; a possible (mis)step of risk between security and freefall.

<sup>94</sup> (Re)imagining that is performance.

*Who lives in our outport?  
Sadie has new jeans — wonder where she got the money for them?  
What do these clotheslines tell us about the people living inside the houses?  
Do clotheslines exist in your world?*

A solitary moment in a role drama *brings forth a new possible world* and, within a space-moment of recognition, opens new horizons within which to wonder and wander.<sup>95</sup>

How many saw Mario's clotheslines?  
— lightshadows in a january classroom

Did others  
see clothes in the wind dance on a line and  
recognize the possibility of naming  
members of our fictional outport  
by empty cloth limbs shadow-playing  
under a blue sky?

Or did they see  
only the blackboard?

How can I —  
(*researcher-participant*)  
in that breathmoment of recognition —  
help Mario bring his clotheslines into our role play?  
— this unexpected unfolding  
that windbreathes  
possible new worlds  
in action and interaction?

Elusive, the moment slips through visibility  
like fingerfog wrapping the verandah railing.

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<sup>95</sup> With thanks to poet Carl Leggo for the imagery of wonder and wander.

Do others  
    realizing  
    (as yet unnamed) space-moments of learning  
bring recognition (*mapping in exploration*)  
into the continuing interlogue  
    of our performance?

ecological interstanding  
    sings co-evolving world(s)  
    of performance and cognition  
        to transformative dance.

*Mario counts clotheslines  
and i gather empty limbs  
to my breast and weep.*

This is not to suggest that all performance realizes moments of transcognition in which the not yet known becomes known, absence sounding presence. There are many times when an improvisation or dramatic scene struggles within a cognitive reality that prevents the realization of that “unique reality” which Kitaro calls “pre-conceptual ( ... transcognitive), intuitive reality.”<sup>96</sup> Improvisations that play to expectations or stereotype frequently frustrate efforts to freefall into unexpected spaces of possibility.

*it is through stillness  
    a lover's heartbeat moves us to tears  
breath fog on a mirror glass.*

Nor are individual space-moments of learning necessarily shared nor simultaneously experienced by all participants. Perhaps only one person may realize-recognize a “new possible world” that throws her or him into a space-moment of learning, opening new

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<sup>96</sup> Kitaro as quoted in Fels & Stothers, 259.

horizons of possibility. Nor are all possible aha! moments *simultaneously* realized and recognized within the *immediate* performance, but they may be embodied within and recognized through reflection.<sup>97</sup>

*like a pebble dropped into a still pond  
resonance plays through space in ever-widening  
circles.  
somewhere within a time not yet imagined  
this moment will touch us  
and be remembered.*

In the Newfoundland role drama, our research through performance continues through to the end of our roleplay, our creative action and interaction playing into presence possible learning and (re)searching. And when we have bodymind danced to a temporary playhalt

*the grandfather's sweater retrieved by a youth in the community  
a barnacle-encrusted hotel rising from the sea-depths of the bay*

it is through map-exploration — reflection in shared remembering, conversation, writing, (re)imagining, questioning— of unexpected journey-landscape(s) collectively and individually experienced that we (researcher-participants) sound write perform space-moments of interstanding to shared resonance.

*illuminating possibilities  
within as yet unmarked  
galaxies.*

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<sup>97</sup> For an example of a possible space-moment of learning realized during an improvisation but not fully recognized in all its possibilities as a space-moment of learning until several years after the event, see pages 72-74 in landscape one describing the Cinderella improvisation.

## **praxis: finding ourselves on the map**

*we pin butterflies  
labeling identity in chloroformed kindness  
who are you? where do you come from?  
map-reading the world in upside down colours  
stand on your head  
here you are! in the centre of the universe  
blue edged against an unfamiliar horizon.*

Let us write play explore performative inquiry in praxis. How does this research methodology perform in creative action and interaction? How might it be documented?<sup>98</sup> And in the foot noting, will we recognize the path we lay down in bodymind dancing on the edge of chaos?

In 1995, I was invited to lead a role drama for a conference.<sup>99</sup> I called the role drama “Finding Ourselves on the Map” in memory of a group of graduate students pinning their places of origin on a world map located in The Longhouse at the University of British Columbia.<sup>100</sup> What amazes me in map-exploring the role drama is the richness of possibilities that unfold —

The focus and ambition of the role drama is to “find ourselves on a map” — is it possible to create community-heart within an imaginary environment given only play-pretend

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<sup>98</sup> Again terminology causes me to hesitate. For the term, “documentation”, read “(re)imagined or performed into shared resonance.”

<sup>99</sup> Imagining a Pacific Community: Representation and Education, An International Conference, Vancouver, BC, April 23-26, 1995. I will highlight two moments in which absence in my known world is played into presence through performance.

<sup>100</sup> When it was my turn to insert my pin into the map, I was pin-hesitate, unable to choose, among the many, my “hometown,” and so I left unmarked my presence.

memories, anticipations, and immediate actions and interactions in role? Can we, a group of researchers, educators, and students imagine into possibility, in sixty minutes, a community that is ours? A place to pin-map on the landscape?

Our role play begins as we each are invited to imagine who we may be and the reasons for our search for a home in an unfamiliar land “on the edge of the ocean in the shelter of the mountains.” I ask the group to pile a dozen cardboard boxes into a mountain range while I spread out an ocean-blue sheet on the floor. After the mountains are draped by a snowfield white sheet, I am discomforted by the closeness of the sea to the mountains and so move the blue sheet away from the boxes to provide a strip of land between.

“Put that back,” a woman demands. “The mountain comes down to the edge of the sea.”

*Oops!*

I quickly replace the ocean.

*How is it that she breathes a seascape*

*and I am only thinking in terms of sheets and boxes?*

I have a skeletal script in hand but am determined to follow the directions indicated by the actions of the participants. However, after a while, I decide that we should move into the “next scene.” The role drama is not unfolding as I had anticipated but is taking a left-angle turn into unplanned territory and I yearn to regain control of the “script.” Grabbing a box from the mountain range, I cry, “We need houses. Let’s all build our own houses.” And I begin to dismantle the mountains.

“Hey! Stop!” several participants protest. “You can’t do that! Who do you think you are abusing our land? What’s the idea of clear cutting our forests!?”

*and i feel the shock of the unexpected*

Recognition that I (in role and as teacher-facilitator) failed to honour  
recognize protect this place. That my agenda (to create a streetscape of  
cardboard box homes for the role drama) is in conflict with their  
determination to protect their environment.

(straddling Phelan's bridge, they shout at me  
from a middling distance — I am shore-stuck  
with boxes and sheets while they sniff cedar  
breathed air)

*guilty! ashamed!*  
*so this is what it is to abuse nature.*  
*without thinking of other or the land. for my own purposes.*

"I'm sorry," I say. "I didn't mean to destroy the mountains."

*and in that space-moment*  
*learning comes into being*  
*realized and recognized.*

A new horizon unfolds— a space-moment of learning neither intended nor anticipated  
by the script that I had prepared the week before. *I am trapped in my own net! but they rescue*  
*me, throwing out a line and slipping through this moment, i am gifted,*  
*fisher-released into a seascape of possibility.* Through performative inquiry, an unexpected  
journey-landscape happens which then may be map-explored collectively and/or individually  
by teacher-researcher and/or participants.

What ambitions blinded me to the dismantling of the mountains?  
How did you feel in that moment of arrest?  
What do we learn from the experience?  
What does clear-cutting have to do with building community?  
How does this relate to land expropriation, environmental issues, native land claims?  
Is being responsible for our environment integral to becoming community?  
Where do we go from here?



Could I have anticipated the environmentalist perspective taken by the participants in the role drama? Perhaps. But I had not yet recognized the importance of environmental concerns to community building or identity.<sup>101</sup> Consequently, my intended curriculum of the inter-relationship between community and identity and place did not include the issue of land protection. However, through performance, unexpectedly, triumphantly, our role drama voices communal responsibility for the well-being of our imagined landscape “on the edge of the ocean in the shelter of the mountains.” And in doing so, community-heart plays into being, becoming.

*Our role drama unfolds unimagined horizons ...*

Nearing the conclusion of the role drama, I find myself trying  
to give birth to my child

(played by one of the participants — we are at this point  
completely “off script!”)

but

she refuses to be birthed into being.

*Come on, I mutter under my breath —*

“I’ll light a candle for you ...”

(one of forty candles which I bought for this role drama, a \$35  
expenditure which I plan to use for the dramatic conclusion of our  
role drama. However to my frustration, the ending is bodymind  
dancing towards an as yet unknown possibility)

“... and we’ll all sing happy birthday!”

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<sup>101</sup> How is it when we think we have “all the angles covered,” that performance surprises us and, against our expectations, learning happens, delighting humbling (re)playing possibilities not yet imagined?

“You can’t light her candle,”  
interrupts one of the participants.  
“She must light it herself.”

A woman moves forward  
displacing my impatient grasp of the sheet-entombed unborn

*come*, she croons to my reluctant issue  
and rejecting me  
my child gives birth to herself through  
the songchant embrace  
of a sea-woman.<sup>102</sup>

*I am devastated.*

In role I fail to give birth to my child.

(a space-moment of learning in which I realize that my own  
child’s being becoming is not of my making nor control.)

Out of role the script is stillborn.  
Have I failed in my objectives?

*but then*  
*a participant invites me*  
*to light a candle*  
*and*

*in that moment of birthing light*  
*i learn the possibilities of*  
*my own learning within through*  
*performance —*

*the hand acts, and in doing so speaks.*<sup>103</sup>

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<sup>102</sup> See Scott (1995).

<sup>103</sup> Barba, 1995: 26.

The moment of lighting the candle speaks to hope, realized through my own explorations, and to the learning that comes into being through performative inquiry.

*yes, i am here  
in this space-moment  
at the edge of the sea  
in the shelter of the mountains*

*and i too can become known.*

And so, we come to a place of learning — our community-heart plays unexpected spaces of honouring our landscape and giving birth to the learning, becoming that is possible within each of us. Through our explorations we come to know the heart-integrity of community that freefalls within the interstices of relationship with ourselves and our environment. And the breath-heart of our community is realized through the birthing of a child who bears our hopes dreams ambitions and roots us temporarily momentarily in this place “at the edge of the sea in the shelter of the mountains.”

In performative inquiry, there is no certainty. We can only trust in horizons unfolding through the actions and interactions of performance. Our hope is that we might light a candle of learning — becoming born in a space-moment of freefall between the interstices of the real world(s) and the not yet real world(s) realized through performance.

## performance as revolution

*performance not as process but unfolding horizons of unfamiliar light  
not as product but co-evolving landscapes of painsweet birthing  
bodymind dancing on the edge of chaos  
being becoming*

*hope  
splash ascends  
wavebillows of light  
whisperblue*

To explore the possibilities and contradictions which make performative inquiry a space-action of educational research, we need to entertain the multiple possibilities and contradictions of performance. Performance embodies creative action and interaction realized through bodymind dancing on the edge of chaos.<sup>104</sup> Performance can be impatient, unkind, unwilling to release its grip of the known. Performance refuses to be bullied or bribed or teased into being. Performance is contradiction, interruption, disruption, the stop, the gap. Performance dances absence into presence, an unexpected gust of wind that sets clothes dancing on a line. Demands Barba, "I don't want to see dance. I don't want to see theatre. I want to find myself face to face with that which 'is-in-life' and which reawakens echoes and silences."<sup>105</sup> Performance spells possibility revolution into being.<sup>106</sup>

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<sup>104</sup> See Fels & Stothers (1996).

<sup>105</sup> Barba, 1995: 162.

<sup>106</sup> My thanks to Carl Leggo for introducing *spelling* through his poem, *Spell Poetry* (1996). See pages 86-87. In speaking to performative inquiry, I wish to realize a methodology that

*within pools of echoes and silence  
a lover awakes  
madness touches her skin and  
she arises translucent in moonlight*

To realize the possibility of absence, the unknown, the unexpected, performance requires researcher and participants to have courage to release the known, to freefall, whiteknuckled, grasping skywind, into an unseen horizon.

*The revolution begins here.*

"I don't want to be the cow!"

He is definite in his refusal. This is my first experience with artistic temperament, well, at least at the grade two level. I have been hired to produce a play, *Jack and Jill and the Beanstalk*, an egalitarian rewriting of the fairytale, Jack and the Beanstalk, that meets both gender expectations and the required number of roles for my twenty pint-sized actors. The success of the show hinges on the compliant participation of five Jacks, five Jills, two widowed moms, one moon, a beanstalk, a giant and his wife, a singing harp, a chicken, a mobile bag of gold, and of course, the cow. The cow balks.

"It's boring. The cow doesn't do anything."

"But you can be a talking cow ... when Jack gets you from the field to sell you at the market you can argue with him and ...." My voice trails off — *it is a boring part.*

The cow is considering his options. Suddenly his eyes narrow.

"Can I be any kind of cow I want?"

"Yes! Of course!" I can feel him coming on board. I am relieved. "Guernsey, Holstein, Grade A Beef." I have already dismissed him from my list of things to do.

"Then I'm a cow that plays goalie for the NHL."

*The moment hangs between us.*

"You're a cow that plays hockey?"

---

celebrates the potential of *performance* as a way of coming into knowing: the magic that is in being becoming. I remember one of my drama students who, while writing the word, *spontaneity*, on the blackboard, groaned and said, "In this course, I want to learn how to spell spontaneity." A desire, I echo, which speaks to the spontaneity of performance, and the possibilities potential that may be spelled into being.

“Yeah, I’ll wear my goalie pads and my helmet. And bring my goalie stick. I can have a hockey net and I’ll be practicing saves in the field when Jack comes. It’ll be awesome!”

It’ll be awful. He’s asking me to stretch the traditional fairytale beyond poetic license. A cow that plays in the NHL?

*Let me think about it.* I want to say. *Why don’t you just do what you’re told.*

I want to say. *I’m the playwright here and you are an ordinary cow!*

But I don’t say the words. I look into his expectant face and read the engagement of a child who is finding his way into theatre through his experience as a hockey player. A child who is writing his own role into being. Creating space for his voice.

“Okay,” I say.

He bounds off to announce his change of status to his classmates. Everyone is suitably impressed. I am writing in the script change when I feel someone tugging at my shirtsleeve. It’s Logan. He hasn’t been cast yet. An oversight in attendance records.

“I want to be the policeman,” he says. “You know, to arrest Jack and Jill for killing the giant.”

“Uh-huh ...”

*The revolution begins here.*<sup>107</sup>

And if I had refused? What if I had ignored my students’ requests suggestions ideas and directed the play as I had initially imagined the script? A child’s gift of (re)imagining the universe begins with release of ownership by those in authority and empowering the creative action and interaction between. Performance — bodymind dancing on the edge of chaos — invites Boal’s “moments of crisis”<sup>108</sup> and Applebaum’s “the stop”<sup>109</sup> within which both danger and opportunity co-exist, and in doing so, introduces the possibilities of revolution, the potential of impotence.

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<sup>107</sup> Enactivism in a grade two classroom, conversations between myself and two of the actors. Incorporating a hockey-playing cow and the arrest of Jack and Jill for the killing of the giant in Jack and Jill and the Beanstalk (1993) played to great success with performers and audience. An example of creation theatre or playbuilding where a script is created through performance (i.e. improvisation to scene) and critical and creative reflection.

<sup>108</sup> Boal (1995).

<sup>109</sup> Applebaum (1995).

Between closing and beginning lives a gap, a caesura, a discontinuity.  
The betweenness is a hinge that belongs to neither one nor the other.  
It is neither poised nor unpoised, yet moves both ways ...  
It is the stop.<sup>110</sup>

The stop — our aha! moment embodied in performance — speaks to the potency and revolutionary potential of performative inquiry. In the moment of crisis, we hesitate. We recognize possibilities. We flail our arms, seeking temporal balance on the edge of a space-moment of learning. Do we trust in freefall? Or do we stumble over the moment in our blind-dependence of Oedipus leaning into the topography of earth-memory?<sup>111</sup>

We are exploring Cinderella.  
She is exploring us.  
The instructions of the teacher are explicit.

*In what moment does the father deny his child?*

I/Cinderella am on my knees  
scrubbing an imaginary floor.  
How much farther will the stepmother push  
the daughter to her knees?  
How much longer will the daughter allow the stepmother to push?

I am uncomfortable.  
What level of indignity shame humiliation will I/Cinderella accept  
before I spring to my feet back into the classroom and shout

No!

---

<sup>110</sup> Applebaum, 1995: 15, 16.

<sup>111</sup> See Applebaum (1995) for his reading of Oedipus' wanderings.

I remain on my knees.

*kneeling in this moment still*

Why silent?

Why does Cinderella not rebel?

Why have I been placed in this dangerous position?

I play this moment  
over and over and over

*even now in this moment  
like a slap through time  
it haunts me*

We are investigating the Prince  
And his criteria for choosing Cinderella.  
Who chooses a princess and why?

*Let's have an interview with the King's advisors*

Proposes the drama teacher and we arrange an interview room.  
A stern unyielding row of chairs  
Where the male students sit.

Facing interrogators in a row  
we sell ourselves.  
Over and over and over.  
I am hungry to be chosen.

At the moment of selection  
I recognize

The humiliation of selling myself.  
The triumph of being chosen.

My fear of being rejected.  
My denial of others in self-acclamation.  
Our collective permission given to others to judge.



We hold the role drama teacher responsible.  
We accuse him of putting us in untenable situations.  
Our anger revolves around feminist issues.  
The room is hot with rejection shame loss of trust.  
The moment snags.

*and yet, now in this moment  
in this telling and retelling  
interstanding falls into presence  
a wanna-be princess on her knees  
willing this moment into being*

*resistance resonates*

*Whose denial plays in the moment?  
Who chooses a princess?  
Am I still waiting for rescue?  
Who is responsible?*

*a moment of stop  
a moment of crisis  
a moment of risk  
torn across the flesh.<sup>112</sup>*

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<sup>112</sup> Role drama led by drama educator Gavin Bolton, University of British Columbia, Vancouver, Summer 1994.

**in this unexpected falling, bruised interstanding**

*performative inquiry  
a mapping-exploration of space-moments of learning  
through which action-process occurs utterly through form and  
simultaneously through the destruction of form  
chaos disorder absence possibility  
unknown world(s) not yet realized  
and in a moment of hesitation —*

We cannot pretend that performative inquiry is an innocent journey but rather one that is fraught with danger risk opportunity. We come to edges of as yet unknown horizons and parachute between interstices that mark our leap. In the securing of ropes, air speed, wind shifts, the research-facilitator-participants risk skinned knees in the freefalling. And yet, learning happens —

*the stops, response/abilities and troubled spelling of possibilities  
that come into being through performance ...*

Our presenter is discussing concepts and possibilities of identity and community.<sup>113</sup> *What does it mean to belong to a community?* She invites us to play a game familiar to drama educators called “Prouee.” We are asked to close our eyes. One person is chosen as Prouee and instructed to remain silent. Our given objective is to find Prouee. If we touch someone, we ask, “Prouee?” and if they respond in kind, we know we have not found Prouee.

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<sup>113</sup> Climbing up to check the sky: culture in curriculum, a presentation by Airini at Imagining a Pacific Community: Representation and Education, an international conference, Vancouver, BC, April 23-26, 1995.

Prouee is silent. When we find someone who does not answer our question, we join hands with him or her, and are ourselves silenced. *Come now, close your eyes. Listen carefully.* We inch edge stumble our way around our unseen landscape, hands held up in front of us, calling, "Prouee?" The room quickly empties itself of voices as, one after the other, participants find "the community" that is Prouee. Soon there is only one voice calling plaintively, "Prouee?" *Is it yours?*

The objective of the game is to demonstrate through dramatic form (in this situation a drama game) what it feels like to belong or not to belong to a community. The exercise, although deceptively simple, opens a number of spaces for exploration as map-revealed through public debriefing and private conversations. *What was your experience?* Participants respond to the game in their own way, and several are eager to tell their stories. Our map-exploration continues past lunch hour ....

*troubling space-moments of inquiry are called into being —*

I remember her voice unclaimed calling

*Prouee?*

*Prouee?*

Some participants worry for her welfare  
but they remain silent

they do not call out

*(I was afraid she would walk out of the room, they admit during debriefing)*

We conceal our presence

hands

reach out

clasp join in silent union

*Prouee?*

I am jealous of her

unclaimed and not yet silenced.

She has possibilities still.

*what have I lost*

*seeking community rather than risk stepping*

*through my terror into the unknown*

*the unexplored sidestepped*

*fearing my own voice?*

Several confess to cheating.

*(we didn't like the game.*

*we don't like being told what to do.*

*we didn't want to close our eyes.)*

They resist unsighted boundaries.

They want to join Prouee but

refuse fail reject seek

with eyes open.

What if they mis-step?

I follow the rules.

I close my eyes.

*and listen*

*uncertain hands mapping*

*an unknown landscape*

Am I a docile follower? The good girl?<sup>114</sup> Afraid to break the rules? Or

in trusting in the moment,  
do I place myself  
within the experience,  
and by doing so,

allow the unfolding of unexpected  
space-moments of possibility?

What do we not see when we refuse  
to shut our eyes and trust in being  
within the absence of light?

A man places his hand on a woman's breast.  
Deliberately.

She remains silent during the action.  
Remains silent during the reflection.  
Does not report the incident.  
*I didn't want to ruin the talk.*

questions disturb the silence of an outraged moment  
should she have slapped his hand?  
alerted others?  
interrupted  
the action?  
what complicity is there in silence?  
what complications of gender? power? enabling?  
what translation do we bring of our action and interaction  
within a performative world  
to the politics of recognizing and voicing opposition?

*sexual harassment, professional impropriety —  
performance bares and endangers*

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<sup>114</sup> See Rasberry (1995).

(And listening, we, as performative researchers, must ask questions — do we through performance as research position our participants in possible danger? How do we secure their safety? How do we protect boundaries which may be agreed upon in collective voice but broken in silent acts of rebellion ignorance betrayal. How can we avoid the not yet known acts of innocent and deliberate violence?)

I open my eyes and discover that  
I am holding hands with—

An unanticipated moment!

In the absence of visual, what happens to hierarchy?  
Role? status? identity? power? choice?  
Whose community is this?

New possible space-relationships to (re)imagine.  
Unexpected meetings through performative inquiry.

Bordercrossing.

*Prouee?*

The complexity of research through performance demands mindful awareness of its multi-components of interruption absence potential revolution possibility with careful attention given to the continuing co-evolving interaction of relationships between. Responsibility for the well-being of individual participants falls in uneasy balance between participant(s) and researcher.<sup>115</sup> The researcher-participant(s) co-create a context and environment through which and within which exploration occurs. Performance happens within the researcher's presence, and the shaping, questions, and focus of inquiry play through the researcher's (and participants') personal and communal horizons.<sup>116</sup>

Awareness of the complicity<sup>117</sup> and complexity of response, expectations, opportunity, perspectives, and bias (innocent or otherwise) of the researcher-participant(s) within dramatic investigations needs to be acknowledged. The performative researcher does not stand outside the action: his or her participation plays an active role in the shaping and (re)shaping of unfolding landscape(s) journeyed. The performative researcher must therefore

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<sup>115</sup> The performative researcher needs to pay attention to issues of safety and trust within and outside of performative explorations. Learning happens when we are thrown off-balance and it is within disequilibrium — *here and now, something happens* — the opportunity for learning, new perspectives, or understanding arises. The dis-equilibrium into which we are thrown is not necessarily a place of comfort. However, I suggest that it is primarily through discomfort (i.e. dis-equilibrium), our struggle to re-establish momentary balance enables learning to happen. Our challenge within performative research, then, is to acknowledge the discomfort of learning, and to bring careful awareness to the design and practice of our research. We need to strive to secure the safety and well-being of participants within a place of trust and respect where the discomfort of learning may be recognized and embraced. See also footnotes 118 and 119 on page 81.

<sup>116</sup> Within the context of this dissertation, personal and communal horizons encompass location, history, experience and identity (i.e., individual and communal, e.g., race, ethnic, cultural, gender, social, religious, economic, political).

<sup>117</sup> See Davis & Sumara (1996). The authors describe the complicity of teachers both in their students' learning and in the approach to content and arising curriculum.

claim a position of responsibility and complicity.<sup>118</sup> The researcher must question his or her movements across a journey-landscape that is a collective exploration. There may be concealed shadows, crags, unexpected leanings, sudden sinkholes that may endanger or cause unintentional bruising.<sup>119</sup>

*performative inquiry a space-moment  
of life being becoming;  
a space-moment of risk.*

*possibility and response/ability.  
both researcher and participant must be (a)ware.*

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<sup>118</sup> The ethical considerations of performative inquiry are complicated by the tension(s) that exists between performing experience as imagined and experience performed as informed by personal perspectives, expectations, bias, and beliefs; and lie beyond the boundary of this dissertation. I wish only at this moment to flag the complicity and responsibility that rides on the shoulders of the performative researcher. The potential dangers for exploitation and possible psychological injury due to performative inquiry and/or research through drama and the unexpected repercussions that might erupt are recognized within the field, particularly within the realm of popular theatre. See Salverson (1995) and her thesis, "Unimaginable occurrence: Storytelling, popular theatre and an ethic of risk." Performative researchers, like researchers in any field, run the risk of disturbing, interrupting, (re)injury. Some examples reported or personally experienced: an improvised scene about a dysfunctional family based on a family story as told by one of the students reduces her to tears; a metaphorical improvisation in which one participant watches his or her partner leave on a departing train awakens painful memories of a loved relative who had recently died; an improvisation of a father losing his job due to a factory closing sends one participant to the sidelines. "It's too close to home," he says. Precaution, debriefing, and mindful awareness must be part of all performative investigations — even then, risk remains. As Salverson (in conversation) asks, "Under what conditions is trust possible? What can researchers offer, what's beyond their control?"

<sup>119</sup> This said, it is impossible to anticipate all situations, dynamics, and possible individual responses resulting from and/or during dramatic exploration. A researcher might misread a situation; a response in role may be received as a personal affront; an unvoiced bias, expectation, or personal belief of either researcher and/or participants might interfere with the creative action and interaction of the performative inquiry. It is essential to conclude dramatic activities and/or performative explorations with debriefings to offer participants an opportunity to voice their reactions, feelings, and/or concerns; and to help the researcher-participant(s) identify and resolve problems arising from the work.



**spelling performance — dancing foot notes on a white page**

*Not walls  
of cement, but ...  
the melodies  
of your temperature<sup>120</sup>*

Performance is elusive, impossible to capture and (re)mount for inquisitive eyes. Warns Phelan, “Performance’s inability to be captured or documented within the re-enactments promised by the copy is part of what makes it, per force, face the impossibility of seizing the Real.”<sup>121</sup> Performance slips through our fingers, eludes our grasping need for permanence. Yet the experience is embodied, traces remain: fragmentary evidence of echoes and silences, resonances and absences that sound space-moments of learning through performance.

The reporting of performative inquiry is an interpretive dance, each danced remembering-retelling unique to the researcher-writer. Traces are possible footsteps in the landscape-journey we create through performance, but, in map-exploring our journey-landscape through writing (yet again performance!), we can only hint at the possibilities realized. Absences and questions, questions and absences are “holes in the net” of our mapping.

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<sup>120</sup> Barba, 1995: 162.

<sup>121</sup> Phelan, 1993: 192.

Our question, *what if?* is left hanging unfinished, co-emerging, co-evolving through time. *Performance shockwaves through our known-unknown world(s) leaving a turbulent wake in its mad rush towards the sea.* The knowing that is performance is embodied within each of us; we live that knowing in our bodies, our spirits, our words, our actions. To write our knowing through performance is possible. To write *about* our knowing within performance is a more difficult challenge.<sup>122</sup> Barba speaks to the danger of trusting the written word as witness to the theatre:

The relationship that links *theatre* and *books* is a fertile one. But it is often unbalanced in favour of the written word, which remains. Stable things have one weakness: their stability. Thus the memory of experience lived as theatre, once translated into sentences that last, risks becoming petrified into pages that cannot be penetrated.<sup>123</sup>

As a researcher-participant of the momentary, the fragmentary, interruptions, hesitations, I call on the skills of my writing as narrator and poet to re(play) the rememberings representings of my fellow participants that shape the unfolding of our journey-landscapes. Performative researchers must trust in the imagination, empathy, shared journeying of our readers to capture the “results, findings, conclusions” of performative inquiry. Our telling of moments will be rift with holes gaps questions that signal absence(s) and as-yet unrealized possibilities. And our (re)imagining that is our “documentation” will be

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<sup>122</sup> One of the challenges of performative inquiry is to language what is essentially unlanguageable, that which is embodied through experience within the elusive realm of performance. An “aha!” moment for the experienced drama educator exists as an experience that one immediately recognizes, smells, tastes, touches, hears, feels, and yet, to record its presence is as difficult as marking Phelan’s (1993) “holes in the visible.”

<sup>123</sup> Barba, 1995: 12.

fragmentary, elusive; a choreography-geometry of moments and lost rememberings as eloquent in silences as it is in telling.

*... and when I can't stand the silence any longer, I slip out of my skin, into sound.*<sup>124</sup>

It is the elusiveness of performance and our inability to capture completely through writing and/or video-texting a re(presentation) of our participants' story(ies) after the fact that draw practitioners of performative inquiry to the praxis of interpretative exploration(s) which are in themselves performative. Performative inquiry is a (re)search-performance of fragmentary moments. While I might report matter-of-factly what happened before, during and after a performative inquiry, the (re)telling co-evolves into an interpretative dance that welcomes both teller and reader to poetic as well as pragmatic musings.

*Holes in the net are openings for the imagination.*<sup>125</sup>

Performative inquiry embraces the playfull space of interpretative inquiry; we come into being through performance and then dance an interpretative jig so that others might share in our space-moment(s) of being doing knowing creating. But our interpretative jig breathes on the page, and yet again we are embodied through within performance.

My hope desire conviction is that within the creative action and interaction of performative inquiry, magic is possible: That we may spell absence into presence; that what

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<sup>124</sup> Michaels, 1996: 11.

<sup>125</sup> Taylor & Saarinen, 1994: Gaping 7.

has not yet existed may be danced into being through performance; that we do not dance-breathe entirely within a labyrinth of layered interpretations. Just as nature breath-dancing on the edge of chaos creates new possible life-beings, so performance spells into being becoming new possible horizons.

*wind breathes magic so that i may ride the night skies in a sailboat of imagination and, in the sailing, realize as yet unmarked galaxies.*

“Like the relation which adheres between the real and the representational, something which can neither be confirmed nor denied, can nonetheless be convincing and ‘true.’”<sup>126</sup> *A space-moment of being becoming.* Phelan observes, “Those concerned with understanding the relation between the real and the representational must also recognize that our failing eyes may be insufficient organs for measuring the terms and meanings of the transformative alchemy between them.”<sup>127</sup> And that there are “limits of the methodology by which ‘proof’ is made visible.”<sup>128</sup>

... the transformative possibilities of the Real, we may have to trust while unable to be fully confirmed within the field of the visible (or the empirical), cannot be permanently denied. It is in doubt. That is why we must keep performing and transforming the interpretations of this relation. Doubt may be the best guarantee of real presence.<sup>129</sup>

and she suggests, hope.

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<sup>126</sup> Phelan, 1993: 180.

<sup>127</sup> Phelan, 1993: 180.

<sup>128</sup> Phelan, 1993: 180.

This then is Hope, the hope we fake and perform and the hope we thereby make and have. Hope's power is measured in this faking. Each performance registers not how much we want to believe what we know we see is not all we really have, all we really are. That negation reveals the generative possibility of the "not all" that keeps us hoping.<sup>130</sup>

*the hope that is performance.*

Performance weaves a spell; in the space moment of here and now — nothing anything everything becomes possible. *The magic possible as the curtain rises and we take our places on the play-stage-world(s) of our imagining.*

The poem, Spell Poetry,<sup>131</sup> speaks of the spelling of poetry in which a poet is engaged spelled bewitched in the writing of the poem that writes him; as if under enchantment the words come into being, poet simultaneously voices and is voiced. Leggo's poem traces the spell within which the poet dwells, evidence of the poet's mapping of the not yet known danced into being becoming.

Our reading of the poem invites Hermes' interpretative eye, but it is Hermes' playful presence that spells Leggo into realizing the poem through the creative act(ion) of writing. A poetic inquiry plays within the interactive space between the not yet real world and the real (where experience, memories, anticipation, the unknown, absence dwell) and write-breathes a poem into presence — a space-moment of interaction within which I spell performative inquiry. *Listen to the ducks laughing.*

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<sup>129</sup> Phelan, 1993: 180.

<sup>130</sup> Phelan, 1988: 178.

<sup>131</sup> Leggo, 1996: 26. It is this poet who taught me to listen to the ducks laughing.

## Spell Poetry

a long time ago  
I saw a birch tree  
hold the late winter  
light of afternoon  
after rain left  
even the ducks  
in the slough  
sopping mad  
like once  
or maybe twice  
I have seen  
lovers hold  
the love  
of the other  
in their eyes  
and now  
in this poem  
I walk the dyke  
again, see again  
the birch tree  
holds still  
the late winter  
light of afternoon:

I spell my words  
on the page;  
I am caught  
in the spell.

If I learn  
to spell poetry,  
will I know  
the spell of poetry?

## quest of the performative researcher

*Passionate knowers use the self as an instrument of understanding,  
searching for new methods to sophisticate the way the self is used in  
research.*<sup>132</sup>

*Hand over hand hauling in the netted light,  
the holes in the representational,  
the holes in the visible.*<sup>133</sup>

How did I come to performative inquiry as a research methodology? Through my search for moments that resonate, that arrest my blind stumbling through performance to interstanding. Interpretative and narrative inquiry play a critical part in my work as a writer and researcher. Narrative inquiry, in particular, tempts me as a storyteller and writer of my own stories.

Yet I find myself freefalling in the gap(s) between. I am anxious to embrace a methodology that celebrates the potential of *performance* as a way of knowing the magic that is imagining a universe into being becoming. Having been touched by the spell of performance, I wish to spell the univers(e)ity in an as yet new way of knowing being doing creating.

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<sup>132</sup> Kincheloe, 1991: 41.

<sup>133</sup> Phelan, 1993: 177.

*Betrayal. From tender youth we are told by father and teacher that betrayal is the most heinous offense imaginable. But what is betrayal? Betrayal means breaking ranks. Betrayal means breaking ranks and going off into the unknown. Sabina knew of nothing more magnificent than going off into the unknown.*<sup>134</sup>

*In this course I want to learn how to spell spontaneity.*<sup>135</sup>

I want to realize-explore the unknown. The unexpected. The not yet imagined. The Gap. The Stop. Barba, when intensely involved with his work with Grotowski and his actors, thought that he was “in search of a lost theater”<sup>136</sup> but through time he realized “instead I was learning to be in transition. Today I know that this is not a search for knowledge, but for the unknown.”<sup>137</sup>

*A question with no answer is a barrier that cannot be breached. In other words, it is questions with no answers that set the limits of human possibilities, describe the boundaries of human existence.*<sup>138</sup>

*and invite us to burst through  
those barriers boundaries  
into possible new dimensions  
unknown, absence, what if?*

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<sup>134</sup> Kundera, 1984: 91.

<sup>135</sup> Student in a drama education course, University of British Columbia, Summer 1996.

<sup>136</sup> Barba, 1995: 4.

<sup>137</sup> Barba, 1995: 4.

<sup>138</sup> Kundera, 1984: 139.



Quest(ion)s are the researcher's invitation challenge hope resonating through questions of others in an interactive co-evolving search for absence, for the not yet known, for the sounding of silence.<sup>139</sup> Shaped by and shaping our journey-landscape, we seek, through performative inquiry, a way of knowing in our world(s) — bodymind dancing on the edge of chaos spelling the unknown into presence. New horizon(s) are called into being becoming by the questions we ask, the worlds we dare imagine.

The importance of the reformers resides in their having breathed new values into the empty shell of the theatre. These values have their roots in transition, they are the rejection of the spirit of the time and cannot be possessed by future generations. The reformers can only teach us to be men and women of transition who invent the personal value of *our own* theatre.<sup>140</sup>

Horizon(s) are our boundaries bordercrossings, "... projective, unfolding ahead of us as our pre-understandings and understandings do, altering as our location alters, rather than being static like the metaphor of a framework."<sup>141</sup> Recognition momentarily marking possible horizons that become the unfolding of our journey-landscapes, the research in quest of unmarked galaxies illuminating our presence.

To seek the unknown we must be willing to shift horizons, to be adventurers, risk-takers, explorers sailing over the edge of the world. The old maps trace ancient worlds. The new world(s) asks that we trust in the moment, and sail the winds of our imaginations.

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<sup>139</sup> Lee Stothers in conversation, 1995.

<sup>140</sup> Barba, 1995: 5.

<sup>141</sup> Crusius, 1991: 33.

*If you can't walk in quick sand and dance with  
electrons, you're going to be toast.*<sup>142</sup>

In cyberspace, theory is practice before it is theory: God is gone, history is over, the self is scattered and the book is exploded. ... Theory must become even more radical than I ever imagined or they ever feared.<sup>143</sup>

Performative inquiry is a research vehicle that realizes theory within practice (i.e., praxis). Just as philosophers, Mark Taylor and Esa Saarinen argue that their "... book will, in a certain sense, be a non-book,"<sup>144</sup> performative inquiry as research methodology (re)plays a (re)imagining of research.

*The essence of the question, said Gadamer (1975), is the opening up, and keeping open of possibilities.*<sup>145</sup> Practitioners of performative inquiry understand that the focus of their research lies not in finding answers, but in realizing possible spaces for exploration. *What if? What happens? What unknown journey-landscapes may we realize in our bodymind dancing on the edge of chaos?*

*Being ... is unbounded but not absolute [but] historical, temporal, and contingent. We must continually remind ourselves that the Being of philosophical hermeneutics is not the Being of metaphysics, of perjuring presence or underlying, fixed essence, or all-inclusive but empty abstraction. Rather, Being is the dynamic life-world into which we are thrown willy-nilly at birth.*<sup>146</sup>

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<sup>142</sup> Futurist Frank Ogden, as quoted in the *Globe & Mail*, March 25, 1995: D1.

<sup>143</sup> Taylor & Saarinen, 1994: Ending the Academy 5.

<sup>144</sup> Taylor & Saarinen, 1994: Gaping 13.

<sup>145</sup> van Manen, 1990: 43.

<sup>146</sup> Crusius, 1991: 25.

Realize that the life-world(s) into which we are thrown are not sought known world(s) of certainty, but world(s) which embrace the unknown precariously balanced in-between, "... because we exist in thrownness ... as projection, in anticipation and expectation — we live always amid the not yet, in absence."<sup>147</sup> Through cherishing disruption disequilibrium interruption risk, we perform absence through our imaginary explorations within interstices of possibility on the edge of chaos.

It should not be limited by the linear logic of the past .... The work must also be riddled with gaps, spaces and openings that invite the reader to write. WHITE SPACE BECOMES THE SITE OF TRANSACTION IN WHICH THE EVENT OF UNDERSTANDING OCCURS.<sup>148</sup>

Theatre director, Peter Brook, writes of "empty space"<sup>149</sup> — *I can take any empty space and call it a bare stage. A man walks across this empty space whilst someone else is watching him, and this is all that is needed for an act of theatre to be engaged*<sup>150</sup> — a bare stage which, by its naming, becomes an empty space pregnant with anticipation memory absence possibility. Theatre director Richard Schechner describes performance as including "the whole constellation of events, most of them passing unnoticed, that take place in/among

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<sup>147</sup> Crusius, 1991: 32.

<sup>148</sup> Taylor & Saarinen, 1994: Gaping 13. Caps inserted by authors.

<sup>149</sup> See Brook (1968). Empty space, as I choose to understand it for this dissertation, as not empty but simultaneously pregnant and haunted by anticipation, memory, possibility, absence.

<sup>150</sup> Brook, 1968: 9.

the time the first spectator<sup>151</sup> enters the field of the performance — the precinct where the theater takes place — to the time the last spectator leaves.”<sup>152</sup> Perhaps he limits the galaxies of possibility where performative researchers play as yet unmarked constellations into being becoming.

The “white space” of Taylor & Saarinen<sup>153</sup> and the “empty space” of Brook<sup>154</sup> are the interstices between the not yet real and the real world(s) of possibility on the edge of chaos where we bodymind dance absence silence gaps stops revolutions that haunt our being becoming and are — momentarily temporarily wonderfully — known.

to perform is to revolt against the “known world”  
to explode terrorize abandon  
absolute betrayal  
bordercross

to perform is to set our compass beyond  
the edge of the horizon  
to release our sails ride the wind  
embrace risk  
trust in the moment

to perform is to work within and through form and  
simultaneously through the destruction of form

a precarious dance that recognizes patterns  
disruptions possibilities of being becoming

*in the wind that dances clothes on a line*

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<sup>151</sup> See Boal (1995) for his use of the term “spectactors” in which audience members (i.e., spectators) also participate in the playing and (re)playing of scenes on stage.

<sup>152</sup> Schechner, 1988: 72.

<sup>153</sup> See Taylor & Saarinen (1994) for breath-taking investigations of textual presence on the page.

<sup>154</sup> See Brook (1968).

suspended in-between  
a precarious presence  
— a space-moment of learning realized in bodymind dancing —  
on the edge of chaos

and  
recognized.

“AHA!”

*performative inquiry — a methodology of possibility,  
co-emerging, co-evolving in creative action and interaction  
to interstanding.*

#### **postscript**

In real life, ‘if’ is a fiction.  
In the theatre, ‘if’ is an experiment.<sup>155</sup>  
In research, ‘if’ is a possible foot note  
into a space-moment of knowing.

Mario is hamming it up in the rowboat. “I know  
how we can figure out the population,” he exalts.  
“Count the clotheslines!” And to my amazement,  
clotheslines magically appear — diapers,  
workmen’s overalls, cotton dresses, woolen socks,  
sheets dancing in the wind.

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<sup>155</sup> Brook, 1968: 157.

*imagining a universe that is science*  
*realizing possibilities of interplay that*  
*dance electrons into being*

*landscape two*  
*what matters?*

### ***imagining a universe that is science***

To imagine the universe, first imagine where Toronto is .... Then imagine that the entire solar system is a grain of sand floating over home plate in the Skydome ...<sup>156</sup>

*we must begin where we are.  
in this moment. with this phenomenon.  
phenomena without apology.*

*Simply I am here  
Simply snow falls<sup>157</sup>*

### **fragments of landscape journeyed**

*Tuesday morning, October 14, 1997.*

Blackbirds perch on the telephone wire as I hunch over the keyboard inside my glass cage, pondering the universe — a universe constructed by data: portfolios, interview transcripts, journal excerpts, video tapes, fragmented memories, an unspecified hunger. Perhaps, like me, my feathered companions — two blackbirds on a line — are (re)imagining possibilities of winged adventuring. Perhaps, they too feel the weight of unfinished flight. The nursery rhyme of four and twenty blackbirds springs to presence, and I wonder

am I, unfortunate maid,  
hanging out the evidence  
— laundered sheets pinned  
on a clothesline —  
only to

*ouch!*

lose my nose  
in an inopportune  
moment?

Is it possible for a scientist in a white labcoat to imagine a universe into being?  
Drop the white labcoat. What (whose) universe do I have in mind?

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<sup>156</sup> Packard, 1994: 62, albeit located in San Francisco. Apologies to the author.

<sup>157</sup> Issa, the poet, as quoted by writer, Natalie Goldberg, 1986: 171.

*Friday morning, February 6, 1998.*

Yesterday I met a man who is studying butterflies.

Ah! so you understand the theory of chaos! I exclaim, delighted to meet a fellow traveler. It's more a matter of complexity, he replies. There are three butterflies: the original, the one who mimics, and the third, the one of multiplicity — a masked dance of possibilities. Only one is true to its colours.

They are all true, I tell him. It is a matter of perspective and opportunity.

It is a gift, meeting him on my birthday, a gift of butterflies masquerading as scientific study — miniature windstorms that set clothes to dancing on a line.

Writing this thesis, I seize upon embodied moments that trace evidence of a landscape journeyed through performance. I am a scientist, capturing moments, and pinning them like butterflies to a text, despairing whether, under this multi-dimensional microscope, the dance resonates a shared interstanding in this moment of your reading.

Do you hear resonance in the clothes that dance on a line?

Or is it an indifferent wind that sets our text within a silent print choreography of sound?

Investigating science education through performative inquiry opens space-moments of learning: danced interpretations of images moments relationships recognitions that trace a journey-landscape of possibility. Yet here I am —

thumbing through student portfolios, transcriptions, field notes  
looking for evidence of engagement, learning, ownership, connections,  
inter-relationships, motivation

— like a second-rate detective  
seeking significance in smudged fingerprints on a wine glass;  
tracking footprints in the earth under a broken window;  
seizing with tweezers a tattered remnant of clothing snagged on a rose bush,  
self-importantly flashing my I.D. card  
reassuring observers stumbling on the scene.

Should I seize upon  
the credentials of others  
to finger the obvious?  
How obvious do I want to be?  
Peering through my magnifying glass,  
I consider the repercussions of an illegal search.  
Should I fudge the evidence?  
Camouflage the murder scene? Dispose of the corpse?  
How desperate am I to solve the case?

*J'accuse.*



Let the moments speak their presence.  
 And yet, they are elusive, like the wind that briefly sets the clothes to dancing.  
 Butterflies pinned, they lose their potential for flight. Phelan's suspension bridge  
 momentarily announces presence and then abandons us with capricious indifference.  
 We dance freeflight in remembered space, and recognize absence.

*illumination is desperate, slipping in and out of view.*

And I am left with fragments of possibility.  
 I suspect I am writing yet another version of *breath-becoming* knowing that is performative  
 inquiry.

*pause*  
                                   *between this moment*  
   *of      opening      closing*  
*opening*  
                                   *butterfly in flight.*

Freefalling into this writing invites a (re)imagining of a universe that is science.

Consider a world in which cause and effect are erratic. Sometimes the first  
 precedes the second, sometimes the second the first. Or perhaps cause lies  
 forever in the past while effect in the future, but future and past are entwined ...  
 In this acausal world, scientists are helpless. Their predictions become  
 postdictions. Their equations become justifications, their logic, illogic.  
 Scientists turn reckless and mutter like gamblers who cannot stop betting.  
 Scientists are buffoons, not because they are rational but because the cosmos is  
 irrational. Or perhaps it is not because the cosmos is irrational but because they  
 are rational. Who can say which, in an acausal world?

In this world, artists are joyous. Unpredictability is the life of their  
 paintings, their music, their novels. They delight in events not forecasted,  
 happenings without explanation, retrospective.<sup>158</sup>

The scientific imaginings of a poet.  
 The poetic imaginings of a scientist.

A scrim hangs between.

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<sup>158</sup> Lightman, 1993: 38, 40-41. Novelist and physicist Alan Lightman's text plays with the multiple  
 possible worlds that Einstein might have imagined in his formulation of the theory of relativity.  
 Within this landscape, sections where the reader is invited *to imagine a universe* owe a debt  
 of recognition to Lightman's delightful text.

**(a possible prologue in which our drama educator attempts to explain her presence in a science classroom)**

*Only a curtain separated the two within the co-evolving world(s) of science and drama education. When the curtain opens, the (inter)play begins.<sup>159</sup>*

Science is storying adventure, mystery, and imagination realized through interaction with phenomena — an embodied mapping of fictions, theories, analogies, myths, hypotheses, educated guesses which attempt to explain the unexplainable, to know the unknowable — stories to sing angels and humans awake.

*this story is written in con(text)*

Science is journey-landscapes of our curiosity, our questions, our explorations, our (re)cognitions — our interstanding of our world(s), not as it is, but as we are. *Our purpose and our presence write the science that spells our universe.* The variables we write into our scientific score encompass social, cultural, political, environmental, economic, personal, communal identity in through and out of language.

*this landscape is our (jour)neying*

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<sup>159</sup> Fels & Meyer, 1997: 79.

Science is performance, bodymind dancing on the edge of chaos, opening spaces to explore, seeking the aha! moment that is (real)ization-re(cognition). Through texts of exploration we play space-moments in-between — a temporal temporary tempestuous anchoring between our sensual sensory world(s) and scientific theory that reflects rejects injects projects our explorations impassioned by imagining possibilities. Our embodied adventures interpreted by poets in white lab coats dance into being our conversations with phenomena —

*the big bang. air pressure. a butterfly's wing.*

Science is imagining a universe that is us being, becoming.

## the black box<sup>160</sup>

Imagine a black box.  
It sits before you on a laboratory counter.  
Inscrutable. Impenetrable.  
Daring you to consider possibilities.  
What happens if you investigate?

Run your fingers over its surfaces.  
Consider the boundaries that mark its edges bordered by air.  
Breathe deep  
and spell the presence of the box.

You discover a hole on top.  
You insert a funnel  
like an inverted megaphone shouting into the blackness.  
*Is anybody there?*

On the counter are flasks of water of equal measurement.  
Repeatedly, you pour water into the funnel  
and within the workings of the black box  
an unseen journey is traveled by the water  
which then exits from a hole  
at the bottom of the box  
into an empty flask.

Each exit is unique unexpected.  
Coloured water.  
Water measured by half.  
Water lost recovered.

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<sup>160</sup> One of the activities in the science class undertaken by the students in the science education methodology course taught by Karen Meyer (site of the science education research project for this dissertation) is the black box investigation in which the professor pours flasks of water into a black box. The mechanics inside the box dictate the flow, amount, and colour of the water as it exits from the box into a glass flask. Students are invited to theorize and draw the imagined mechanics of the waterworks within the box, using coloured markers on paper. The activity concludes with presentations by individual groups of students explaining how the box works. The professor, however, does not allow the students to see inside the box, a position which elicits groans of protest and frustration. The point she hopes to illustrate is that scientists, in their theorizing of the universe and all its workings, cannot open the black box of the universe to corroborate their theories.

Is there a pattern to the pouring and retrieving of flasks of water?  
What inner workings within the black box dictate its path?

Perform. Reflect. Theorize. Repeat.

You create theories.

Primary colours map possibilities on large sheets of paper.

You are a scientist reimagining the workings of the black box.

Seeking a theory to explain the universe.

A black box.

There is an easy answer.

Open the box.

But unlike Pandora  
you cannot open this black box.  
Like our universe, it remains sealed.

Resistance.

Can you trust your theories?

Did you remember to recognize *you* in your theories?

Can you realize interstanding between spaces of confirmation?

What happens when all we have are questions?

Will you write a theory of the universe?

Will angels applaud?

Will we listen?

What if you are wrong?

**open your textbook to page ...**

In school science learning, the child develops not only an understanding of ideas about the natural world, but a conception of the nature of science knowledge. Furthermore, the child develops a conception of self as a science learner that ranges from a sense of great competence to one of despair or even total failure.<sup>161</sup>

In practice, the traditional interpretation of teaching the young person to know science has meant almost exclusive emphasis on the acquisition of a body of knowledge or a set of facts ....<sup>162</sup>

Children are taught from an early age to confirm findings by using the senses — sight, hearing, touch, taste, smell. Suddenly they are asked to suspend or ignore this information and simply accept as true what they cannot see for themselves.<sup>163</sup>

Although scientists frequently create new language to reconceptualize and rename the world, rarely are students shown the creative nature of this process. In the science classroom, students are more often asked to simply memorize the terms scientists have used to conceptualize problems .... As students progress through the school program, science learning becomes less and less a personal experience .... This often leaves students with the task of memorizing scientists' language and ideas without understanding the processes of thinking that have brought these ideas into existence.<sup>164</sup>

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<sup>161</sup> Shapiro, 1994: xiii.

<sup>162</sup> Shapiro, 1994: 161.

<sup>163</sup> Shapiro, 1994: xviii, xix.

<sup>164</sup> Shapiro, 1994: 33, 34.

**looking through a classroom window sounding**

*Imagine a universe  
in which a sun shines with a brilliance  
ten billion times hotter  
than any celestial object  
within its omnipresent glare.*

*This sun struts around the galaxies  
whitewashing  
shadows uncertainties imaginings  
with cruel cold splashes of light.*

*There are thirty planets in stationary  
motion.  
Stars are pinpricks on the black curtain of  
space.  
No one disturbs or questions these stars.  
They are the facts.  
A falling star is a meteorite out of orbit.  
Punishment is quick death.  
There is only one colour in Charlie's  
colouring box.*

*The heat of the sun has fire-torched six of  
the planets.  
There are no survivors.  
Charred bodies hang suspended from the  
ceiling  
twisting in the chill of the air-conditioning.*

*The remaining planets ignore the ceiling.  
They do not look up.  
They write in their notebooks:  
Purpose. Hypothesis. Procedure. Results.  
Conclusion.*

*A clock measures time.  
Tick. Tock.*

*A boy is daydreaming in a far corner of  
this universe.*

*He has many ideas —*

*they orbit his desk like radioactive  
fallout.*

*When he moves his hands through them  
a phosphorus dance maps their  
path.*

*He dreams of a universe where  
the faster he runs  
time slows down*

*where clocks are obsolete.*

*He believes that by running fast he will  
find time to imagine another universe —*

*The bright glare of the sun in his eyes  
frightens him.*

*A petri dish sits on the windowsill.*

*An angel passes unnoticed outside the window.*



The young patent clerk still sprawls in his chair, head down on his desk. For the past several months, since the middle of April, he has dreamed many dreams about time. His dreams have taken hold of his research. His dreams have worn him out, exhausted him so that he sometimes cannot tell whether he is awake or asleep. But the dreaming is finished. Out of many possible natures of time, imagined in as many nights, one seems compelling. Not that the others are impossible. The others might exist in other worlds.<sup>165</sup>

Like an angel looking for its earthly body, the gaze seeks out its embodied form. It feels deprived of its presence in the ongoing movement of life. It desires what it is not, yet senses dimly it is. It seeks union with its double in order that it might become itself.<sup>166</sup>

How do we explore our universe? *with questions. with imagining. with wondering and wandering.* With experiences that help us realize the magical “web of relations”<sup>167</sup> that spider-weave landscapes that are us. The sun shines. The grass grows. We laugh. Is there a connection? School science hopefully seeks to connect us with our environment, ourselves, and each other. *our bodies. energy. motion. light. sound. the tensions between.* School science is an opportunity for students to play through experiences and conceptions of our universe, to realize possibilities and potential, to consider alternative realities and possibilities. And yes, to imagine a universe into being.

*you think of the sailors who thought the world was flat  
and so they would sail and sail and keep looking for the edge.*

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<sup>165</sup> Lightman, 1993: 6, 7.

<sup>166</sup> Applebaum (1995).

<sup>167</sup> Arendt, 1958: 184, as quoted by Greene, 1995: 59.

Narratives of science have multiple voices, multiple perspectives, multiple languages, and yet we, as educators, often fail to hear the melodies that overlap, interlap, underline the narrative(s) presented in school science. We deny. Or dismiss. We plead ignorance. We point to the textbook. Interpretations of evidence are subject to the interpreter: the experience of evidence is subject to the perspectives and attitudes of those who experience.

Within the science classroom, students and teachers write the poetry of the universe in the language of scientists. And our universe is still-(being)-born. Do we in our efforts to (re)present our scientific world within the boundaries of the science curriculum leave enough space for our students to write themselves into the universe? Whose universe is it?

*We had the sky, up there, all speckled with stars, and we used to lay on our backs and look up at them, and discuss about whether they was made, or only just happened — Jim, he allowed they was made, but I allowed they happened: I judged it would have took too long to make so many. Jim said the moon could a laid them; well, that looked kind of reasonable, so I didn't say nothing against it, because I've seen a frog lay most as many, so of course it could be done. We used to watch the stars that fell, too, and see them streak down. Jim allowed they'd got spoiled and was hove out of the nest.<sup>168</sup>*

But when future children see the maze of numbers to which the sky has been reduced, what will they think of the gods of science, of the conquests science has made? Will they feel invited to join in a universe where men and women are shadows of gigantic gods with a destiny large enough to fill a whole sky? Or will they see, in the numbered stars, the numbered blobs of matter, a clue to their own reduced destinies?<sup>169</sup>

*"Were you so sad, then," I asked, "on the day of the forty-four sunsets?"<sup>170</sup>*

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<sup>168</sup> Twain, 1994: 158-9. *The Adventures of Huckleberry Finn* was first published in 1884.

<sup>169</sup> Cohen, 1986: 237-8.

<sup>170</sup> de Saint-Exupéry, 1943: 25.

When we journey into science through drama and storytelling, we begin to understand that science is realized through a creative and critical exploration of perceived and imagined phenomena, a vibrant search for underlinings, inter-connectedness, inter-relations, inter-possibilities of action and interaction. There are many ways to imagine a universe into being, and, through the vehicle of our imagining, to voice our interstandings.

*Imagine a universe where distance does not exist.  
Here the sun spits hot flames in quick sentences.  
Thirty planets jostle vainly seeking recognition.  
None have names.  
The angry buzz of a traffic collision immobilized  
drowns out the words of a poet.*

*I lie.  
There are no poets.*

*Competition is fierce.  
Space is non-existence.  
There are no children  
dancing in the streets.*

*There are no streets.  
Everywhere leads to nowhere.  
The subway car is flesh- packed.  
Itineraries are incomplete.  
Suitcases are empty.*

*Stars are molten blobs stuck on someone's elbow.  
A bomb explodes.*

*Release.*

I too might imagine an electron into being. Not as a hyperactive ball haphazardly playing hide and seek with a nucleus, but as an ex-lover, absent but present. I turn my head, he is there, unexpected but anticipated, sly-mocking my miss-understanding. You cannot hold me, but I am here. *here.*

*here.                      somewhere.                      keep looking.*

Magicians are brilliant scientists! The illusion presented to us with a concave mirror, box, and light bulb was a magic trick ... a combination of angles, distance, and relationship of the viewer to the objects manipulated was crucial to my viewing the illusion .... Is magic actually science, or is science trying to make sense of the magic that we do not understand?<sup>171</sup>

*spelling a possible universe into being ...*

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<sup>171</sup> Carol (1997) from a taped interview. For the purpose of this dissertation, quotes from student participants will be recognized by their name (alias), year of participation in the science education research project, and source. Carol is referring to the concave mirror experiment described in the text immediately following her comment.

### **concave mirror experiment where real meets virtual**

The professor prepared the experiment which now sits on a lab table.  
At one end of the table, sits a concave mirror and, in front of the mirror,  
she has strategically placed a box open-ended on one side  
within which hangs an upside down lightbulb.

“Stand here,” she says,  
and one by one, we position ourselves  
at the other end of the table and peer past the box  
into the concave mirror.

But something interrupts our gaze.

Arrested —  
we see an image of the lightbulb sitting on top of the box!

“This is a real image,” the professor says.

“Now, explain how it is possible that you can  
see a lightbulb in a space *where it doesn't exist*.”

An unexpected viewing.

We divide into groups,  
scout information from others,  
reposition ourselves  
in relation to the image,  
in relation to the experiment.

*What happens if? What matters? So what?*

This is the third time I have done this particular experiment.  
It never ceases to amaze.

Results of our explorations speak to the experience  
of inter-relationships (re)affirming presence —

What matters is  
light  
angles of reflections  
the concave mirror  
our positioning  
the positioning of  
the light bulb  
and box.

To see what we see is possible  
through our action and interaction with the phenomenon of light  
as we play presence into being.

A voice interrupts.

“What if you put a mirror in front of the real image?  
Will we see the light bulb in the mirror?”

“I’d never thought of that!” exclaims the professor.  
“I don’t know,” she confesses.  
“Let’s try it!”

A mirror is found.  
Held in position.

*And in the mirror, like magic, we see a virtual image of a real image!*

We are amazed.  
The complexity of the moment exalts.  
This too is possible.

The textbook lab is improvised.  
Ownership of knowledge slips  
into shared responsibility and empowerment  
as students and teacher perform the unknown into known spaces of learning.  
Who is the learner? Who is the teacher? We dance possibility between.  
An unexpected space moment of learning welcomed.

A student imagines — *What if?*

and performance realizes  
a possible universe into  
being.

## sound sniffing in a science classroom<sup>172</sup>

She hesitates at the threshold of the classroom door. Light shadows play her face. "I am a sound artist," she protests. "What do I have to say to science teachers?" She walks around the lab in catpaws, stealthily sounding the room. Pauses, sniffing sound.

*Throw out a sound and the room will return it to you in variations of form.* Like a diesel truck rattling the windows of a third floor apartment. Like a train whistle sounding memories of lying under blankets, listening to trains shunting in the railyard. Like a foghorn warning water-travelers, sound shaping shorescape in fog-born rhythms.

We walk around the campus listening. Listening to buildings breathe. Listening to the rustle, crackle, crunch, tap-tap of footsteps in conversation with stones, pavement, leaves, earth-touch-sound of our laying down a path in walking. Listening to voices announcing the changing language of time. *I'm late! Coffee to go. I didn't have a clue what he was talking about. Did you get your assignment done? Passing on your left!*

We lay down the sounds of our university on a giant piece of newsprint, marking our presence sounded and heard. Sound imagined and remembered. Ice breaking on a lake under the weight of a canoe. An infant's first breath of laughter. A traffic jam in Calcutta counterpointed by temple bells, shouting vendors, warning horns by harried messengers on bicycles.

The classroom reverberates in her presence, a cacophony of intertextual echoes, sounds, replies, questions, possibilities. I walk home listening to the world on my fingers.

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<sup>172</sup> Hildegaard Westercamp, a Vancouver sound artist, gave three workshops to education students participating in the science education research project.

**sounding presence like a saxophone note lingering sweat stained in the air**

... like science is everywhere, whether or not you admit it, and half the time you probably understand. Like ... that guy who does the lighting for the ballet, I bet you he never thinks of his lighting as science. I bet you he doesn't. I really don't think so. And the guy who's a musician who can play the trombone or the trumpet with absolute purity, probably never thinks of it as saying, "Well, you know, this is my little science kit here," but he does, you know. Or the guy who can sing perfectly, he's got the perfect biological science within him.<sup>173</sup>

*He was the best and the loudest and most loved jazzman of his time, but never professional in the brain. Unconcerned with the crack of the lip he threw out and held immense notes, could reach a force on the first note that attacked the ear. He was obsessed with the magic of air, those smells that turned neuter as they revolved in his lungs then spat out in the chosen key. The way the side of his mouth would drag a net of air in and dress it in notes and make it last and last, yearning to leave it up there in the sky like air transformed into cloud. He could see the air, could tell where it was freshest in a room by the colour.<sup>174</sup>*

*I fill my pockets and my hands with stones and walk into the river .... I stand on the bottom, my boots sucked down by mud, the current flowing around me, a cloak in liquid wind ... and when I can't stand the silence any longer, I slip out of my skin, into sound.<sup>175</sup>*

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<sup>173</sup> Doug (1996) from taped interview.

<sup>174</sup> Ondaatje, 1976: 14.

<sup>175</sup> Michaels, 1996: 11.



## wish upon a falling star

*Three science teachers, a drama teacher, and thirty students stand on the top of a hill staring up into the midnight sky. An unexpected light flashes across the night and disappears.*

The positivist says: That's a meteorite. It burns up when it enters earth's atmosphere. Turn to page 34 in your textbook ...

The students reply: Is it on the test?

The constructivist says: What do you already know that will tell me what that is?

Student A replies: There are stars in the sky. Stars fall down. That was a falling star.

Student B replies: Stars are angels that fall from the sky when someone dies.

Student C replies: It's the toothfairy collecting another tooth.

Student D replies: Star Trek. The Enterprise.

The inquist says: What did you see? Deconstruct. What matters? What if? So what?

The students reply: An unidentified celestial object. Moving through the sky. A flash of light then blackness. Investigate. Brainstorm. Suggest possibilities. Form a theory. Test it. Consult available resources. Apply hands-on material. Compare our ideas with scientific explanations. Be open to ideas. Anything is possible.

The dramatist says: Explore. Research. Imagine. Play this moment of your interstanding.

The students reply: (in choreography, in tableau, in scripted scene) This too is sciencing our universe.

*We have miscalculated. The drama teacher is also a science teacher. There are four science teachers standing on the hill.*

*(Define science teacher.)*

## seeking conclusions not possible but imagined

*We open the space of science education in the classroom  
to give voice to the imagination and imagining that is science.  
To touch with our fingers abstract  
To smell with our hearts experiment  
To taste with our memories procedure  
To hear with our music hypothesis  
To presence with our becoming purpose  
To join in companion results  
To trust in absence conclusion*

Purpose. Hypothesis. Procedure. Results. Conclusion.  
Observation. Experience. Context. Environment.  
What if? What matters? So what? Who cares?

When we invite our stories and the stories of others into the science classroom, we begin to share in the landscape-journey that is sciencing our universe. A student remembers lying on his trampoline outside, staring up into the northern lights, watching the colours paint an ever-changing mural. Another tells of her daughter running home shouting, "Dixie and I walked in the northern lights across the soccer field. There was pink light all around us!" A third student, enthusiasm intertwining maps, video, chalk diagrams on the blackboard, presents her research on the *aurora borealis* to the class. The interplay of research, personal experience, and storytelling co-evolve into interstanding. The northern lights play in classroom imaginings, realized into welcomed recognition through experience, interpretation, and shared recollections.

... tonight, when you go for a walk, after the sun has slipped off to bed and Venus hangs low in the summer sky, look to the north. If you're lucky, you will see the northern lights dancing. It's what scientists call the *aurora borealis*. But you know and I know that it's just the angels, wearing their neon headbands, snowboarding the night sky.

*If we asked a child to name her universe what language would she dance?*

Science is an ambitious endeavor, daring us to reconcile imaginings and recognitions of possible universe(s) as perceived through the particular lens(es) with which we, individually and collectively, view our world(s). Through questions, embodied explorations, imagined possibilities, shared memories, collective and individual interpretations, intertextual conversations<sup>176</sup>, we are students imagining a universe into interstanding.

*If,  
as educators,  
we view  
scientists in white labcoats or school science textbooks  
as the primary sources of definitive answers  
in the unraveling of the universe's mysteries,  
we will silence both ourselves and our students.  
We will limit our participation to the sidelines,  
like hapless wallflowers at the edge of a gymnasium floor  
with no space welcoming us to dance our science into being.*

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<sup>176</sup> Our explorations in science class encourage intertextual conversations between students, teacher, science textbooks, poets, personal and collective stories, novels, artists, experiments, paintings, scientists — intertextual conversations which affirm, (re)confirm, inform, and invite scientific interstanding through performance. It is important to understand that the science textbook is not evicted from the classroom. Our textbook expands to embrace communications and shared explorations with scientists and researchers who are creatively and critically investigating and (re)imagining possible new worlds through medicine, astrophysics, genetics, bio-technology. It is by opening up our conversations and interactions with others intertextually, that children learning school science may participate, be empowered, and understand that they, too, may voice the sciencing of their world(s).

*But  
if we see ourselves  
as fellow explorers, co-partners  
in the experience experiment imagining of science,  
our students will take us  
on a journey of unexpected knowing being doing creating.  
They will embody science and write their own  
individual and collective stories of science  
through performative inquiry —*

*a creative critical investigation of world(s)  
imaginary, perceived, experienced.*

*if we ask a child to imagine her universe, what science would come into being?  
if we ask a child to science her universe, what imagining would welcome our becoming?  
what happens when we journey into science through drama and story?  
this is not a question.  
this is a possible universe.*

Here, then, is a great mystery. For you who also love the little prince, and for me, nothing in the universe can be the same if somewhere, we do not know where, a sheep that we never saw has — yes or no? — eaten a rose .... Look up at the sky. Ask yourselves: Is it yes or no? Has the sheep eaten the flower? And you will see how everything changes .... And no grown-up will ever understand that this is a matter of so much importance!<sup>177</sup>

*Bubbles. Surface tension. Rainbow colours. Light refraction.  
Dishwashing soap. Laundry Soap. Shampoo. Blowing bubbles.  
Soap in the eyes. Hidden flesh. Bubbles. In the drain. Skyhigh.*

*Will I ever be able to relax in a bubble bath again? <sup>178</sup>*

Science stories possibilities.  
Stories without endings or beginnings.  
Stories of being becoming.

Tell us a story of sciencing our universe.  
A dance, a song, a play,  
a poem ...

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<sup>177</sup> de Saint-Exupéry, 1943: 91.

<sup>178</sup> Sally (1995) in conversation during class.

## Cosmic Absence<sup>179</sup>

In light of the fact  
i tumble you into white sheets of  
light  
our lovemaking tumultuous interplay of light and shadow

shafts of sun spilling through the window  
into a pool of liquid light on the wooden floor  
your face reflected in my face mine in yours  
our faces suns

an eclipse is cosmic grief the loss of image  
a celestial wedding her face against the moon's face the sun  
a bride dressed in the absence of light wears a diamond ring  
too bright to bring to the naked eye

Zeus in his anger terrible banishes the sun to punish disbelievers  
does he also now wander the skies extinguishing the stars?

light traveling the speed of light  
messages sent by celestial angels  
a star death announced  
by a brief telegram received lightyears  
after the fact

the science lab transforms into  
a cathedral crosses of light  
startle the doubting thomases  
we manipulate light and balls  
children playing house  
in a universe that laughs at our clumsiness and  
locks her secrets in the jeweled knowing of starlit skies  
trying to understand the mechanisms of the black box  
we create theories on white paper skies  
with rainbow markers

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<sup>179</sup> A poem which I wrote in response to a unit on light explored in the first year of our science education research project and read during an in-class conference on light by an astrophysicist invited as guest speaker, February 1995.

the black box cannot be opened  
our questions fail to crack the combination lock although  
a couple of indentations are noticed when the  
box is returned to storage

the classroom steals our shadows looking for them we  
go outside the vancouver rains refuse to lift their veils of grief  
shadows lost  
the city weeps in their absence  
the classroom a space of light refusing to acknowledge our  
presence

pointillism  
points of lights  
rebounding rays criss-crossing no strings attached  
an endless game  
of billiards

we create light and shadow shadows in light  
playing shadow tag I run towards you to escape  
at night the flashlight makes you a prisoner  
my own imprisonment reflected in your eyes

*in light of the fact i tumble you in white sheets of light  
the image of the sun pressed against our bodies.*

**in our absence, an angel breathes a universe into being**

Finally, then moving from  
an imagining of The Universe  
to the tiny red arrow that says,  
*You are here.*<sup>180</sup>

*Perhaps all this is not real —  
this universe of ours that we call “real”  
with its traffic collisions, its wars, its technologies, its skyscrapers, and pollution.*

*Perhaps we are an ever-expanding hole  
in the ozone layer of a universe not ours.  
Perhaps we are being imagined by someone else  
and the presence we are is  
in that space of intersection in-between.*

*Or perhaps we are absence  
Waiting impatiently in an empty space to be danced into being  
Not yet imagined  
A delusion of our own imaginings.*

*Perhaps we have been imagined and are now forgotten  
set adrift to wander unclaimed in a universe of fragmentary space-moments.  
Perhaps we are a space-moment remembered in a researcher’s diary.  
Perhaps we are performance danced into being becoming.*

*Or perhaps we are someone else’s theory  
chalked on a blackboard to be erased when the bell rings ...*

*(curtain suspended neither rising nor falling  
being becoming in absence of applause)*

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<sup>180</sup> Rasberry, 1997: 25.

*light sound movin' around:  
what are monsters made of?*

*spelling science into recognition through performance*

*landscape three*

*so what?*



## ***light sound movin' around : what are monsters made of?***

*If there is to be a beginning out of weariness — and consequently active learning initiated by those choosing to learn — there has to be an interrogation. There has to be a why, and I would add, in order to investigate this why, the capacity to imagine what is not yet.*<sup>181</sup>

Behind the curtain, the ten university students and their two professors attend to last minute details, the performance imagined in science class now moments from show time. “Is my make-up okay?” queries one of the Jesters. Einstein and Wendy rehearse their lines in a secluded corner. Einstein’s rabbit ears tremble with stage fright. “Two minutes to curtain time,” cautions the director. In the booth, the sound technician cues the CD player. The lighting technician dims the house lights.

The Monster whispers, “Break a leg.”  
And the play begins ....<sup>182</sup>

## **fragments of a landscape journeyed**

*Friday afternoon, December 5, 1997*

I am side-stepping this moment — an intertextual remembering that resists archival rendering. How do I enter into the application that was? Layer text into remembered being? Is it enough to push play on the VCR and let the tape run? How do I bring multi-dimensionality to a bi-dimensional space?

I remember Einstein<sup>183</sup> and it is as if his shadow now leans over my shoulder in this writing. I hear him still, spouting his textbook science, ears flopping in conversation ... I remember Wendy, with her plaid pajamas and ambitious pigtails, chasing monsters from hidden

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<sup>181</sup> Greene, 1995: 24.

<sup>182</sup> Meyer & Fels, 1998: 22.

<sup>183</sup> Einstein is the name of a character in *Light Sound Movin' Around: What Are Monsters Made Of?* (1996). See footnote 184 on page 123. Einstein is a six-foot plush velveteen rabbit who accompanies Wendy on her journey through the lands of light, sound and motion and whose understanding of science is restricted to a mere echoing of scientific definitions gleaned and memorized from science textbooks.

shadows, decoding phenomenon with a detective's aplomb. Should I invite her into the text? Will she welcome my presence in her text? In the writing of this thesis, will I accidentally write her out of text? Which moment, among the moments that are the landscape of this journey, do I pluck and plant in the text — a momentary signpost signaling possibilities? Is it enough just to say we happened?

Violin notes counter-compose as I type soundless paragraphs onto the computer screen. My daughter plays her presence in the livingroom as I sit upstairs in my office seeking resolution, comforted by the concerto that vibrates the air I breathe. If only I could sound the landscape explored with the confidence she brings to the notes inscribed on her music sheet.

How do I compose a piece that resonates with the performance that is my inquiry? Perhaps I should simply retell the narrative that was *Light Sound Movin' Around: What Are Monsters Made Of?*<sup>184</sup> and with chronological diligence, retrace our journey into science through performative inquiry. A chronological retelling is possible, and yet, in the unfolding of light that spells yet another moment's distance from what was realized through those months, hours, moments, I resist the expected narrative.

Is it not enough that in the wind clothes dance on a line? Must I now like Einstein attempt definition to realize the spelling of understanding? A risk-filled ambition. Does not the Monster warn, "Light, sound, movin' around. A nice scientific theory, but that's not all monsters are made of ..." <sup>185</sup>

*What monster do I create in the writing of this thesis that is performance?*

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<sup>184</sup> *Light Sound Movin' Around: What Are Monsters Made Of?* (1996) was created and performed by education students participating in the science education research project in the Winter of 1996. The play was performed for two audiences of children from a local elementary public school. April 25, 1996.

<sup>185</sup> From *Light Sound Movin' Around: What Are Monsters Made Of?* (1996).

The data spells three years of research,<sup>186</sup> and yet, recording understanding is elusive. We assume a precarious stance on Phelan's suspension bridge, straddling between remembered experience and imagined possibility.

<i>What if?</i>	We create our own monster called Science.
<i>What matters?</i>	Language, Exploration, Inquiry, Imagination.
<i>So what?</i>	A mapping of our universe through our words, our experience, our being becoming present in action and interaction. <sup>187</sup>

To realize performative inquiry is to recognize moments of interstanding. A layering of illuminations that dance shadowed presence on the text that is our performance. This is how it was — this unfolding of an imagined landscape of light, sound and motion into knowing doing being creating through performative inquiry. We play a monster into being, and within the performance that is our inquiry, we realize possibilities and absences. Imagining a universe into being unleashes a childhood monster and, through our challenging the monster, we recognize spaces of reconciliation.

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<sup>186</sup> In the fall of 1994, I was fortunate to be introduced to Karen Meyer, a science educator and professor at the University of British Columbia. For three consecutive Winter terms, we co-designed and taught a science education methodology course which introduced physical sciences through performative inquiry to education students. Embodied in the course were drama activities (role play, improvisation, readers' theatre, soundscapes, creative movement, charades, play building) which explored science through metaphor, storytelling and dramatic presentation. Our imaginative investigations in light, sound, and motion were complemented by experiential activities investigating the phenomena and by physical endeavors such as swimming, skating, and playing billiards. The premise of the course was that science may be investigated through the inter-connections and inter-relationships possible within a context and environment of everyday living. These inter-relationships and inter-connections are explored through performative inquiry. In our first year, drama activities were undertaken by the students in-class and their initial enthusiasm encouraged us to pursue our research beyond the initial three month pilot. In the second year, students created and performed a play based on performative inquiry and experiential hands-on investigations of light, sound, and motion in the science classroom. The play, *Light Sound Movin' Around: What Are Monsters Made Of?* was performed for local elementary students at the university cinema theatre. Prior to attending the play several weeks before the performance date, several classes of elementary students participated in hands-on experiments designed and led by our students. In our third and final year, our education students again designed and led hands-on experiments for students in classes at the local elementary school. Each participating class then created a science drama video based on the concept (light, sound, or motion) investigated in their classroom. The project concluded with a video festival showing highlights of the students' videos, interspersed with scenes of famous moments of scientific discoveries. Findings from the science education research project have been published in two articles. See Fels & Meyer (1997) and Meyer & Fels (1998).

<sup>187</sup> Meyer & Fels, 1998: 25.

The documentation of my research relies not on field notes nor interviews nor fragments of student portfolios, but on an intertextual (re)imagining of a space-moment performed. For a retelling of a landscape journeyed through performative inquiry (that is itself performative inquiry), I seize upon a moment that falls within a moment that falls yet again into our presence: Einstein's meeting of himself within the light-shadow that announces his being present in action and interaction with his environment.

Remembering that performative inquiry is exploration, questioning, imagining, investigation, journeying through performance, we realize that interstanding requires our active participation, creative imagining, and critical recognition of what is possible and what yet is absent from our known presence. Sticking to a script is not the performative researcher's way into interstanding. There needs to be improvisation, an imagining of other possibilities, and a willingness to release what is known or expected so that opportunity and interstanding may be performed and recognized.

This is a moment of crisis and opportunity.  
Secure your parachute.

**performative inquiry — reimagining presence that is us**

Einstein:     HELP! There's a giant bunny after me! Don't panic! Stay calm! There must be a scientific explanation for this? Ah, yes! When an object intercepts the light falling on a surface, then the size of the shadow will be dependent upon the distance that the object is away from the light source! Whew! *Einstein turns around and sees his own giant shadow and again screams.* It's still there! Wendy! Come over here! Quick!!!!!! <sup>188</sup>

Imagine a carrot. Be careful! This carrot is ticking. Tick. Tick. Tick. Einstein! Look out! It's a carrot bomb! Ka-boom!!!

Einstein:     I'm never going to eat carrots again! They are potentially dangerous!

A rabbit who dislikes carrots is as rare as a six-foot pink bunny named Einstein who reads *Scientific American* at bedtime. But Einstein exists, and, due to an unfortunate run-in with a carrot bomb, currently lists broccoli as his favorite food. Now there may be a metaphor lurking in the not so innocent shape of an unearthed carrot — perhaps it is a foreshadowing of scientific misadventure in the classroom lab where students stray from detailed instructions. Or perhaps it is a not so subtle allusion to the phallic dominance of a science curriculum that values objectivity, mathematical formulas, and scientific language. Perhaps the carrot is Einstein, an experientially-deprived breathing textbook. Open a page, if you dare. The carrot represents the science that Einstein thinks he knows, oh so well, having memorized pages and pages of definitions, until he takes a bite, and the “crunch” is replaced with a ticking bomb. How can he protect himself from what is not expected? Unless Einstein recognizes his enemy which is himself, each carrot is a potential time-bomb waiting to detonate —

Let us imagine broccoli instead. Broccoli is safe. It is healthy. Einstein loves broccoli. But alas! Broccoli is an inadequate metaphor. Slip it under Einstein's pillow for his midnight snack. Sweet dreams, Einstein.

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<sup>188</sup> Excerpt from *Light Sound Movin' Around: What Are Monsters Made Of?* (1996).

Let us imagine an onion. Layered light. Layered skins of experience. Realized through performative inquiry. The whole onion is the play.<sup>189</sup> Peel a layer, and we imagine a land of light. Peel another layer, and Einstein meets a giant shadow. Peel yet another layer — here's a hanky — and we are in rehearsal, experimenting with light and shadow, sound and motion, science and interpretation, performing possibilities ...

*... the role of imagination is not to resolve, not to point the way, not to improve. It is to awaken, to disclose the ordinarily unseen, unheard, and unexpected.*<sup>190</sup>

(I am rewinding the video tape. Here. Press the pause button. This is where I want to be.)

*Two days before final rehearsal. We are in the auditorium rehearsing Einstein's encounter with his shadow. The lighting technicians are fiddling with the lights, trying to reduce the size of Einstein's shadow on the screen behind him. We are stopped in action. Einstein is dissatisfied with the script. It is a moment of crisis and opportunity.*<sup>191</sup>

Einstein:       HELP! Wendy! My shadow is shrinking!

It isn't working. This shrinking thing. It's really corny. Like, I'm shrinking — oh I'm so scared!

It's what we wrote in the script. Wouldn't you be scared if your shadow was shrinking?

Like, no.

But we talked about it in the classroom when we were trying to imagine different scenarios. It made sense then.

Sure, on paper it works. But now we're here. Like, it's just a total lie.

Listen, Einstein, it's in the script. Just do it. We don't have time to rewrite this scene.

I hate to interrupt but like the lighting sucks —

The lighting — !? What do you mean?

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<sup>189</sup> "The play" refers not only to "Light Sound Movin' Around: What Are Monsters Made Of? (1996)" but also to the creative action and interaction of play.

<sup>190</sup> Greene, 1995: 28.

<sup>191</sup> The following text is a (re)play of multiple voices including Einstein the actor, Wendy the actor, the researcher, the director, the lighting technician, the student in charge of props, and one of the actors playing a jester. I have chosen not to identify individual speakers because our space-moment of learning emerges through collective action and interaction. The moment (re)played is an intertextual embodied conversation.

It's not working. We can't get his shadow to shrink. Like, it's technically possible but —  
There's no angst in the moment. I need something that gets the fur rising on the back  
of my neck.

Maybe if we reposition the lights?  
He's just not standing in the right place.  
Einstein, stand over there.  
I'm talking motivation here.  
Just say the line again.

Einstein:      HELP! Wendy! My shadow is shrinking!

See, it doesn't work.  
It doesn't work.  
I can't see the shadow from back of the auditorium.  
What if?  
What if what?  
What if Einstein's shadow got bigger instead of smaller?  
Bigger?  
And when I turn around, I see —  
A giant bunny!  
and I'm terrified.  
It has possibilities.  
What about the lines you say?  
I'll change them.  
Any ideas?  
Just let me try it.  
Hang on a minute. We have to figure out the lights.  
Could we use a flashlight?  
Wendy's got one in her backpack.  
Wendy, where's your flashlight?  
Here it is.  
Let's try it.  
Einstein, get back into position.  
Not enough light. What about a spot?  
Where should we shine it from?  
What about in front of the stage?  
Who holds it? Wendy?  
It's too big for her to carry throughout the scene.  
I'll do it. Give it to me.  
You have to hold the light in front of him so his shadow falls on the screen.  
Are you sure?  
Yeah, remember what we did in class?

*When an object intercepts the light falling on a surface, then the size of the shadow will be dependent upon the distance that the object is away from the light source.*

Say it in ordinary language.

It matters to the size of Einstein's shadow where he stands in relation to the light and the screen. When he's far from the light, his shadow on the screen is small. The closer he gets to the light, the bigger his shadow.

I think that's right ...

Show me.

Hey, Einstein. Walk towards the light.

Like this?

Stop wriggling your tail! See, his shadow gets bigger.

We'll have to reblock the whole scene.

What's he going to say?

I don't know. Any ideas?

Let's just try it and see what happens.

Einstein, get your bunny tail into position.

Quiet on the set.

Einstein: HELP! There's a giant bunny after me! Ahhhhhhh!!

Yes! I like it!

It works!

I'll put the change in the script.

I've already marked it in mine.

What's next?

Lighting Problem #2 — Creating the (bunny) monster — From class activities we knew that the size of the shadow depended on how close the object, actors were to the light source and the screen.

A flashlight was not bright enough to light up a whole person's shadow so we decided to use a hand-held spot. However, Wendy could not carry a spot with a cord throughout the play so we positioned one at the edge of the stage for this scene ... this led to modifying the script slightly ...<sup>192</sup>

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<sup>192</sup> Lighting technician's notes, 1996.



... on paper ... afraid of your shrinking [shadow], that'll work or whatever and then being up there, does not work — even when I watched [the] video ... watching that shrinking thing I thought, "How corny, that doesn't even sell — that is just total lie." I guess it showed even in my performance [during rehearsal] I didn't think it was working. "I'm shrinking. Oh, I'm so scared." Right, I'm a wuss<sup>193</sup>

—  
and then, I think it was you who came up with an idea that the shadow could be increasing in size. Okay, that'll work too. Let's try that and instantaneously, I turned around and thought, "If I saw something sneaking up on me, it would be like 'AAHHHH!'" — that's more realistic.<sup>194</sup>

*Two days before showtime, and we are rewriting the script through experience. Reimagining a bunny who meets his shadow and fails to recognize himself. As we rehearse the scene, the actor recognizes the dramatic inadequacy of a shrinking shadow. Coupled with lighting frustrations, we are encouraged to replay the scene, not on paper but on stage, with bodies and lights and repositioning expectations. Imagining what is not yet. Performance.*

Through performative inquiry, we work within the context and environment of our experience, physical and imagined. The text of our scientific exploration — the relationship between an object, a light source, and the resulting shadow — is performed within a play, requiring translation and transference of learning. Our investigations in the classroom are replayed within the theatre, as we reposition Einstein so that his shadow adjusts in size depending on where he stands in relation to the light. The script brainstormed during our class meetings is interrupted within the experience that is performance. Words that seemed honest and true on paper fail to resonate with Einstein, both character and actor, who refuses to be scared of his shrinking shadow — *"that is just a total lie."*

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<sup>193</sup> Slang for chicken or scaredy-cat or weakling.

<sup>194</sup> Einstein, the actor, (1996).

The co-evolving play shapes and is shaped by the interactions between the physical spaces of the theatre, the remembered explorations of the classroom, the creative and critical embodied experience during rehearsal, and the imaginary worlds inhabited by Wendy and Einstein. What seems to make sense on paper requires embodied experience within the environment and context of the action and interactions played by Einstein and Wendy, shadow and light. Setting up the light and reworking the lines play interstanding into being through performative inquiry. Our classroom understanding of how shadows work finds expression dramatically and experientially through Einstein's interaction with his shadow.

*Einstein: Don't panic! Stay calm! There must be a scientific explanation for this?*

Everybody relax.  
Einstein knows the answer.

*When an object intercepts the light falling on a surface, then the size of the shadow will be dependent upon the distance that the object is away from the light source.*

Words from a textbook.  
But the words have no meaning for Einstein.  
He has memorized them outside  
experience  
    environment  
        context  
            conversation.  
He cannot find himself in the script.  
He cannot save himself.  
He does not understand.

Einstein: It's still there! Wendy! Come over here! Quick!  
Wendy: What's wrong, Einstein!? Calm down!  
Einstein: There's a giant bunny right behind me and he's going to get me!!  
Wendy: Einstein, that's not a giant bunny!  
Einstein: No?  
Wendy: No! It's just this light making your shadow big!

*Wendy points out light in front of the stage to Einstein.*

Einstein: Really?  
Wendy: Yes! Now, just back up okay?  
Einstein: You sure about this?  
Wendy: Just go, Einstein! Nothing is going to get you!

*Einstein slowly backs away from light, towards the screen. His shadow shrinks.*

Wendy: Now, turn around.  
Einstein: It's small! It's just me!  
Wendy: Yeah! Told you it was just you and the light!  
Einstein: That's just what I said! I knew that!  
Wendy: Now that's figured out, let's go and find that monster okay?

*Reimagining a bunny who meets his shadow and fails to recognize himself. Our presence matters in conversation and interaction. Einstein believes himself absent from his scientific explanation. After all, the textbook definition does not directly identify him as a key player in the observation and experience of shadow-making. When an object intercepts the light falling on a surface, then the size of the shadow will be dependent upon the distance that the object is away from the light source. Terminology obscures meaning, distancing the learner from experience. The learner fails to recognize himself or herself in action and interaction with and within the phenomenon.*

Terminology for me was a major stumbling block. I think terminology also turned me off. That was something. Terminology ... frustrates some kids because not only are the kids trying to decode these terms but also apply the meaning to the concept at hand and while they're doing that the teacher is miles and miles ahead .... The farther this person falls behind and therefore they just tune out.<sup>195</sup>

Einstein learns science through an interruption of language and experience. Wendy slips between the scientific text that languages Einstein, and using a language of embodied experience, she walks him through the learning that is possible within the phenomenon of shadow. Recognizing and sharing her knowing with Einstein empowers both rabbit and girl.

Wendy plays through experience, repositioning Einstein to illustrate that his movements interacting with light reveal his presence through shadow. *"It's just me!"* Einstein recognizes himself and fear dissipates, although he then pretends that he "knew" all along who the giant bunny was.

Wendy: Told you it was just you and the light!  
Einstein: That's just what I said! I knew that!

We laugh, knowing that in his denial, Einstein is just a silly rabbit and that, unlike him, we, with Wendy, had known to whom the terrifying bunny shadow belonged. The monster that was a giant bunny that is Einstein becomes experience realized and recognized through performance. *"It's just me!"* In the absence of embodied experience, words fail. Within embodied text, interstanding is possible. Will Einstein recognize his shadow in the future?

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<sup>195</sup> Ted (1996) from taped interview.

Einstein the actor reveals his own positioning within the phenomenon through performance that is his exploration of shadow and light. "*How corny, that doesn't even sell — that is just total lie.*" He is uncomfortable. The script is not working; the interaction he attempts with a shrinking shadow fails to speak to his experience. There is no resonance. We reimagine the scene, and suddenly his heartbeat leaps into action. He performs through imagined experience, words and action creating a terrified bunny stumbling over a scientific text not yet recognized as relevant to his experience.

When Wendy, as character and actor, repositions Einstein's body in relationship with the light, and walks-talks him through the experience of making his shadow smaller and bigger, interstanding becomes within Einstein's grasp. The language of experience, embodied in action and interaction, makes recognition possible. Einstein's engagement with his shadow and the light in conversation with Wendy makes visible the embodied experience behind the textual definition spouted by Einstein. Language matters in conversation and experience.

Wendy:      You know, Einstein, I really hate this science homework. All we do is read from big fat text books and memorize formulas and definitions .... It's all scientific bafflegab to me! Why don't they just use normal language? Science is so boring!

Wendy resents the linguistic trickery of "scientific bafflegab," trusting her own experiential learning and vocabulary to explain phenomena such as giant bunny shadows. She demonstrates in her own words the connections and inter-relationships between Einstein,

the light source, and the size of his shadow, illustrating in action and interaction what the scientific text failed to explain to Einstein.

Wendy comes to understand, through creative action and interaction, the landscapes of light, sound, motion. She brings to her embodied text an interpretative spirit which invites a spirited response to the shadow monster. At the end of the play, when the shadow monster is a threatening presence, Einstein mouths incomprehensible formulas while Wendy enacts a creative and critical application of what she has learned to defeat the monster.

Our own reliance on a script created during brainstorming sessions during classroom sessions threatens to interrupt the learning possible during rehearsal when Einstein confronts his shrinking shadow and fails to be moved to terror. Initially, there is resistance to (re)imagining what is not yet.

Listen, Einstein, it's in the script. Just do it. We don't have time to rewrite this scene.  
It's what we wrote in the script.  
Einstein, get back into position.  
We'll have to reblock the whole scene.  
What's he going to say?  
Just say the line again.

*It's not working.*

But resistance invites the opportunity of revolution. In recognizing resistance and welcoming possibility — *Let's just try it and see what happens* — playwright, scientist, director, actor, student, teacher release the bonds of the script, the curriculum, the expected so that the unexpected may be realized.

A space moment of learning happens in the intersections between an interrupted script and the interactions between lighting technician, director, and actor of the experiential world(s) and the imaginary world(s) of Einstein and Wendy in conversation and interplay with the phenomenon. It is within these intersections that interstanding is realized and recognized. The catalyst that sparks performative inquiry is the question or inquiry or resistance to what is that opens us to possibilities — *imagining what is not yet* —

*What if?*

What if Einstein's shadow got bigger instead of smaller?  
What about the lines you say?  
I'll change them.

Any ideas?  
Let's just try it and see what happens.

It works!

I'll put the change in the script.  
I've already marked it in mine.  
What's next?

The script brainstormed during classroom conversations and improvised into text, remains fluid, changeable, reacting to the inter-relationships between the actors, their environment, and the phenomena (light, sound, motion) explored. We cannot presume what will happen until we place ourselves within a performative space of exploration. A space-moment of learning is possible when there is interruption in the script. And acceptance.

... it was kind of hard for us to get into it when we weren't really sure what was happening, you know, when we practiced in the classroom .... Once we got into the theatre which is that first day, [it] was just like, "This is so much better."

*Why do you think that was, moving into the theatre?*

Well, the ideas would just start coming. You just knew what you were working with ... and in the theatre ... ideas would start coming to you, you know, coming down the aisles for the game show part, you can't think of these when you're in the classroom and you don't know what you're working with.

*It's kind of like science in a way isn't it? I mean you get all these abstract ideas but until you're actually in the environment —*

Exactly, you can't really think about it unless you're experimenting with it.<sup>196</sup>

We work with a script, but the script is replayed within the imaginary and physical space of the theatre — the auditorium and stage and our imaginary lands of light, sound, and motion — and the embodied remembering of the science classroom, which present unexpected opportunities and possibilities. The script, brainstormed and improvised into text, is rewritten again and again through embodied experience as we explore the physical, remembered, and imaginary worlds presented. The play's ending is not imagined until the day before dress rehearsal. But we have learned to trust the journey landscaped through performance.

*This too is possible.*

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<sup>196</sup> Christine (1996) from taped interview.



But  
we have forgotten our audience in our imagining of our performance.  
Their presence matters.  
Their response,  
in play and interplay,  
resonates throughout the performance.<sup>197</sup>

*The child has its ears right out there, in the world  
listening to the sounds and talking back to it.*<sup>198</sup>

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<sup>197</sup> A resonance and understanding which was documented in drawings received from students. One teacher e-mailed us, writing:

The performance was brilliant. My kids were totally into it. We are still arguing about "who" the monster was. We still have not resolved it. It helped that your students had come into our classrooms beforehand to work with our kids. We connected what they did with light and color in the classroom with what Einstein discovered on stage. We deconstructed the whole experience and my students hadn't missed a thing (I took notes).

Prior learning through classroom experience (hands-on experiments with materials) designed and led by our education students introduced the elementary students to many of the scientific concepts explored in the play, and proved valuable in helping the young students to reference and recognize the science within the performance. It was clear, from the illustrations that they sent us, that these children, unlike Einstein, comprehended the inter-relationships of distance and shadow and light and object. Also fun to note from the teacher's correspondence is the continuing mystery of the identity of the "Monster" which is never revealed (not even during curtain calls nor question periods). Like the black box experiment in which the internal mechanism of the box itself is never exposed to the students, so the "Monster's" identity is never explained. The message that our education students wanted to include in their play was an understanding that scientific theories, such as the big bang or the mysterious workings of our "Monster," may be imagined but may not be always experimentally nor experientially confirmed. By not revealing the identity of our shadow monster, we chose to spell possibility and to invite continued wondering. Such an invitation encourages children to continue posing questions and imagining possible new worlds to explain shadow monsters under the bed. In this way, the science that is imagining the universe that is us may be perceived by students as a responsibility and an opportunity for all, not solely the domain of "scientists in white labcoats."

<sup>198</sup> Hildegaard Westercamp during a workshop with education students participating in the science education research project, Winter 1995.

Unscripted responses are shouted by children in the auditorium.

Wendy:        Now, where do monsters like to hide?

*Under the bed! In the closet! Behind the door!*

The children in the audience enter into the conversation, sharing their knowledge, ideas, guesses. Wendy and Einstein, the actors, reshape the text in response to the children's enthusiastic participation, welcoming them into the performance. The child within us knows about monsters under the bed or hiding in the closet. Shadows that bear scrutiny of the light realize the intensity of inter-relationships, intersections, inter-connections, a co-evolving breath of possibilities that witnesses the brilliance of imagining a universe into being.

Performative inquiry in educational research opens unexpected spaces for exploration and learning. Ask the question, *What if?*, and we imagine into being an uncharted exploration into the learning and teaching of science through performative inquiry. Performance, our tool of investigation, invites students to imagine, translate, transfer, interpret, represent, and embody scientific learning within a performative space. *What matters?* is context, environment, language, ownership, participation, group interaction and sharing of learning, presence, embodied experience through imaginative embodied play. *So what?* realizes an opening of possibilities, and a recognition of absences which encourages a reimagining of science education curriculum. Recognized also within a breath of realization are the possibilities of performative inquiry within educational research.

*The learning is one of surprise — freefalling through moments of crisis and recognition of possibility.*<sup>199</sup> The application of performative inquiry to our query about science education, *What happens when we journey into science through drama and storytelling?*, results in an informed inter-textual conversation embodied through performance and revisited through mapping-in-exploration.<sup>200</sup> “A fascination with phenomena (like the presence and absence of light, sound and motion) ... motivates both a

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<sup>199</sup> An unexpected space-moment of learning happens during the final performance of the play during a scene which occurs in the land of sound. The enthusiastic audience performed a dramatic illustration of the relationship between Wendy’s “scientific bafflegab” and lack of understanding by both speaker (as Einstein) and listeners. In the scene, Einstein delights in shouting self-congratulatory compliments such as “You’re great!” into the environment in order to hear them returned by his echo. Each time Wendy shouts “Stop!” to silence the echo, the echo yells back her command. Exasperated, she turns to Einstein for explanation.

Wendy:	Shhh. <i>(whispers)</i> You know what, Einstein? I don’t think you can stop an echo. Why is that?
Einstein:	Well, Wendy, there is a scientific explanation for that! <i>(the audience, now expecting Einstein’s scientific explanations, groans)</i>
Wendy:	There is?
Einstein:	Yup. You see, sound is the motion of oscillating particles moving parallel through a medium in the direction of the propagation of its horizontal sound wave. Therefore, an echo is a reflection of a horizontal sound wave by a surface so that a weaker version of it is detected shortly after the original sound wave!
Wendy:	Einstein. Eat a carrot.

The unexpected occurs during Einstein’s long-winded explanation. The children in the audience echo back to Einstein phrase by phrase, word for word, the entire scientific definition. Einstein the actor slows down his delivery in order to accommodate this unexpected echo. The children’s echo is spontaneous and insistent to be heard. Sitting backstage, we listen to the children verbally and accurately repeat a scientific definition which has no meaning for them — they are simply repeating what they are being told outside of understanding. The moment nicely illustrates the transparency of memorized textbook answers written on exams theoretically designed to test understanding.

<sup>200</sup> See intertextual conversations in scenes from the cutting room floor: ground level which follows on page 178. This appendix is composed of extracts of interviews with participants in the science education research project.

metaphoric and exploratory response,”<sup>201</sup> a response that embraces participation, shared learning, and ownership. *Light Sound Movin’ Around: What Are Monsters Made Of?* is a performance that plays our interstanding of science through images, relationship of text with experiential play, recognition of presence within a phenomenon, and opportunity for resolution and (re)imagining through performative inquiry.<sup>202</sup>

*Unexpected is the critical and creative reimagining of the landscape .... The question “what if?” prods scientist and dramatist towards a creative exploration and interpretation of experiential sensual world(s) real and imagined.*<sup>203</sup>

The landscape journeyed within a space-moment underlines the potential and possibilities of performative inquiry within educational research. Through performative inquiry, students create an embodied text of interstanding, shaping and being shaped by their intertextual conversation with the phenomenon explored. It is an imagining of a universe through performance that invites ownership, participation, shared learning, and unexpected moments. *Moments of (re)cognition*. The “power of collective imagination”<sup>204</sup> realized through embodied exploration gifts us presence in our inquiry. We are not alone, solitary individuals in isolated pursuit, but participants in danced co-evolving worlds of possible interstanding.

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<sup>201</sup> Fels & Meyer, 1997: 75.

<sup>202</sup> The possibilities of exploring imagery within science education through performative inquiry arises from a conversation with Luybov Byrne who is currently working on her doctorate in education at the University of British Columbia, Vancouver.

<sup>203</sup> Fels & Meyer, 1997: 75.

<sup>204</sup> Patrick Verriour, drama educator, University of British Columbia, in conversation.

[Students] romped science out of the closet through a surrealistic door and, in the end, created a monster that confronted and challenged our experience of science as students and educators.<sup>205</sup>

*This is our challenge — imagining a landscape that is us.*

Wendy's world is scientific textbooks, a six-foot pink bunny rabbit named Einstein and an unexplained monster under the bed. Her closet door opens into unexplored realms of light, sound and motion. Can she navigate her way through coloured shadows, exploding carrots and shark-invested waters to the safety of her bedroom and an understanding of the "science" that is her (our) world? What are monsters made of? ...<sup>206</sup>

The monsters, of course, play at many levels of expectation. The monster that is us. The monster that is science. The monster that is unknown. Einstein plays the textbook; disembodied text that finds voice in a long-eared rabbit. Einstein is the textbook, but alas! outside the classroom, his well-memorized formulas provide neither solace nor protection. It is to Wendy that Einstein turns, for her reading of the text is one of relationship, interaction, and courageous action. Wendy is performative inquiry embodied. Play which is not bordered by script, but which co-evolves through embodied creative action and interaction. The Propman<sup>207</sup> who creates wind. The Piano Player<sup>208</sup> who gives voice to stairs.

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<sup>205</sup> Fels & Meyer, 1997: 79.

<sup>206</sup> Early draft of Fels & Meyer (1997).

<sup>207</sup> A character from Light Sound Movin' Around: What Are Monsters Made Of? (1996).

<sup>208</sup> A character from Light Sound Movin' Around: What Are Monsters Made Of? (1996).

The lighting technician who imagines a shadow monster into being. A rabbit who reads *Scientific American*. Research that playwrites itself through the phenomena, the players, the inquiry, and the quest of a young girl in search of a monster that is the sciencing of her universe.

It is evening. A light breeze fingers lace curtains. Moonlight dapples a patchwork quilt. The quilt is old, squared memories of yesterday's clothes stitched in pattern. A child is asleep, her pink stuffed rabbit snuggled beneath her arm.

A shadow appears at the window.

This is our landscape. The journey of our presence.  
The possibilities of absence. Performance.

***curricular interlude***

***curricular landscapes of possibility***

***landscape four***

***who cares?***

## **curricular interlude**

*If the doors of perception were cleansed, everything would appear as it is — infinite.*<sup>209</sup>

Not only can teachers feel the importance of releasing students to be personally present to what they see and hear and read; they can also be reminded of the need for students to develop a sense of agency and participation and to do so in collaboration with one another.<sup>210</sup>

I wonder what colour the sky is in that guy's world.<sup>211</sup>

## **between the curtains**

Excuse me.

*Mmmm?*

Have you got the time?

*For who? what? when? where?*

How many more minutes before curtain call?

*Minutes?*

Sorry. Slip of terminology. Moments.

*It depends.*

Meaning?

*Yes — but also perspective.*

How so?

*If we place a curtain between, we are masking what is possible and labeling what is not. A curtain, like a line drawn in the sand or across the middle of a child's bedroom floor, is a fiction of borders, an act of bordering which in itself is political, an establishing of not yet known horizons to be realized by exorcising possibilities. A finishing. Conclusion. It's not possible to see through a window that is curtained.*

Unless it's lace.

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<sup>209</sup> Attributed to poet William Blake in the film, *Mindwalk* (Capra, 1990).

<sup>210</sup> Greene, 1995: 104.

<sup>211</sup> Comment by professor at University of British Columbia referring to a lawyer renowned for his trademark sunglasses and unorthodox professional behaviour, in conversation.



*Touché. A view is possible. An obstructed view. To realize horizons and to recognize co-evolving world(s) of possibility we must be aware of obstructed views. Be it language; or experience of gender, sexuality, culture, race; or social, economic, political ambition; or failure of action, or indifference.*

So?

*Remove the curtain! Horizons collide! Ownership contradicts! Empires tumble!*

Anarchy?

Revolution.

I only asked you for the time.

*Time for who? where? when? what? to dance? to create? to be?*

Or not to be! You actors are all alike. Stealing centre stage and calling it the universe.

*To imagine anything less would be a failure of imagination.*

A quote?

*A possibility. Consider a scrim.*

What's a scrim? Oh, I know! Like when news reporters mob a politician with their cameras and microphones, asking for the definitive word on a subject.

*You confuse the word. There is no definitive word. (Or subject.) A scrim. A stage curtain that bleeds scenes, one scene unfolding into another through a positioning of light. A momentary collision of worlds co-evolving from one moment to the next within a moment of possibility.*

*Not linear but simultaneous in being becoming. A lighting technician shines a light from one direction to reveal a world, illuminating action and interaction for our participation and reflection. A light beamed from another perspective reveals yet another possible world, simultaneously masking the other, but acknowledging its continuing presence — unseen but not forgotten, a layering of moments lost, remembered, reimagined in the light of unfolding world-possibilities. Each possible world present yet unknown until the moment of recognition. Absent, not yet realized by light.*

Does this matter?

*It depends. How obvious do you want your worlds?*

Textually?

*Inter-textually. Hints at some delicious wickedness, doesn't it? Inter-textual.*

Are you propositioning me?

*Do you have the time?*

Meaning?

*Exactly.*

**fragments of a landscape journeyed**

*Friday afternoon, December 5, 1998.*

Like Tigger, I bounce from landscape to landscape arresting moments through text. Re-focusing multi-lenses, I am myself reflected, (re)enacted, (re)membered, (re)imagined. *What happens if we journey into science through drama and storytelling?* Curricular explorations through performative inquiry realize a six-foot tall pink rabbit into being who insists persists connives *rockscissorspaper* that I too exit through a closet door and be recognized.

*Fluidity between seeps through the text.*

This landscape — a curricular interlude — interrupts progressions through other landscapes, desiring reconnoiter in-between. Imagining a universe, educational research, and curricular exploration are co-evolving illuminations, an *aurora borealis* of curricular possibilities. And like Tigger who announces his presence with an unexpected welcoming, the bouncing matters. It is the *bounce* in our conversation that is us. Interstanding.

*What does it mean to write with sound or even with smell?*<sup>212</sup>

... and even within this moment, I am writing a scrim, overwriting moments through time within spaces of possibility. *Friday afternoon, May 1st, 1:35 p.m.* Where are you in the moment I write anticipated interstanding on a page? Placing a hand on the lean length of a lover? Marking footprints along a solitary beach? Steam-breathing a bubbling pot of jam on the stove? A page that is not yet a page, unbound and unpublished, not yet realized yet present in the intertextuality that is this moment between us. Anticipation.

I lick my lips  
eager to hear your response  
within our text of interstanding.

like a scientist writing  
sensory experience into scientific text  
and in doing so  
writes out sensory  
so I write out of experience

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<sup>212</sup> Taylor & Saarinen, 1994: Styles 5.

write into being becoming  
intertext that  
reflects suspects respects rejects  
creates experience

*our being in a moment.  
realized and  
recognized through languaging.*

*how do i write play dance absence into y(our) presence?*

within this multi-dimensional space-moment that is  
but a fragment of a landscape  
journeyed and reimagined

I put under microscope the imagining that is our curricular intertext.  
I put under microscope the research that is our curricular imagining.

Can you focus? Is the lens clear? Is this too possible?  
Do you care?

## boxtumbling curricular possibilities

*... to be in that place between disequilibrium and balance.*

... so you're jumping off a cliff ... into a lake .... Feeling of your stomach in your chest or your heart in your mouth kind of thing ... that exhilarating adrenaline rush that says I'm alive. Because it is in that tension, in that tension between homeostasis and disequilibrium that we do truly know we're alive .... I'm trying to figure exactly how I'm going to survive here between the time that I'm leaving the rock of the cliff and entering the water of the lake. It's like, well, what's going to happen, you know? You don't know.<sup>213</sup>

The moment of boxes tumbling. Tension between the anticipated script and unexpected resistance. *You can't dismantle our mountains!* Here is where I want to breathe curriculum — through performance. Dance learning into being. Bodyspell landmarks on our journey-landscape. Release curricular expectations to open the spaces in-between the lines. Moving from the I-eye of curricular authority to embodied i-eyes-aye of communal imagining learning becoming.

*What if?*

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<sup>213</sup> Mark (1995) from taped interview.

A student leads us on a visualization during a role drama exploring citizenship<sup>214</sup> —

Imagine you are an immigrant leaving your home for Canada. You may be happy, excited to be leaving. You may be leaving against your will. How are you feeling about leaving your home? You cannot bring many belongings with you. Some clothes. Your identification papers. And a box. A small box that you can carry across the border through Customs. What does your box look like? What is it made of? Where did you get it? What will you put in your box? Something to remind you of your home, your friends, the places you are leaving behind? A manuscript of a book you are writing? Perhaps photographs? Or maybe something secret. Choose carefully. Will it be something that someone has given you? Will it be something valuable like jewelry? Maybe you will put several things in the box. Carefully wrap what you are bringing in a cloth, and lay it in the box. Slowly now, close the lid.

In the role drama, our immigrants arrive in Canada and unfortunately, their boxes (pieces of paper on which they had written the contents) are seized by Customs. After establishing homes, jobs, and new friends, the immigrants attend a citizenship ceremony during which they become new Canadians. One by one, the citizenship judge welcomes them to Canada, reads out the contents of each box and, with ceremony, returns the box, its contents, and memories. “Welcome to Canada,” she says. The aha! moment is our collective recognition that the individual boxes contain the stories, histories, and customs of a homeland left behind, and that through the regaining of these boxes, memories and customs and histories are replanted on new soil. A simple visualization opens horizons for curricular explorations and rememberings; a collective sharing of the personal and communal stories of students within the multi-cultural possibilities of a Canadian classroom.

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<sup>214</sup> A variation of this visualization was led by a student in a drama education course, University of British Columbia, Summer 1996.

*Here now —*

Close your eyes. Listen to your breath. Breathe in. Breathe out. Slowly. Listen to the beating of your heart. Now. Imagine a box. What kind of a box is it? What is it made out of? How big is it? What colour is it? This is your box. Where did it come from? Did someone give you the box? Did you find it? Are you happy to have this box? Or are you sad? What memories does the box hold for you? Do you know what is in the box? Can you open the box? Is there a catch? A lock? Open the box carefully, slowly. Look inside your box. Carefully. Slowly. Let the light fall into the box. How do you feel opening your box? What is in your box? How do you feel when you look inside? Wait a moment. Someone is coming. Look over your shoulder. Who is it? A shadow falls across the box. Hurry. Shut the box. You don't want anyone to see.

A room sounds with the quick closing of boxes. What is in your box? What is its story? Who is with you? Imagined worlds caught within boxes.

Boxes  
Of knowledge  
Piled on students' desks.  
Textbooks. Exams. Curricular documents.  
Boxes to be stored away and forgotten.

Pandora's box.  
Well, yes, that's another story.  
A well-worn story.  
But mine. *Is it yours?*

Linear learning.  
Colouring within the lines.  
Line up for your next class.  
Don't cross the line.  
Break your mother's back.

Boxes to open and  
Boxes that are closed mystery.  
Boxes of possibility.  
The metaphor breaks and  
All the vices in the world cannot be contained.  
All the loving in my heart cannot be restrained.  
We must be released.

We must taste our presence.

## curricular musing as a butterfly lights upon

*A curriculum designed for my child is a conversation that leaves space for her responses, that is transformed by her questions.*<sup>215</sup>

*Join me in this moment.* I am co-writing a play with a class of grade two students.<sup>216</sup> One by one, students sit with me at a table outside the classroom. Our script is pre-written in that plot and action has been already determined, but within the script are spaces for each child's response in role. "Read this," I say. "Now, here is the situation, the context, the environment within which your character is working. What is your motivation? Now, what do you think you would say if you were Bear and Coyote was eating your fish?" And each child writes his or her dialogue within the spaces of the script that are as yet unwritten.

Now, several years later, even the preliminary script is set aside. I create plays with children and we improvise our scripts to action. *Here is the situation, the context, the environment. Let's see what happens.* And the children improvise their play into being, languaging possibilities, playing variations, sounding voice and presence in their imagining of possible universes. This is not curriculum designed as a conversation that leaves space for children's responses, but curriculum enacted

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<sup>215</sup> Grumet, 1988: 173.

<sup>216</sup> *How the Polar Bear Became* (1992) is based on a short story written by Ted Hughes (1974) of the same name.

through performance within the co-evolving world(s) of children and teacher, inquiry and environment. *What if? What happens?*

Curricular moments of learning happen sometimes within performance; sometimes in the mapping-in-action, reflection, reimagining, that happens following performance. Invite children to conversation through performative inquiry and space-moments of learning co-evolve in curricular spaces of possibility.

*performative inquiry*  
*journey-site of exploration*  
*realizes and recognizes*  
*curricular opportunities*

*choose one*  
*light sound movement*  
*love despair hope loss*  
*technology genetics*  
*battered lives*  
*fractured memory*

*curricular possibilities*

*seize the moment*  
*elusive*

*suspended in-between*  
*the gap*  
*a space-moment of being*  
*becoming*

*curricular presence.*



*Imagine this.* We are architects trusted with the job of designing a resort hotel for the outport Come By Chance, a fishing community whose local fish processing plant has been closed. Looking for alternative income revenues, the villagers decide to capitalize on the tourist potential of their isolated locale. With financing by a business tycoon “from away,” a competition for the best hotel design is announced.

Now it is time to present our ideas. We are confident, certain that our proposal will win. But then an architect from a rival firm presents their proposal.

“What we will do,” she says, “is build the skeleton of our hotel in the shape of a boat. We will sink the structure in the harbour. After six months, the structure will be raised. It will be covered with barnacles, seaweed, mussels ....”

The moment hangs between us. It is as if time stops and she is standing in a spotlight, the weight and magic of the barnacled hotel held before us in her hands. *Imagine.*

We roll up our blueprints. Awed. It is in the moment of performance that the magic and possibilities are realized and recognized in imagining a universe.<sup>217</sup>

The moment, like a harbour at low tide, sea-smells of curricular opportunities for exploration. Why has the local fish processing plant been closed? What happened to the vanished schools of cod? What life lives beneath the sea? How do barnacles, seaweed, mussels attach to the foreign presence of human construction? What impact does human construction have on the ecology and economics of a bay? What new animal surfaces in the rebirthing of technology and biology? Within whose science, economics, employment, environment, context, experience does this moment happen?

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<sup>217</sup> Moment from Newfoundland role drama, February 1995.

*Imagine this.* Hansel and Gretel have been found by the local police in the home of a woman who lives in the forest. She is accused of kidnapping the children. A trial is held, and witnesses lay down their evidence like pieces of a jigsaw puzzle, piecing the story together. But the picture is not the one on the box.

The woodcutter is accused of having an affair with the woman. He claims he sent his children to her for protection from his wife. The mother is discovered to have been squirreling away the woodcutter's money in her own bank account. Hansel and Gretel, both drop-out students, are known to the local candy store owner for shoplifting. The accused witch is called to testify. She points her finger at the community members lined up to testify against her.

*You accuse me? But who is it who comes in the stealth of night for potions to seduce the next-door neighbour's teenage daughter? Who asks for powders to poison a nagging husband? Who is guilty?*

In our debriefing circle after the role drama, we share our experiences, our opinions, our readings of the courtroom scene. Why did the jury vote against the witch? Why did we condemn her for appearances? Why were we so eager to denounce her despite the growing evidence in her favour? Who were we protecting? Who is guilty? The witch? Or the community? And suddenly, the light shifts.

Scrim senses. Worlds within worlds. The morning of the role drama, the news media announced the innocence of a husband jailed several years for the murder of his wife. The community had testified against him. Not immediately. But angered by his involvement with a younger woman a few months after his wife's death, they accused him through fragments of gossip. Pieces of a jigsaw. The wrong picture on the box. And we, in our role drama, had just as eagerly, spitefully, sentenced an innocent witch to jail!<sup>218</sup>

An aha! moment that opens curricular explorations into community expectations and perceptions, fallibility of law, the power of innuendo, questioning of authority, perceptions of world(s) seen through multi-coloured lenses are suddenly within our grasp.

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<sup>218</sup> This role drama was led by a group of students in a drama education course, University of British Columbia, Winter 1998.

*Imagine this.* We are a community. We gather berries. We catch fish in sea-seeking streams. My son fun-wrestles with his friends. In the spaces between our campfires and our homes and our lives in the forest, our children are loved. Ribbons that mark our identity with our tribe are taped to our left shoulder.

A knock on the door. Government officials. They want to take away our children and send them to a residential school. *We will educate them.* My cry sounds the horror of the moment, rising like campsmoke above the village. My heart pounds and I am crying. Someone wraps her arms around my shoulders. *Hush, hush.* In that moment of taking, I recognize a mother's pain of losing her child. *It was a lark at first,* the student who played my son tells us later as we debrief the role drama, *until I saw my mother crying. I too almost began to cry.*

Our village dissolves into a scene at the residential school. The teachers have herded the children into the assembly hall. We stand in neat lines. They move up and down the lines, ripping the ribbons of masking tape from our shoulders. Our identity is torn from us and shredded. I am rebellious. Before the priest reaches me, I secret my ribbon into my pocket. This action escapes notice.

*Later, in the final moments of the drama, three students from the residential school and the priest with his three teachers face each other across a line. A rope is handed to them and they engage in a tug of war: a symbolic metaphoric tug of war between authority, government policy, sexual physical abuse, religious belief and the culture, language, memories, lost hopes, forbidden dreams of our people.*

*One. Two. Three. Pull.* I remember my ribbon, the symbol of my tribe, my people. I pull it from my pocket and reach out — but others are already marking our people with the torn, wrinkled pieces of masking tape that they too have secretly pocketed. The three students from the residential school wear our tribe's badges of identity and pride like tattered banners braving the cruel wind. *And pull. Hard. Imagine.*

Curricular possibilities and opportunities of these two space-moments of learning shared in communal imagining within the role drama are voiced during our reflection as the talking stick is passed hand by hand around the circle. The role drama experienced pulls us from the distanced non-participatory space of newsprint, textbook, and historical document to an immediate experiential (re)imagining that breathes interstanding into the classroom.<sup>219</sup>

Leaping off a cliff into the lake, we do not know what will happen. We do not know whether or not we will survive this curricular freefall. But it is in the space-moment between leaping and landing, that learning and curricular presence (embodied, immediate, engaging, empowering), are realized and, within a heart-breath, recognized.

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<sup>219</sup> This role drama was led by a group of students in a drama education course, University of British Columbia, Summer 1997.

**within curricular explorations a stop interrupts**

*Imagination may be a new way of decentering ourselves, of breaking  
out of the confinements of privatism and self-regard into a space  
where we can come face to face with others and call out,  
"Here we are." <sup>220</sup>*

*A moment of crisis and opportunity.* Like educator Ted Aoki's spaces between the  
backslash<sup>221</sup> of possibility / absence, performative inquiry is a temporal bridging of a  
curricular gap that realizes new spaces between. How do we, as educators, play curricular  
investigations into being? What who where why when how is curriculum? Can we propose  
that curricular opportunities are performed into being, becoming known, within the gaps,  
spaces, lines, edges, horizons that dance our co-evolving worlds into curricular presence that  
is our learning?

arrested  
reimagined by moving through danger, opportunity  
in recognition of the moment.

*and in the writing and  
rewriting of curricular conversation  
i recognize realize gaps  
unimaginable black holes  
that swallow our  
inter-text like a galactic monster  
hovering on the edge of the  
universe*

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<sup>220</sup> Greene, 1995: 31.

<sup>221</sup> From presentations by Ted Aoki, professor *emeritus*, University of British Columbia, 1995-96.

*how do we come to curriculum through performance?  
is inquiry our curriculum realized and recognized through performance?  
do we dance curriculum into being on the edge of chaos?*

**stop.**

... understand that curriculum does not and cannot exist apart from the world. It cannot be thought of as something intended to reflect or reveal the universe, for it is an inextricable part of the universe. Curriculum action, like any action, becomes part of the continuous structural coupling of curriculum actors and their world.<sup>222</sup>

... curriculum, like language, is a moving form; conceived as an aspiration, the object and hope of our intentionality, it comes to form and slips, at the moment of its actualization, into the ground of our action. It becomes part of our situation.<sup>223</sup>

Curriculum ceases to be a thing, and it is more than a process. It becomes a verb, an action, a social practice, a private meaning, and a public hope. Curriculum is not just the site of our labor, it becomes the product of our labor, changing as we are changed by it.<sup>224</sup>

If we regard curriculum as an undertaking involving continuous interpretation and a conscious *embodied*<sup>225</sup> search for meanings, we come to see many connections between the grasping of a text or artwork and the gaining of multiple perspectives by means of the disciplines.<sup>226</sup>

The world is not what I think, but what I live through. I am open to the world, I have no doubt that I am in communication with it, but I do not possess it; it is inexhaustible.<sup>227</sup>

*breathe.*

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<sup>222</sup> Davis et al., 1996: 163.

<sup>223</sup> Grumet, 1988: 131.

<sup>224</sup> Pinar et al., 1995: 848.

<sup>225</sup> "Embodied" is inserted and emphasized by me.

<sup>226</sup> Greene, 1995: 96.

<sup>227</sup> Merleau-Ponty, (1962) 1967: xvi-xvii as quoted in Greene, 1995: 107.

## curricular revolutions on the edge of chaos

What happens when a science educator and a drama educator cross paths at a university workshop on enactivism? What unexpected, possible worlds are co-created in this uncommon meeting? As the two agree to embark on a journey into science through drama and storytelling, they realize they are navigating unknown waters of inter-disciplinarity. Both suspect their praxis will change.<sup>228</sup>

*curricular explorations and  
reimaginings through  
a language of being becoming  
— performative inquiry*

Recognition of co-evolving worlds realized through performative inquiry invites a reimagining of curricular inter-disciplinarity. We move from a text of curricular expectations within spaces of inter-disciplinarity (i.e., science and drama), to an understanding of curriculum as an imagining of a universe through performance (i.e., performative inquiry) through which context, issue, environment, event, relationships, perspective, experience, phenomena may be explored. An imagining of an embodied curriculum that no longer acknowledges disciplines or subjects or textbook (or teacher) authority but co-creates moments of curricular presence and unfolding horizons of curricular possibilities and opportunities dancing in the wind on a line: intertextual learning embodied by learner and teacher.

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<sup>228</sup> From an early draft of Fels & Meyer (1997).

*What of curriculum as itself a search for meaning?<sup>229</sup>*  
*What of research as itself a curriculum for interstanding?*

In the (re)imagining of education that is our challenge — a moment of danger and opportunity — understanding curriculum not as inter-disciplinary conversation but as co-evolving play of reimagining the universe through performative inquiry invites curricular melodies; journey-landscaping intertextual moments that breathe our temperature within our presence; within the underlining<sup>230</sup> that is our absence.

Curriculum is embodied performance, a bodymind dance on the edge of chaos, in which space-moments of learning are realized and recognized. Our curricular explorations through creative action and interaction to embodied interstanding are performative inquiry realized and recognized within a space-moment of being becoming. Our curricular intertextual conversations are a scrim upon which we shine our light of inquiry, the multi-dimensional multi-perspectives realizing co-evolving world(s) of possible interstandings. We label life scientific, forgetting science is life seen through the lens of science. We enact drama. Intercourse breathes a new being into presence.

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<sup>229</sup> Greene, 1995: 89.

<sup>230</sup> From a presentation by Jacques Daignault, visiting professor at University of British Columbia, Vancouver, Winter 1996. In seeking to write about his bicycle trip across Canada, he found that he could best capture the spirit of the trip through writing a fictional account, or what he referred to as the "lining" of the "jacket" that was his experience. I choose to use the word "underlining" to include a lining (the hidden underside of a jacket) and also, underlining, both as marking emphasis and/or alerting us to the presence of absence.



*possibilities of bodymind dancing on  
the edge of chaos*

*light lunacy of love<sup>231</sup>  
being becoming  
that brings a  
    shout of laughter, exaltation  
despair, hope.*

*we are here  
    now*

*laying down a path in interstanding  
    we breathe the moment and are recognized*

*suspended  
    in-between*

*revolution*

*what if? what matters? so what? who cares? what happens?*

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<sup>231</sup> Carl Leggo, fragment of e-mail, September 8, 1995.

*curriculum as possibility, as interstanding,  
an ever re(k)newing lifeform balancing precariously  
unexpectedly joyously on the edge of chaos.<sup>232</sup>*

*in realizing our presence we recognize absence  
absence that is us  
the underlining of now  
the underlighting of this moment*

*Here is our curriculum. Our research is here.*

*It is evening. A light breeze fingers lace curtains. Moonlight  
dapples a patchwork quilt. The quilt is old, squared memories  
of yesterday's clothes stitched in pattern. A child is asleep, her  
pink stuffed rabbit snuggled beneath her arm. Remembrance of  
a mother's cool hand soothes her brow. A shadow appears at  
the window.*

*A curricular landscape of possibilities. Opportunities of  
presence. Underlining absence. Imagine into being what is  
not yet known. Performance.*

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<sup>232</sup> From an early draft of Meyer & Fels (1998).

*freefall*

*skyscape two*

*celebration*

## **freefall**

*Like science, it doesn't matter the final conclusions ... it's what you  
learn along the way ... it's living it and what we're learning ...*<sup>233</sup>

*this morning  
i tried to dance  
a poem into being  
but lost it in the movement*

## **fragments of a landscape journeyed**

*Wednesday, May 13th, 1998.*

— thoughts on reaching a possible ending?  
Performative writing. Hermeneutic interpretations.  
Intertextual reading.  
Metaphors of dance and light.  
Sounding presence. Risking absence.  
Co-evolving horizons.  
A moment of crisis.  
Opportunity.  
Danger.

a child lost  
hangs in a frozen moment  
falls again and again  
seeking balance  
disequilibrium  
why do i feel her breath  
on my cheek as i seek  
presence in these worlds  
that dance on a line  
like clothes in  
the wind?

---

<sup>233</sup> Wendy (1996) from a taped interview.

white ship sails  
icebergs await

*here now*  
catch the cardboard box plane  
released from the  
clothesline it  
rises in an updraft

runs a clean line along  
the gymnasium floor

wendy learns to fly  
parachutes billowed  
blue fields sunspeckled  
white clouds like cotton balls  
the ascent is gentle

Release a moment into  
being becoming.  
Possibility.  
Scraps of paper.  
Mountains shrouded  
by white wings of fog.  
Open a window.  
Take flight.

### **Icarus touches the sun**

*She is afraid of silence. Running the lines of her script like a frightened deer across the stage floor. Her paper feathers scatter with each turning in the sun. She is playing the role of Daedulus, words falling like dead weights in the heat of rehearsal.*

*The others sound their presence with youthful exuberance, eager to perform.*

*Hot! Hot! Hot! Icarus, come closer! Don't listen to your father.  
Fly closer. Icarus. Icarus. Fly closer.*

*Sun, sporting a golden crown and purple sunglasses, glories in her power.  
Her voice is teasing, tempting, cajoling. Icarus spiral circles into radiant light.*

*Oh! No! My wings are melting. Help! I'm falling! Aaaaaaah!*

*His cries reverberate in the expanse of the auditorium. His death is spectacular. He dies with the finality of a stone rolled across a tomb. Then miraculously, he is resurrected to die spectacularly yet again. It is, he tells his friend, in a grinning aside to backstage left, great fun.*

*But Daedulus fails to take flight. Her eight year old body remains grounded by false wings — she is unable to span the centuries to the fallen moment of Icarus. She runs her words together without expression, without pause, without compassion.*

*We run out of time, there are parents to be seated in the auditorium, children hurried into position. Lights drop us into blackness.*

*And in the spelling that is performance, Sun loses her crown. A chair crashes backstage. Lines tangle. Icarus falls. Daedulus speaks*

*Icarus!*

*Where are you?*

*Icarus?*

*within heart-breath beating of wings*

*I catch my breath  
and in the silence spaced  
between her words  
Icarus falls again and again and again  
sun-scorched wings*

*the loss that is Daedulus'  
resonates in the school gymnasium  
measured against the ticking of the clock  
— a moment speaks of a parent's timeless loss.*

*I listen  
to the slow spiraling of absent sound  
of this child who  
wears the pain of Daedulus  
a weighting of a  
mortal lost wrapped around  
her shoulders.*

## Pas de deux

"Well!" ...

"Well!" she said.

"Well, here we are," he said.

"Here we are," she said. "Aren't we?"

"I should say we were," he said. "Eeyop. Here we are."

"Well!" she said.

"Well!" he said. "Well. How do you feel ...?"<sup>234</sup>

"A bit breathless. Like Alice who tumbled down a hole ..."

"Chasing her rabbit ..."

"Yes."

"Yes. Do you remember how it ends?"

"You mean with the rabbit?"

"No, the tumble."

"A few bruises, I should think."

"No doubt. Comes of being curious, I suppose."

"It's the experience of learning."

"Do you think Alice's rabbit liked carrots?"

"Probably. Don't you?"

"Oh, no! Too dangerous. I prefer broccoli now."

"I forgot. And carrots are so obvious."

"Would you care to dance?"

"Dance!? Here? Now? Why?"

"Well, to celebrate. You know, our journey. The landscapes we explored."

"You mean, the moments we danced into being? "

"It's a possible metaphor."

"I didn't know you were a dancer."

"You've forgotten! Remember the stairs?"

"Of course! The grand finale!"

"But then the monster ..."

"A horrible moment!"

"And the fight!"

"You were terribly brave!"

"I couldn't have done it without you."

"We were wonderful!"

"Yes!"

*A modest pause.*

"Shall we ...?"

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<sup>234</sup> Excerpt from opening dialogue in Dorothy Parker's (1940) short story, *Here we are*.

“Wait! Who will lead?”  
“Isn’t it obvious?”  
“Meaning?”  
“Rock, paper, scissors. Ready?”  
“Ready!”  
“Go! (*groan*) A tie!”  
“Rock!”  
“Paper!”  
“Scissors!”  
“Another tie!”  
“What shall we do?”  
“Well, according to the regulations, and I’m quoting here, ‘When neither party has succeeded in outmaneuvering the digital machinations of his or her partner ...’”  
“In ordinary language, please.”  
“Well, umm. I’m not sure.”  
“Let’s create our own inter-rules.”  
“Rather dramatic, don’t you think?”  
“Dancing is dramatic — co-evolving horizons.”  
“Possibilities.”  
“Free fall.”  
“The stop.”  
“Here. Now.”  
“Together?”  
“Yes!”  
“Shall we begin?”  
“We already have.”

*Lights dim. Music spills into the room. They move into the moment, their bodies casting shadow silhouettes on the wall. Her shadow is graceful, a lazy arpeggio. His towers above hers, his shadow ears, lengthened in the cast of light, flop in delicate time with the tempo. Unnoticed, a third shadow rises from a chair, luminous with possibilities.*



**in the wind clothes dance on a line**

*She has not yet noticed the possibility that is us. Bringing in the laundry, hand over hand, she pauses. Clothes on a line dance in the wind. Interrupted by the pull of her hand on the line, we resist. Fragments of paper drift, like feathers from a tattered angel wing, through the skyblue of the moment, catch in her wind-blown hair, snag against the lawn chair, fall into her laundry basket. You and I exchange a curious smile, one of anticipation, loss, fear, hope. This is the stop. Our presence unknown becoming known — a moment of danger, a moment of opportunity.*

*Reach out now and touch the brilliance of our sun.*

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*scenes from the cutting room floor*

*ground level*

*intertextual conversations (1995-1997)*

## *intertextual conversations (1995-1997)*<sup>235</sup>

*Something (you said) in the oral exam about sound I really liked was the idea of mapping sound. You know, standing on a hill top and sending out sounds, and then mapping (the landscape's response). I loved that image .... (Researcher to Laura, 1995)*<sup>236</sup>

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<sup>235</sup> This appendix is composed of extracts of interviews with education students who participated in the science education research project (1995-1997). Each interview lasted between one to two hours, and was based on an informally-structured set of questions. Our conversations, however, were guided by the interests and experiences of the students interviewed. Prior to beginning my doctoral studies, I had decided to investigate drama (and storytelling) as an instructional tool in science education. As my dissertation evolved into a conceptual (re)imagining of performative inquiry as a research methodology, the science education research project initiated with Karen Meyer provided me with an on-site application of performative inquiry. Through performance, we, researcher-participant(s), explored the interplay between drama and science within a specific learning environment (i.e., a university-level science education methodology course). Our experience suggests that performative inquiry is an effective research vehicle which helps identify and illuminate the interactions and inter-relationships within a given inquiry; and that bringing drama and storytelling into a science education class (elementary and post-secondary) dramatically encourages the learning of science. This second finding was realized-recognized through performance and (re)confirmed by student-participants during interviews conducted after the completion of the research project. There is a book slipped between the pages of this appendix that I hope to write in the near future which speaks to the advantages and potential of drama as a learning medium in the science classroom. I write this appendix as a performance piece that hopefully invites you into our intertextual conversation of science and drama and learning.

Interviews (i.e., mapping-in-exploration through reflection, shared conversation and [re]imagining) were included in the research design as an integral process of the performative inquiry undertaken. However, interviews (formal or informal) are not necessarily an essential component to the research design of performative inquiry. The performative researcher may choose other means of mapping-in-exploration his or her field of inquiry by using video-texts, journal-writing, group debriefings, performance. For example, the play, *Light Sound Movin' Around: What Are Monsters Made Of?*, embodied and illustrated the learning of science by our education students during the science education research project. That learning continues through performance and beyond was reinforced by the elementary students who attended the performance and who later in class deconstructed the science of the play, sending us pictures describing the dynamics of Einstein's giant shadow in relation to light and distance. The purpose of this dissertation is not to explain how to design and conduct a performative inquiry but to conceptualize and articulate performative inquiry as a research vehicle and to share my experience of coming to knowing being doing creating through performative inquiry.

<sup>236</sup> For the purpose of this appendix, all quotes by participants in the science education research project (1995-97) will be identified by the name of the student quoted (alias) and the year he or she participated and was interviewed. All quotes are from taped interviews with the researcher.

## voices of school science remembered

*Most of it came from a textbook of just written notes and tests were in the form of filling in the blanks with the appropriate words ... (Anne 1996)*

*... but I didn't feel that I had access. (Laura, 1995)*

The one thing I had the toughest thing with when I was growing up, with science was that I was asked to memorize .... I was asked to sit there and memorize .... I just didn't get science. It was such a mystery .... I just didn't understand. It was so abstract. Little lightbulbs were going off everywhere but not mine ... with me it was just — it seemed like I missed the first step and everyone was way ahead of me. (Christine, 1996)

I have a hard time thinking of myself as a scientist ... because of my conditioning of if you can't do math you can't do science. (Janet, 1995)

I always used to think of scientific terms and I used to think — I'm not scientific, you know, I don't think I could comprehend this quite well, but I think if somebody said to me, you know it's what you make of it, your questions that come out of that and the wondering and exploration. Then I'd go like, Oh wow! then I do have a say in it and I can be creative and it's not as cut and dry as I thought it was. (Melissa, 1997)

When I got to junior high school we had science but again it was taught by a man in a lab coat who did all the experiments at the front of the classroom and we simply watched and wrote down the results of the experiment without asking why. It was like a recipe, formula, we just wrote down the results, and we remembered those results for the exam and that was our science. (Anne, 1996)

I just remember sitting at the desk, taking notes off the board. That's how I remember my science class. Like learning about the tree or plants and stuff, there'd be a hand-out, [we'd] label it, and take notes on it. I don't remember very much other than that. (Melissa, 1997)

The reason why I probably got turned off science was the textbook sort of let's just, you know, do it this way, and all the jargon, the scientific jargon and you're going "what's going on?" (Melissa, 1997)

I think for me, the hard part for science, and I am a science major too, most of my years in university, I think it's like everything was very surface and I never really got to that point of reconstructing, you know, actually synthesizing the information that I knew. You kind of memorize it and then you forget it. (Caitlin, 1997)

Terminology for me was a major stumbling block. I think terminology also turned me off .... Terminology, I think, frustrates some kids because not only are the kids trying to decode these terms but also apply the meaning to the concept at hand and while they're doing that the teacher is miles and miles ahead so what little this kid gains in understanding. The farther this person falls behind and therefore they just tune out. (Ted, 1996)

... like everything I learn must — because of this test, it has to be on the test. That seems like a very limited view of learning science or maybe not even learning science, just maybe memorizing the facts to get you through the test and then you know it's not connected to the real world so you just forget it. Like I did all my high school science. (Anne, 1996)

... well I just didn't see, it didn't apply to me. I just thought, well I don't need it. And no one said you do ... so it became a memorization game and I would sit there and do nothing in class and I would, you know, pull As and that on the exams .... I would study to get the top mark in the class just because it would tick him (science teacher) off, because I did the least work. (Mark, 1995)

And I just feel like how can you memorize everything? Like it's crazy to memorize things! Because in the real world, if you're doing real science [or] in the university doing research, you don't have any answers and you don't memorize things. You start with very little parts of information, small isolated information and you try to draw it together and you do experiments and you make your own conclusions and that's what science is. But the way that it's taught very often, it's already you're given the formulas and ... I would look at these formulas, these definitions, and ... all these big huge chemical things, and I'd be like, "so where does it go?" .... And like we don't even think about that. Like it doesn't apply to real life. And that's the way I've learned science. That it's pure. You learn about it — that it's isolated and it's on its own — in fact it's isolated from other parts of science .... Life is not separate like that. Life is all interwoven, and that's just a really weird way of learning it. (Wendy, 1996)

... I never enjoyed science in high school, because there was no connection to my experiences or my world. Me, my background. No, high school chemistry, it was just, we learned all about the periodical table and then, you know, learned how to do all these different diagrams but it didn't, I mean, how did that apply to my life? (Laura, 1995)

... it was very procedural, you have to make sure you account for all the variables, you have to make sure everything is clean and ordered and tidy and neat and nothing out of place and you know a place for everything, everything in its place .... (Mark, 1995)

yeah, you're right, the experiments were really controlled. Like they'd be laid out in a book, page by page, you follow every single step, and you're in the lab for three hours. (Dave, 1997)

*and if you don't get the right answer, you fudge. (Researcher, 1996)*

yeah, or you copy it off somebody or something. (Pamela, 1997)

... one of the things I never liked about math and science was that it wasn't human. It's like, there were always absolutes, there were always right answers and that you could always get them. That's not true, you know, and communicating that to the kids ... you know, making those kids confident that no, you don't have all the answers, yes, it's just an experiment, yes, if you don't get it right, it's okay if you don't do it exactly the way the text book says. (Mark, 1995)

*I think in science what tends to happen is not so much confusion as fear of making a mistake. Feeling like you have to know everything and you have to memorize everything and that we've lost the sense of exploration. (Janet , 1995)*

*That's why I never went into science, it gives me a headache. (Mark , 1995)*

### **portrait of a positivist**

You know, my science ed. teacher kept me after school and told me that ... I needed to establish some kind of order. My books needed to be more organized, I needed to be more organized, I needed to do all these things. I didn't see the point, you know, that this crusty boring old man is telling me in his little organized little lab room in the back that I needed to organize my life. Why? You know, so I can be like him. Yuck. Why would I want to be like that? You know. Why would I? .... He never smiled. He never laughed. He never cracked (a joke). If he cracked a joke it always had something to do

with science that was really complex that you know you just couldn't understand .... He was very, you know, he had no energy. No spark. No life to him. He was as frozen in formaldehyde as those things we had to dissect. Why on earth would I decide that order was something that I wanted to do if it meant that I was going to be like that? (laugh) (Mark, 1995)

### **insecurities of the reluctant science teacher**

teachers ... just trying to find materials scares them off from teaching science ... and beakers, you know, they're these fragile things that are kept away in the cupboard, you have to go dig them out in cupboards that are kept in the basement, and it's so no one wants to go down there and get them. (Charles, 1995)

Maybe that's the scary part, that everybody feels that, "Oh God, I don't know if I could teach science," and they think to themselves, "I have to stand up there and say science." And I'm thinking, no, you don't, that's what you're not supposed to do! You know that's what turned you off in the first place so why would you want to do that to somebody else? You know that's what I think. I think, funny, why would you want to teach science the way you got taught knowing that it didn't work for you. You know you thought it was terrible ...." (Doug, 1996)

... teachers themselves, they have a fear too of bringing all this equipment and not knowing what to do with it, not realizing, you know, that what we've come to realize is it's okay to try things out and it's okay to be wrong. It's okay not to have the answers, that you're going to learn as well. (Julie, 1995)

## science lesson revisited

*What do you think makes science a science lesson?*

Just the taking anything from the classroom, looking at its properties, and how those properties function, to make for what it does in relation to the environment around it ... so it can be anything that — I mean, like anything, any object, any phenomena is exploring, like develop questions about it and sort of try to figure out why and what ...

*Would you have said this is what science is before this class?*

Well in a way I would have. But I would have been more focusing on the experiment itself rather than the questions leading to the experiment. So talked about more about controls, variables .... I wouldn't have really thought as much about the questions ... choosing which questions to explore ... and recognizing that you're ignoring some other questions that are going off to the wayside so then that's how you get into the different biases of, like culture, biases of science. What direction you choose to go in .... Kind of put it all together into sort of a concept of the world, like the world, this is how the world works and doing science the way we do it, because it's a lot more accessible that way to that kind of concept of the world. That everything is interrelated, everything is connected, it's all, like the system. There's nothing in isolation, everything impresses upon it, everything else in some way ... so you've made it more accessible to kind of pulling stuff and changing a little bit so that it fits in the parameters of the situation we're looking at right then.

... the base change for me was that it became, science becomes something ... it's not just ... this is the experiments that we did and the lab with, you know, the Bunsen burners and stuff. It became more something that was part of a whole, the whole sort of, every, like whole life experience. We draw upon everything, you're drawing upon all of your knowledge, drawing upon all of your experience, and applying it, like taking things that you've seen in the real world, your memories, and giving it, creating the context for science. (Charles with *Researcher*, 1995)



**a student teacher discovers a classroom full of scientists<sup>237</sup>**

I said, what is a scientist? And ... I wrote [it] on the board if they said it. We went over everything-like anything they [scientists] did, what they looked like, everything. The word scientist ... what does it mean? And then afterward, after we got this all on the board, and I filled like a huge chalk board, completely full of ideas about scientists. Then ... we went through it ... checking off all these things [that the students did], and I said, "Well if you look at this board, guys, [there's only] two things you don't [do]." There were only two things left: they didn't wear white coats and they didn't report their findings. Everything else they did .... They'd all done experiments, they had all taken and observed things. I forget everything that they had ... but they did everything that was on that board that a scientist does. Everything except wear the white lab coat. I said, "Well, I can give you a white lab coat if you want" and that was an unusual image, but they all had the white lab coat image. And ... "report the findings," and I said, "we can arrange for you to do that." .... "You mean we're scientists?" [and] I said, "That's exactly what I mean!" And this look of amazement on most of the children's faces, and they weren't saying this, but boy, those little brains [were] working and just the looks on their faces. It was just wow! That was one of the most exciting science units we did. (Janet, 1995)

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<sup>237</sup> This brainstorming took place during the education student's three-month practicum in an elementary classroom in the fall prior to her enrollment in the science education methodology course. I include it because she spoke of the incident both in her journal and during the interview, and because it illustrates the sudden recognition by many of her students that they, too, do the work of scientists. We are all, in our unique ways, scientists involved in the (re)imagining of our universe that is us into being becoming.

## journey-landscape of science through performative inquiry<sup>238</sup>

*I honestly had never ever put drama and science together. I had never thought of doing anything creative like arts with science. It sort of frightened me in the beginning because I thought, "Well, how can they put the two together, where does it come together?," and if you do that, will it dilute the arts part of it or dilute the science part of it? I had all kinds of questions. Boy, I had a lot of questions (laughter) in the beginning. (Ann, 1996)*

*But why I was learning all this stuff before was for putting it into the purpose of the play. And that's part of science, making it purposeful — having a connection .... (Christine, 1996)*

*You move out of the textbook .... The play showed the journey of our course as well, moving out into the real world. (Wendy, 1996)*

*It depends on how, you know, the time limits .... (Charles, 1995)*

I guess [drama] just brought the different situations that we encounter in our every day lives ... and just made the **connection between science and real life**. Like every day situations. Plus it was **fun**, you know, to get up there and do a bit of acting ... it all made connections. Yeah, and it allowed us to **express ourselves**. (Laura, 1995)

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<sup>238</sup> In this section, bolding of words highlights recurring themes which emerged during interviews with education students participating in the science education research project, themes which arose from the performance that was our research. These themes indicate the participants' perceptions of the possibilities and potential of drama (and storytelling) as a teaching tool and learning vehicle in the science classroom and confirm and reaffirm the experience and learning embodied in our performative inquiry as explored in landscape three which begins on page 121 in this dissertation.

I'm a more visual learner and so to be able to see, for example, groups act out certain definitions or certain topics or themes, it was easier for me to relate. So I think that really helps using the drama in the sense of having different plays or skits to act out. And I remember them now, from those skits rather than looking at the textbook and saying, "Okay, what's inertia? Inertia means blah blah blah." And you end up going, "Okay, I think it means this." But when you see a group act it out in its context, you're like, "Ah, I know what inertia is, I remember, they were driving and so and so," and that's [what] I mean. I'm not a scientific person. I don't have a large background in science so for me that **helps remember and visualize**. So the drama really helped that way. And I was thinking, it was more **fun** too .... (laughter) (Melissa, 1997)

Like you really **have to understand something in order to be able to act it out**, to dramatize it. So I think that really helps you understand it when you're doing [it]. And then, when you're watching something like that, it really **illustrates** it for you too. (Pamela, 1997)

I found out that just by acting it out you think about it more because you have to think about how you're actually going to do it, like portray it so ... for me it's more **stimulating** so, I don't know, you **remember it better**. So I think it definitely is better, and it's more active, rather just like when you read a book or something, often times you don't really think about it you just read it. Whereas this you actually had to think about it and then do it. So I guess in that sense **you're reconstructing your knowledge** right? (laughter) Because you're taking that information and you're kind of like putting it into your own frame of mind and then doing it, acting it out, so that you bring it and make it concrete for yourself. Yeah, I found it really helpful. (Caitlin, 1997)

Just having the drama first of all creates more interest for them to do well because they know they have to present it in front of the class ... it gives them more of a goal and I think it's challenging and it sort of makes them in **control of their learning** ... you can learn it in a **fun** way. It can be a little more open-ended and the way you **communicate** your ideas, what you find out. If you know you're going to be going to this stage then maybe you're going to be **more alert** in these steps. You think, well I'm going to be presenting this so what's going on now, I got to pay attention here so I can come up with a really neat, crazy idea so I can, you know, present it to the class ... it is a **motivator**, I think it's a big motivator. (Julie, 1995)

That's what science is. It's all around you. It's an environment around you. And it's stupid to isolate it in any way. So that's how this play was for me too. **You learned different things and you built a background and you created things like your own theories and ideas about science and you created your own project and that's what science is to me.** It's all around you and it shouldn't be isolated in anyway. And that's what made it really **fun** and special. And that's the real world. It's **not isolating science** on its own and that's how it made me change my feelings about science. I really did think of [science] as on its own and I know that has annoyed me that it is on its own and I didn't know how to change it and now I do. (Wendy, 1996)

... **breaking down the artificial barriers** .... I've always been good at art and good at science ... but if you've got somebody else, some students that say, "I'm bad at science but I'm really good at art and everything," **you're pulling their expertise into the science** and saying you can apply that, your expertise into the science and once you apply that, no, you're not bad at science, you have **something to contribute**, you have something, you can get something

out of it ... it becomes more based on what, how much can I pull into, like how much can I take my experiences and apply them. (Charles, 1995)

I think it's a better method of teaching because it gives you hands-on experience as well as **a visual representation** and sometimes, you know, it can be an abstract term or whatever and it **brings it to life**. And that's what kids, anybody, me, need in order to understand something. So bring it to life, and to make it relevant to your environment to you, relevant to the learner ... because it's what you make of it, **the experiences that you bring into the drama are your own and so you're connected and you can relate to it**. ... I think drama makes it relevant to everybody. I think, everybody can say, yeah, I know what you're talking about. Or, you know, it really ties it all up or connects ... and so, you know, every child can relate to what's going on. **They relate to what's going on because they have a say in it**. (Melissa, 1997)

[Students are], you know, writing a play about science, and by doing that, they're learning. **They have to learn the concepts about what they're doing or they won't understand**, you know, they can't explain in the play what science is about if they don't understand. So it's sort of a very effective way for them to learn because they're doing two things: **Not only are they learning about science but they're having to reshow it in a new way**. So they're **doubly learning the concepts** so I think it's really effective that way. (Doug, 1996)

I remember the **process** of coming up with, like you know, if you give us a [scientific] term to act out, first we had to figure out what it meant, and whenever we were in groups, we would just try to describe, "Okay, I think this is what it means," and that makes sense. And so that way we were thinking it through. And that was like the scientific part. And afterwards, when we dramatize it, that was sort of **bringing it into a new context**. (Pamela, 1997)

... I guess you're also **putting it into your own terms**. You're forced to put it into your own terms, that's trying to make it **accessible** for everybody and in that process, I guess, in that process, I guess maybe it helps click in.

(Ellen, 1997)

So I think that the main thing that worked for me **was the collaboration and learning from everyone else, and being in an atmosphere where everyone's opinion was equally valued**. (Sally, 1995)

Why does **ownership** happen through drama? Okay, taking it back to just having it in the textbook, it's someone else's definition that you're memorizing for a test. With physical science and then drama, you're interacting with the idea, you're not just looking at it, you're coming into contact with it yourself and you're discovering it for yourself. That's more the physical part ... like when you're interacting with the Plasticine,<sup>239</sup> it's kind of yours and the two people around you. Once you put it into drama and that production, everyone else can see what you've done with it. And that gives you a feeling of ownership. It's a feeling of yes, I've done something.

Everyone look at me! Look at what I've done! I understand science! And I mean, if that's not learning, not only learning but **confidence** learning, good for self-esteem ... such a feeling of **accomplishment** and ownership, like, I made it mine, I made it different. (Carol, 1997)

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<sup>239</sup> She is referring to a buoyancy experiment using Plasticine which her group did with an elementary class in the local elementary school.

### **bodymind dancing new possible world(s)**

- a) So I think drama ends up giving somebody another avenue to go down with science without it being pure science ... without them thinking that science is just the textbook, you know, like we said, "the bafflegab" ... it shows you that understanding doesn't come from learning the words, it comes from doing something or really understanding it. (Doug, 1996)
- b) So what drama does is offer more than one way of expressing a discovery, more than one way of expressing how something works, more than one way of expressing a principle, a theory, a hypothesis. (Janet, 1995)
- c) ... it takes the sting out of some science. It makes it a little less dry, it makes it more interesting, more alive, more relevant for the students ... it's a good jump starter for students who have been turned off science. You have to think of it in a new way ... it's like "Okay, how can we explain it? How can we present this? How can we do it so that it's meaningful?"... it allows their thinking to become experientialized in a way that you probably couldn't .... (Mark, 1995)
- d) The pros are they definitely get active with it. It's definitely hands on for them. It has them thinking and them participating in it. Especially in the younger grades, they need that. They can't handle just sitting there and listening to you. I mean you can do that for ten minutes but after that, you know, you've got to get them up and moving. So it's great that way. It gets them involved and when it gets to the point when they have to do their own thinking, I mean, it's amazing what they come up with, and it's a great way to find out what they're learning. Great evaluation tool. (Ellen, 1997)
- e) I think it's also because when you do the drama, ... you have to bring it into everyday life, and then you can see how science is all around you and everything, I think it brings everything clearer and I think that's really good .... It's just a good way to tie things together and relate it to their lives and just to bring creativity into science, which is really important. And yeah, just from what I was just saying, like if they can really really remember it as a good experience too. (Pamela, 1997)

- f) And they can relate it to their past, and that's the basic building blocks of learning, I think. You've got to start with what you know, small as it might be, and build from that. Because if it's something that you can remember, then it's real to you. (Carol, 1997)
- g) It works. It works. I don't know what else I can add. It was fun, definitely fun, and for those people out there who aren't into science, this brings them in. (Melissa, 1997)

**this too is possible**

*And ... once you've gone that direction then you can look back and see where you, where you've been in a different way. You're in a different space so you see everything before, that was before you that you've experienced from a different perspective, a different angle. So that I think drama can really lend to the exploration of science in a new way, the creation of new ideas with kids and adults too. Knowing that makes your job as a teacher that much more interesting because you're also involved in the investigatory process and you don't have to, you know, it's not just something you're directing or managing. It's something you're experiencing with the kids. (Mark, 1995)*

*You know, after doing this performance, I can't imagine not doing something like this. Like, I would be really disappointed with myself if I just stuck to the old, traditional, safe way. I would be really be disappointed, I really would be, because I know that it can happen. And I can't say, "Oh, I didn't know you could do it that way." (Wendy, 1996)*

*It's awesome. It's awesome. I was really glad I was part of it.  
(Christine, 1996)*

*...if you give more than one venue, more than one way of expressing it, you open that up, there's no longer a gate keeper, the gate's wide open. All you have to do is walk through it and try. (Janet, 1995)*