

Motherhood as Resistance in the Bio-Performance *Analfabeta*: An interdisciplinary Dialogue Between Biology and Performance.

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Interdisciplinary dialogue acts as a symbiosis for all the areas that participate and imply enormous projections for both art and science. This paper explores the potential of an interdisciplinary dialogue between Biology and Performance using as a case study the Performance *Analfabeta* created by the artist Paulina Bronfman. The work was shaped in the context of The Third Conference of the Nucleus of Artistic Research (NIA) of In/Inter/Disciplinary Laboratories hosted by the Faculty of Art of The Pontificia University of Chile (LAB IID). The Lab was led by Chilean biologist Alejandra Zuñiga-Feest and the Brazilian artist Adriana Parente La Selva. This work aims to explore the questions: what does it mean, from the point of view of the arts and sciences, to develop an interdisciplinary laboratory? How is this done? This paper problematizes the creative process of collaboration between sciences and performance as well as the potential impact and link with society that this multidisciplinary dialogue can have.

Keywords: interdisciplinary, biology, performance, motherhood, Chile

Introduction

The first part of the article describes the context and the scientific input that biologist Alejandra Zuñiga Feest gave to the laboratory writing from her own personal experiences and research area. She describes the laboratory process and settings and her subjective experiences as a participant. After this stage she exposes the scientific input that she gave to the lab based on the concept of resilience and resistance through her presentation. In the second part of the article, Bronfman explores how the Performance *Analfabeta* was created as an artistic response to Zuñiga Feest's input using a subjective personal narrative. The third part of the paper reflects collectively on the principal themes that *Analfabeta* explores: resilience, resistance and motherhood. Finally, the fourth part of the article explores the potentialities of interdisciplinary collaborations.

Part one

The starting point:

Surviving Los Andes adverse climate conditions

I (Alejandra) received an invitation from Dermis Pérez León, a PhD student in Arts at Pontificia Universidad Católica de Chile (PUC), who is also a member of the NIA group (Nucleus for Arts Research), to be part of an in/interdisciplinary Art Laboratory with Brazilian artist and researcher Adriana La Selva, who works on art practices. We talked about some common concepts for various disciplines, both from the arts and the sciences, which constituted a starting point to carry out diverse exercises. These pairs of concepts were a) Contact and Contagion and b) Resistance and resilience, in which I gave my experience from the perspective of research on plants that grow on volcanic substrates in the Andes mountains of southern Chile. These plants are a model of resistance and resilience to extreme living conditions.

At the beginning of the workshop, the most important thing was to open up and let go; to let myself be carried away by the dynamics that my workshop partner, an experienced actress, Adriana La Selva, offered me. I must say that we scientists always have very defined protocols to approach carrying out any type of activity, such as

workshops, scientific congresses, experiments, projects, writing papers. This gives us a certain security in what is established, what is organised well in advance, and always using the scientific method, often leaving intuition and improvisation a little in the margins. This researcher's task ends and is re-organized with new questions at the time we disseminate results. This science and art workshop was a call to a beautiful adventure, in which I completely immersed myself, and for which I am grateful.

The anchors of this exercise were the concepts of **resistance** and **resilience**, which can be defined from various perspectives and disciplines. For example, from the physical, biological and psychological point of view. Thus, finding key and approachable concepts from different disciplines turns out to be key for this type of creative exercise. I spoke from my research areas: plant ecophysiology and

Figure 1. NIA group's (Nucleus for Arts Research) Invitation to be part of an Inter/disciplinary Art Laboratory



TERCERAS JORNADAS DEL NÚCLEO DE INVESTIGACIÓN ARTÍSTICA (NIA): LABORATORIOS IN/INTER/DISCIPLINARIOS (LAB IID) 22 y 23 de noviembre, 9.30 - 16.30 hrs.

Campus Oriente, Pontificia Universidad Católica de Chile
Jaime Guzmán Errázuriz 3300, Providencia, R. M. Los salones exactos de los LAB IID serán confirmados por email tras la inscripción.

LAB 1: *resiliencia-resistencia*

A cargo de **Alejandra Zúñiga** (Doctora en Ciencias Biológicas, Instituto de Ciencias Ambientales & Evolutivas, Universidad Austral de Chile) y **Adriano Parente La Salva** (Creador de teatro, Theory and performance, Art studies and sciences, Ghent University, Belgium).

LAB 2: *contacto y contagio*

A cargo de **Natalia Espinet** (artista visual y educadora, trabaja en la intersección entre las artes visuales, la pedagogía crítica, la performance y las prácticas comunitarias, Pontificia Universidad Javeriana, Bogotá, Colombia) y **Josefina Camus** (artista interdisciplinaria, música, danza, literatura y artes visuales. Su investigación de doctorado, en Goldsmiths University, examina la conexión entre corporalidad y medio ambiente. Es encargada de investigación de la carrera de Danza en la Escuela de artes escénicas y audiovisuales de la Universidad Academia de Humanismo Cristiano).

soil-plant interaction. I showed my results humanising the life of plants, trying to reveal what they 'feel' or 'sense' when they grow in extreme conditions of life in the mountains. I spoke not only from an aerial perspective, but also about the most unknown, the subterranean: their belowground life, that ecosystem containing the roots of many plants. Coexisting species, which are neighbours, which recognize each other and which dialogue with the microbes that live in the vicinity of their prodigious space: the rhizosphere, the zone of influence of the roots.

Then, within the workshop that we planned with Adriana, the exercises of gifts among the participants emerged. We were sequentially giving each other actions that showed the resilience and resistance that we had experienced in our lives. This is how each of these actions lit up like 'flashes', which opened a path for us among the participants, until *Analfabeta* was born. When it manifested, I was amazed at the process: previously, I had experienced approaches

Figure 2. Alejandra Zuñiga giving her presentation in the Inter/Disciplinary Laboratories at the Universidad Católica de Chile, © Paulina Bronfman



to artistic activities, but the birth of this 'illiterate' co-creation literally 'blew my mind' and my eyes marvelled at the enormous opportunities that were opening up at that moment for the dialogue between art and science.

The input: Resistance and resilience from the scientific perspective

In the context of the Inter/Disciplinary Laboratories organised by The Third Conference of the Nucleus of Artistic Research (NIA) I gave a PowerPoint presentation to a group of 15 interdisciplinary artists. I am a biologist. I speak from a science-based perspective on the research that I have carried out in two areas that are connected: plant ecophysiology and soil-plant interaction. For years, I have visited the slopes of several volcanoes in the south of Chile and studied the mechanisms that 'colonizers' employ on recent volcanic substrates, this nascent material that our volcanoes continuously expel, and that Chileans know well.

Figure 3. Slide from Professor Zuñiga workshop's presentation

Our study site: Slopes of various volcanoes (Antuco)



Chaiten 2008



- Escorial 1190 🌟
- Ladera 1250 🌟
- Laguna 1420 🌟

What does it mean for a plant to grow in the mountains? (Termas de Chillán, Shangri-La Forest)



Figure 4. Slide from Professor Zuñiga workshop's presentation on roots.

Only a few species grow in these types of conditions and elevations, since life there is more adverse than in places where there is greater soil fertility, more water, and lower elevation, as occurs in most prairies or crop fields in the intermediate depression in Chile.

These colonising plants are both resistant to environmental stress and resilient, establishing and persisting there and even generating positive relationships with their neighbours and the microbes close to their roots, in the area we call the 'rhizosphere' (Zhou et al. 514). These concepts, defined for human reality, are also applicable in the context of stress physiology, as well as from the perspective of plant nutrition and plant ecology, which studies the relationships between plants and their biotic and abiotic environment.

The plants that we studied in some cases can reduce their growth, but persist, as occurs with the natural bonsai of Coigue (*Nothofagus dombeyi*), and other species grow in "vegetation patches" where

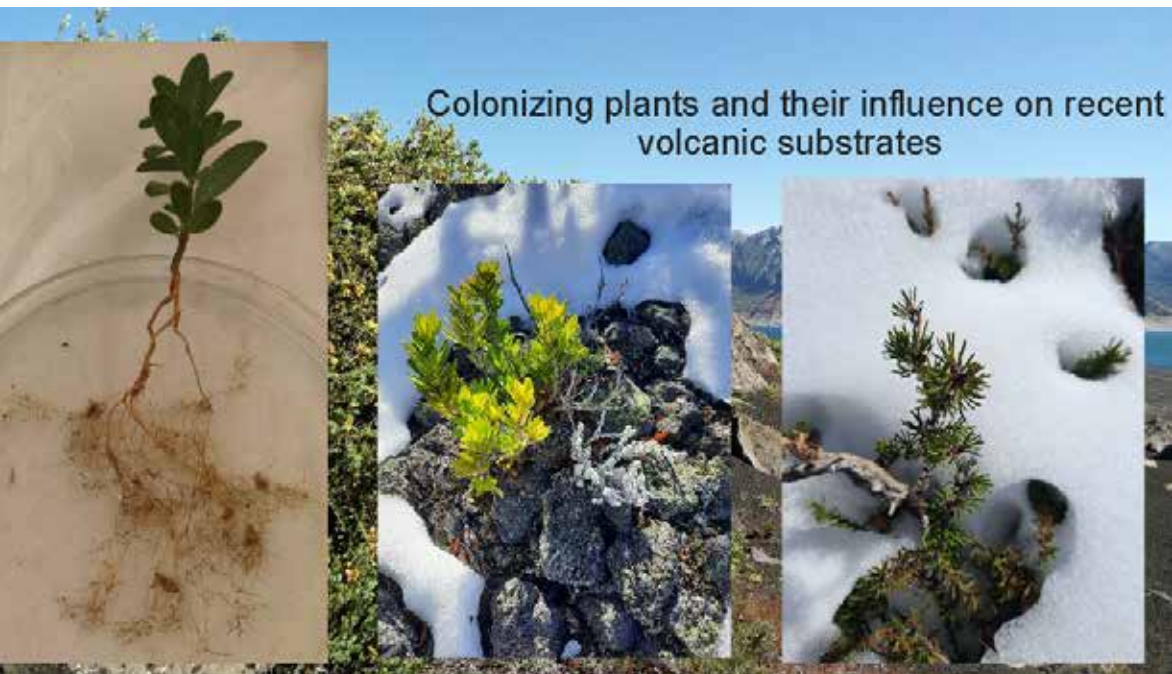


Figure 5. Slide from Professor Zuñiga workshop's presentation

several species coexist (Cavieres et al. 229). We have seen that in many cases these neighbours have nutritionally complementary adaptations in their roots and thus one of these species can provide a type of resource which can be shared by the inhabiting species of that patch. We have detected this among species that grow on volcanic substrata in Patagonia, where notro (*Embothrium coccineum*) and cadillo (*Acaena integerrima*) are better supplied with nitrogen and phosphorus when they grow together, on the material expelled by the Hudson volcano (Piper et al. 12). These complementary radical adaptations occur in plants that have mycorrhizae (associated with fungi), nodules with nitrogen-fixing bacteria (an element that comes from the air) or proteoid roots (RP), which allow them to solubilizesparkly phosphorus from the soil.

In particular, these adaptations, the PRs, to solubilizethese nutrients, exude molecules called carboxylates (and many others) to the soil, close to their roots (rhizosphere), which have a chemical but also a

biological effect; that is, they can attract or stimulate the growth of bacteria in their rhizosphere (Renderos et al. 2427). This is possible, because plants communicate in this way with soil microbes and can even select beneficial microbes that contribute to them and/or the patch where they live. I like to call this selection mechanism 'the free pizza effect'; that is, an invitation to microbes that almost no one refuses to eat (in fact, carboxylates are food for bacteria). Countless relationships are taking place under our feet, between plants and between plants and microbes, not only in the mountains.

Through different methodologies and techniques, which include work in the field, in the greenhouse and in the laboratory, we have determined that, in the mountains, under extreme living conditions, plants resist and grow better when they are together in patches, with 'good neighbours' and that this form of growth magnifies the 'free pizza effect'. Through these strategies, these colonising plants can even improve the environment where new plant species arrive

Figure 6. Slide from Professor Zuñiga workshop's presentation

Experiments with seeds collected in terrestrial radal enano (*Orites myrtoidea*) and chaura (*Gaultheria poeppigii*) in volcanic substrate (Volcán Antuco)

Thesis: Constanza García ICRN



in a sequential process called 'primary succession' (Muñoz et al. 266). These colonising plants are pioneers and by improving their substrate for themselves, and their current and future neighbours, can become what are called 'ecosystem engineers' (Lambers et al. 337). We have detected that these patches of vegetation increase the diversity and abundance of microbes close to their roots, compared to soil without plants, and that within the patch the leaves of the plants are better supplied with essential nutrients for their life. Apparently, there are growth strategies that are combined to explore the substrate, which allow them to better resist these extreme conditions, making a more conservative use of resources that enables them to persist in adversity; that is, being resilient.

Part two:

Surviving the human conditions: the biopolitics of motherhood.

In November 2022, I (Paulina) joined the Inter/Disciplinary Laboratories organised by The Third Conference of the Nucleus of Artistic Research (NIA), as a participant. I was highly motivated for the potential dialogue between nature, science and art because my current research was on *Scenic and performative practices as an ecological strategy in Chile*. The lab led by Adriana La Selva and Alejandra Zuñiga-Feest was constituted by diverse strategies of play and creative practices that established a wonderful creative atmosphere between the interdisciplinary group of participants. In the first part of the workshop, Zuñiga-Feest gave a complete presentation of her research on plant resilience and living conditions in the South of Chile, of which I took very detailed notes.

One of the most beautiful exercises proposed by La Selva was 'The gift chain', where each participant created a sensorial performative gift for the rest of the group using a very simple input as a starting point. The repertoire of 'responses' were extremely diverse in terms of their materiality. Some contributors used their voice, bodies, phones, instruments etc. Each person created a response to the other's piece, creating a chain of performative gifts. We had just a few minutes to create a response to the other's material, and consequently the exercise was very dynamic and spontaneous.

Creating a bio-performance

The performance *Analfabeta* was created in response to Alejandra's presentation of a "performative gift". In a very short amount of time, I took notes from the presentation that she made and wrote freely on my own personal experiences of adaptation and resilience as a Chilean immigrant in the UK. The writing process was a combination of *in-situ* improvisation; my personal experiences of motherhood in a foreign country, with the notes I had taken from Alejandra's presentation on resilience and resistance. Each of her ideas was a stimulus to remember the adaptation process that I had gone through as a mother in the UK. The text is centered on the idea of 'becoming' illiterate and raising children that speak another language.

ANALFABETA (Spanish version) ¹

Sensa ? El estrés de las plantas
Cuando tenía 35 años quede analfabeta
Cuando tenía 35 años quede analfabeta
Como quien queda sorda. Yo que era la profesora, la
sabelotodo. Un día no entendí nada
Quede analfabeta
 una madre analfabeta

Entonces ocupe La memoria de las plantas

Mi cuerpo se silencio y me dedique a escuchar, a imitar,
repetir
Repetir
Repetir
Escuchar, imitar, repetir
 una madre analfabeta

Como las raíces de las plantas que comparten lo que falta,
busque un trabajo en un pub. Lave, serví y escuché
Lave, serví y escuché

Lave, serví y escuché

Las plantas toman lo que necesitan o ¿lo que sobra? ¿Cómo lo sabes?

Las plantas toman lo que necesitan o ¿lo que sobra? ¿Cómo lo sabes?

(Justicia social, equidad, comparte solidario no competitivo)?

Pensaba

Volcanes de Chile pensaba

Ambientes estresantes, alta montaña. Pensaba.

hijos.

una madre analfabeta

No entiendo las tareas del colegio

No entiendo las comunicaciones de los profesores

Cuando tenía 35 años quede analfabeta

Como quien queda sorda. Yo que era la profesora, la sabelotodo. Un día no entendí nada

RESILIENCIA: superar las circunstancias traumáticas

RESISTENCIA: capacidad de resistir la fatiga, mantener un esfuerzo concreto por el mayor tiempo posible

Luego me puse a estudiar el nuevo idioma. Cuerpos que se mueven de otra manera

Que dicen gracias, cada medio metro

It is lovely to meet you

It is lovely to meet you

It is lovely to meet you

It is lovely to meet you

It is lovely to meet you

It is lovely to meet you

It is lovely to meet you

It is lovely to meet you

It is lovely to meet you

LÍNEAS DE INVESTIGACIÓN resiliencia maternidad

Lenguaje

Fui a la universidad gané beca fui doctorada

Pero ya no fui sabe lo todo

Soy sabe lo nada

Soy FISIOLOGÍA VEGETAL

Soy (la fisiología del estrés)

Soy más aun la ECOFISIOLOGÍA VEGETAL

Cuando tenía 35 años quede analfabeta

Como quien queda sorda. Yo que era la profesora, la
sabelotodo. Un día no entendí nada

-INTERACCIÓN SUELO-PLANTA

cluster roots, bunch, plant

I miss my home

I miss my plants my roots in the middle of Yorkshire

My children's playground in the middle of Yorkshire

I miss my face in the cold wind

The snow in the cold Yorkshire morning

an illiterate mother

I miss the cold wind while cleaning the rubbish in the
Yorkshire Pub

The invisible mother

the poetry

The Green

the poetry

The Green

La ciencia se hace en grupo / same to the performing arts ;

RESISTIR a veces es dejarse llevar, soltar, caer hacia atrás

Radar enano crece en muy pocas partes del mundo, asociada
siempre con otras plantas

Chillán y Antuco, lava, lago, cordillera

¿Cuál es la función de los cluster?

Una Sucesión vegetal, que cambia el suelo

El territorio se renueva por la lava de los volcanes. Chile es un territorio que esta siempre renovándose.

una madre analfabeta

Nutrirse de la roca. Micorrizas eating roots, minan los nutrientes

Coping with the stress

Sensar

Hacer

Cope

Resilience

Nosotros

Crece dentro de una roca

Flores rojas en nativa chilena

RAICES PROTOIDEAS

Hidropónico en agua, pero también puede crecer dentro de la roca y la rompe

Va formando suelo

¿Que significa para una planta crecer en la montaña?

LENGA

UNA GRIETA ES UNA OPORTUNIDAD

Revelando la belleza de las plantas

Todas estas plantas son resilientes y resistentes

Las plantas colonizadoras son lo que se llama INGENIEROS DEL ECOSISTEMAS, van mejorando las condiciones para que lleguen otros

Estas plantas exudan ácido cítrico, jugo de limón, y van disolviendo las rocas

Avellanos tienes raíces proteoideas

Interacción de las plantas es cooperativa

It was lovely to meet you

It was lovely to meet you

It was lovely to meet you

ANALFABETA (Illiterate) English version

Sensa? The plant stress

When I was 35 years old, I became illiterate.

When I was 35 years old, I became illiterate.

Like those who are deaf. I was the teacher, the know-it-all.

One day I didn't understand anything

become illiterate

an illiterate mother of two

Then I occupied the memory of plants

My body fell silent, and I dedicated myself to listening,
imitating, repeating

Repeat

Repeat

listen, imitate, repeat

an illiterate mother

Like the Roots of the plants you share what is missing,
looking for a job in a pub.

Wash, serve and listen

I washed, I served, and I listened

wash serve and listen

Do the plants take what they need or what is left over? How
do you know?

Do the plants take what they need or what is left over? How
do you know?

(Social justice, equity, non-competitive solidarity share)?

I Thought

volcanoes of Chile

I thought

Stressful environments, high mountains. I Thought.

children.

an illiterate mother

I don't understand their homework

I don't understand the teachers' letters

When I was 35 years old, I became illiterate.

Like those who are deaf. I was the teacher, the know-it-all.

One day I didn't understand anything

RESILIENCE: overcoming traumatic circumstances

RESISTANCE: ability to resist fatigue to maintain a specific effort for as long as possible

an illiterate mother

Then I began to study the new language. Bodies that move differently

that says thank you every half metre

It is lovely to meet you

It is lovely to meet you

It is lovely to meet you

It is lovely to meet you

It is lovely to meet you

It is lovely to meet you

LINES OF RESEARCH maternity resilience

Language

I went to university I won a scholarship I received a PhD

But I was no longer a know-it-all

I am a know-nothing

an illiterate mother

I am PLANT PHYSIOLOGY

I am (the physiology of stress)
I am even more the PLANT ECOPHYSIOLOGY

When I was 35 years old, I became illiterate.
Like those who are deaf. I was the teacher, the know-it-all.
One day I didn't understand anything
-SOIL-PLANT INTERACTION

cluster roots, bunch, plant
I miss my home
I miss my plants my roots
My children's playground
I miss my face
The snow
an illiterate mother
the poetry
The Green

Science is done in groups / same as the performing arts!
RESISTING is sometimes letting go, letting go, falling
backwards
Radar enano grows in very few parts of the world, always
associated with other plants
Chillan and Antuco, lava, lake, mountain range
What is the function of the clusters?
A plant succession, which changes the soil
The territory is renewed by the lava from the volcanoes.
Chile is a territory that is always renewing itself.
an illiterate mother

Feed on the rock. Mycorrhizas eating roots, saps of nutrients
Coping with the stress
sense
Do
cope

resilience

Us

grows inside a rock

Red flowers in Chilean native

PROTOID ROOTS

Hydroponic in water, but can also grow inside rock and break it

It is forming soil

What does it mean for a plant to grow in the mountains?

TONGUE

A CRACK IS AN OPPORTUNITY

Revealing the beauty of plants

All these plants are resilient and resistant

The colonising plants are what are called ECOSYSTEM ENGINEERS, they improve the conditions for others to arrive.

These plants will exude citric acid, lemon juice, and dissolve the rocks.

Chilean Hazelnuts have protein roots

Plant interaction is cooperative

It was lovely to meet you

It was lovely to meet you

It was lovely to meet you

The gifts, the authors and the fire

In the context of the 'gift chain' exercise, the performance was presented to the colleagues in the laboratory. The piece was composed of three fundamental elements: reading the text, physical actions and improvisation. The text was written less than an hour before presentation, therefore all reading implied an exploration of tones, volumes and intentions. The physical actions consisted of opening

my handbag and carefully arranging the objects in full view of the participants. This action implied two things. Firstly, taking the private into the public space and giving it another order, therefore, a new reading. I discovered that the experience of feeling illiterate had generated a lot of shame, especially because the mandate said that mothers should understand what is happening around their families and explain this to their children and not vice versa. On the other hand, the exercise of metaphorically taking things out of my bag, giving them a new order, represented the power of the text: taking my shame out of the text and transforming it into resilience and resistance. Taking the text out, had allowed me to see the resilience with which I had faced the immigration experience.

Narrating the creative process of *Analfabeta* represents a series of challenges because I felt that some important element of the process was missing besides 'academic' narrative. During the writing process of the article, I had a dream. I was in the lab with the workshop's participants. We were doing a circle where one by one we passed a paper sculpture that contained a small flame of fire inside. The 'instruction' consisted of passing the sculpture to the next colleague. Changing the shape of the paper sculpture but without extinguishing the flame or burning the paper. It was an impossible mission and yet it was accomplished. Each sculpture was different, there were geometric flowers, like origami and marine plants. All made of paper with their flame inside. The dream helped me to understand two elements of the creative process. The container for the fire was a plant, which is very consistent with the theme of this work, but there was something dangerous and supernatural in this act. The sculptures were made of paper so they should have burned with the small flame, but for some extraordinary reason they didn't. The 'paper plant' container did not catch fire but only protected the flame. The flame, of course, symbolically, in many cultures means life. But here I think it also contains the idea of authorship, collaboration and co-creation. The flame or the 'work' was passed from hand to hand without an owner but with the aim of keeping it lit. It was an action that aimed at taking care of life and what is alive, which could ultimately be the purpose of the process of resistance and resilience in nature: to keep beings alive and take care of life in all its dimensions. This occurred in a completely natural way as a kind response to a gift that Alejandra had given to me. It has given me a new perspective on my experience of not belonging. Also, it

allowed me to see motherhood as a biopolitical (Foucault "Vigilar") form of resistance.

Part three

Motherhood as resistance: a biopolitical reading of care

The concept of resistance is used by various disciplines such as physics, biology, political theory, sociology and cultural studies. Resistance is a concept that generates a multiplicity of meanings. Many times, the idea of resistance can have different meanings and uses, even within the same discipline. From the perspective of the social sciences, Baaz et al. state that there are a wide range of definitions and concepts linked with the idea of resistance. For example, 'everyday resistance', 'critical resistance', and 'civil resistance', including non-confrontational types of resistance, as Scott has described in his works. In the Chilean political context, for example, García has applied Said's concept of 'themes of cultural resistance' to describe the tension between the Chilean government and indigenous communities, focused on the Mapuche conflict (Alvarez and Bronfman 318).

Several authors (Fernandes; Mikael Baaz et al.; Maase) agree that it is not possible to establish one definition for the term resistance. In order to make sense of cultural context and biopolitical processes, Fernandes proposes that

the concept of resistance is reserved to name the counter-hegemonic social attitudes, behaviours and actions which aim at weakening the classification among social categories and which are directed against the dominant power(s) and against those who exercise it (them), having as a purpose its (their) redistribution in a more equitable way (174).

Discussions that seek to perpetuate the existing state of things deny the possibility of resistance. Díaz thus conceives it as creative and productive when he affirms that resistance is co-extensive with power and is rigorously contemporary. It is not the inverted image of power, but it is, like power:

as inventive, as mobile, as productive as it is. It is necessary that power be organized, coagulated and cements itself. Let it go from the bottom up, like him, and be distributed strategically (117).

Resistance could be also conceptualised as a process of creation and transformation. In this context the body is the place of resistance. According to anthropology scholars, the body is understood as “the place of experience, desire, reflection, resistance, response and social change, at different economic, political, social, aesthetic and cultural intellectual crossroads” (Esteban 54).

Analfabeta is a work that brings together two conceptions of Resistance. On one side, the ability to resist fatigue, maintain a specific effort for as long as possible, which comes from biology dialoguing with a more biopolitical narrative of resistance. The text explores “illiterate motherhood” and the experience of not speaking the language of your children as a biopolitical experience of displacement. The text investigates motherhood as a form of resistance and resilience; the capacity to overcome traumatic circumstances (adaptive capacity, flexibility, strength) as biopolitical circumstances of immigrant women. The piece presents a reflection on the sense of resistance to the ideal of motherhood imposed by biopower (disciplinary institutions – family, religion, nation, language, school) which the subject constructs in a body narrative about her bodily experience as an illiterate mother.

Analfabeta re-signifies motherhood and performative narratives as practices of resistance to biopower. Foucault conceived the term 'biopower' in the 1970s as part of his explorations into how various disciplinary techniques directed at training the body deliver the basis of the governing power to survive life. Foucault analysed how it became possible to:

manage a population through the development of new rational and demographic techniques aimed at measuring, classifying and managing the immanent characteristics of a given population and territory. (Donger and Katsouraki 2)

From another perspective, Polezzi explains how Foucault, in his

discussion of the biopolitics of contemporary societies, identifies language as the supplement which distinguishes human politics from any other form of social interaction:

the element which allows us to move from the distinction between pleasure and pain to that between good and evil, right and wrong, and which ultimately makes us what we are: “*homo sapiens loquendi*” (353).

The environment where translation encounters migration, where the work of translation is directly connected to migrants and to their lives, where linguistic and cultural differences intersect and become visible, then arises as a key location for the struggle over the control of individual lives as well as social processes (Polezzi). That territory is an extremely political space and any act of translation that inhabits it is, therefore, an eminently political action.

Maternal action is also intrinsically linked to 'mothering' and 'performance'. All three terms are active and invoke a sense of doing. All three are political and linked to activism, to going beyond the prescribed normative maternal identity, to engage in a kind of struggle for a different, self-defined position that will remain open to the plurality of others. Through the invocation of maternal action, mothers position themselves as active agents, as performers, in the world, beyond the domestic intimate sphere. The three terms, mothering, performance, and maternal action, are also social; they can only be understood in relation to our wider otherworld and its structures, including the species beyond humanity.

Maternal action that seeks to treat “everyone with maternal care is a struggle to move from the domestic to the public, as Hannah Arendt argues” (Šimic and Underwood-Lee 87). Going public is going from the individualised struggle of a mother at home to thinking about mothers as a collective. For example, we can consider those who breastfeed as a marginalised group, in the patriarchal context in which we live, structured around the devaluation of care. To invoke the group is not to reduce the mothers to a homogenized mass; instead, maternal action must be experienced by active agents in relation to other active agents: a collective of individuals who respect and work with each other, what Judith Butler and Athena Athanasiou have called 'plural performativity'. Butler and Athanasiou's discussion

is based primarily on social movements and agencies involved in politics and street activism. This paper proposes to investigate “the maternal” beyond the limited world of the domestic as it is predominantly presented. On the contrary, we want to install the discussion in the public space, visualising maternal action and affirming that said action must be carried out in public and must participate and be visible in the world. Butler, following Hannah Arendt, points out that it is when bodies come together as a community that they can move into the political realm: ‘the bodies in their plurality reclaim the public’ (2013). Thus, “the maternal” happens, transiting through public space, as a performed and embodied act (performance), that different maternal bodies transit towards through maternal action.

Despite this dichotomous vision of motherhood, Hays questions the exercise of the maternal role in the 21st century, in which women try to manoeuvre and fulfil their professional development and the upbringing of their children. It is consigned as intensive maternity, in which women must invest a large amount of time, energy and money in raising their children. Under this requirement, women who stay at home carry a devalued position from the social point of view, while those who work carry a double role or double shift, in which they are in charge of domestic chores and childbearing. Even when the father figure has been incorporated into spaces that were previously the exclusive domain of women, women continue to be in charge of childbearing more than men, in the same way that girls are more concerned than boys with household chores. The various discourses that make possible the emergence of motherhood, which is not directly related to the biological capacity to reproduce life, but rather to the task of raising (Badinter), are strategically deployed in knowledge-power devices that account for a way of being in the world (Rivera).

Part four: Reflections on interdisciplinary dialogues between the sciences and artistic practices

Alejandra

My first sensation is of heat and uncertainty; I like to plan every detail of an activity well in advance. I let myself go, surrendering to the exercise that this arts research workshop summoned from us. I felt a huge door opening into a garden, ready to be explored. This happened in me, after addressing resilience and resistance, from 'my' model of plants that live in extreme conditions in the mountains. Thus, we exercised dialogue with our experiences; the ones that have moved each one of us and the messages that emerge, like an epiphany from our own life stories, identifying ourselves with these other beings: vegetables. We say, "a crack in the rock is an opportunity", that message inherited from the vegetable experience resonates with us. We say, "a microbe told me," communicating these underground stories of multiple interrelationships, as if it were a dance that is practised between the plants that have come to colonize those substrates, which are not yet soil, that were thrown with force from a volcano.

Practice brings new questions: how do I connect with all living things? How do I make a synthesis by building a network, with all these experiences of moving molecules? The molecules below are obvious and aerial. In the group, I let myself be carried away with the dance and the drums, with the beating within me and thus I now 'colonize' the space of this white room, as if drawing the space with the 'dance of the winds'. I join the network of dancing souls, I coordinate, submerging myself slightly in each look. I rediscover the richness of having opened this door, that starting point, that 'flight line' from where we build this practice in art.

This article is relevant to biologists and ecologists that are looking to expand their research and results to the community and could be a way to improve dialogue to help them realize how to outreach to society. Also, it is important because it represents an exercise in co-creating knowledge among art-science, science-art, from different research areas. Nature, plants and this knowledge have been a part of art as inspiration now and during the naturalist ex-

pedition to South America in past centuries, developing enormous contributions in terms of understanding nature, vegetation, land processes and heritage worldwide. However, here, in this co-creation of it went further, contributing towards the development of a transdisciplinary exercise.

It brought an enriching point of view to expand my knowledge about plant ecology and plant ecophysiology. Although biologists previously used the 'humanization' of plant functioning to show scientific results normally published in papers, here, I emphasized these ideas to keep participants closer to a belowground reality. A friendly way of communicating science to other audiences that works well, interdisciplinary dialogue like this probably creates a displacement of the limits between science and art. Oftentimes, biologists use different narratives in their presentations. I like to use humanisation from an intuitive approach to show our research group's results. In this case, this co-creation could represent a way to move further and expand our disciplinary limits in a 'dance' with artists, just as nature dances over seasons or roots dance with microbes into the soil.

Paulina

This article aims to explore the questions: what does it mean, from the point of view of the arts and sciences to develop an interdisciplinary laboratory? Is it still possible, from the space of freedom that art is supposed to embody, to deploy renewed links with heterogeneous ways of thinking and building knowledge? How is that done?

Interdisciplinarity implies points of contact between the disciplines in which each one contributes its problems, concepts and research methods. It refers to the work of cooperation and integration between two or more disciplines and its focus is to obtain syntheses that go beyond the limits of the participating disciplines. If for the multidiscipline the character of interaction is juxtaposition, for interdisciplinary dialogue it is an integration of concepts, methodologies, and practices (Klein). Interdisciplinarity is a new restructuring of knowledge that considers the ways in which different disciplines can lead towards the solution of different and novel questions. And as we have already pointed out, it responds to the idea of conflict; of everything that is complex. According to Edgar Morin, there is an ever-deeper line of separation between our acquired and segmented

knowledge and reality, which is increasingly transversal, multidimensional and global. From here, we come to understand that the complex can be solved by the interdisciplinary and this can result in a trans-discipline (Dalmau & Górriz). Bearing in mind that the disciplines are specific fields reflecting a fragment of reality, their overcoming is necessary because the discipline is an approach that indicates its own expansion in its potential root.

The option for interdisciplinary work, without neglecting the incidence of personal trajectories, is part of an epistemological conception. If all construction of an object of knowledge is related to points of view and to the place from which it is elaborated, the articulation of different perspectives and places opens different potentialities. According to Pombo, we are in a situation in which we need to broaden the very concept of interdisciplinarity. We already had to amplify the concept of science; we already had to move from a science that was predominantly analytical to a science that seeks to deal with the new complexities that it constantly discovers and invents, proceeding more and more transversally:

We have to realize that we are in a world in which walls have been torn down (although others are being erected, the fall of the Berlin Wall is an event of inexhaustible symbolic meaning) (43).

We are in a world of cancellation and the mixing of borders. As Agamben considers, the emerging global community is a community of immigrants, mestizos, stateless, the impure, 'landless' people (6) that awaits us is a world in which one's own sense of identity (or would it be better to say, sense of belonging?) is lost. This is also a new reality that demands from us the capacity to find broader ways of thinking and that, very probably, has to do with the issues that are thought in accordance with the scope of the word 'interdisciplinarity'. Basically, this suggests that we are going from a tree-like scheme, in which there was a root, a Cartesian stem that rose impressively above us, which divided into branches and small segments from which several 'succulent fruits emerged', all of them linked by a kind of harmonious and fertile hierarchy, towards a network model – a very complex constellation, where there are no longer hierarchies, nor privileged links (54).

In this perspective, art-based interdisciplinary research proposes a new epistemology based on practice. Within artistic practices, the innumerable tactics and knowledge of everyday life from multiple perspectives in various fields are named as ‘ways of doing’ (practical or critical ways of articulation), rather than disciplines in and of themselves. In the case of *Analfabeta*, these new ways of knowing and creating within interdisciplinary practice arise from the situated experience of the South, reconstructing the migratory experience from a decolonising perspective.

Following De Sousa Santos’ thinking about the experiences generated through social struggles, like migration and exile, requires thinking from an epistemological, geographical, and political standpoint. Speaking from the South and with the South means producing knowledge “with its subjects rather than about them” (245), in a permanent dialogue mediated by intercultural and inter-political translation. It means generating sound, relevant knowledge from other perspectives, differently formulated. This is a knowledge that requires “new ethical relationships and is performative, healing, transformative; it goes beyond being decolonising, democratising, and depatriarchalizing” (246). It is a knowledge that, by using different expressions, can highlight emergent thought from the South, a knowledge attentive to both the individual and the collective needs of individual and collectively oppressed subjectivities. Such knowledge must be unruly, disruptive, provocative, and rebellious.

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Notes

- 1 We invite English readers to try reading the full Spanish version first to experience the estrangement and difficulties the artist herself went through.