

# Kite Lutherie: Sonic Encounters around Wind-Human Collaborative Crafting\*

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## [ABSTRACT]

This text encapsulates the journey I embraced for my research—creation project on collaborative experimental lutherie. While pursuing my Master's degree in Sonic Arts, I found myself deeply interested in the character and presence of the wind I was constantly stumbling upon in Belfast, Northern Ireland. By adopting the *cosmopolitics* approach proposed by Isabelle Stengers, read through the framework of the contemporary arts, I will evaluate the feasibility of presenting the sound making process as a collaborative platform where human and non-human actors are allowed to interact. While wondering how to establish sonic exchange mechanisms with the wind, I rediscovered the local kiting folk practices and began to study the kite using conceptual tools brought from the German media theory, particularly the work pioneered by Friedrich Kittler. It is a physical fact that the kite could not fly if either *Wind* or *Human* were missing; therefore, in that sense, I will argue that kite flying can be presented as *Kulturtechnik* whenever both actors find themselves affected by the result of the collaborative action. Going a step further, I will explore Kite crafting in terms of experimental Lutherie as a process in which the final "instrument" is indeed the result of wind-human sound interaction.

**Keywords:** Lutherie, wind, folk practice, interface, sound, *kulturtechnik*.

doi 10.11144/javeriana.mavae15-2.klse

Fecha de recepción: 11 de noviembre de 2019

Fecha de aceptación: 6 de abril de 2020

Disponible en línea: 1 de julio de 2020

- \* Artículo de investigación. Producto correspondiente al proyecto presentado en el Sonic Arts Research Centre para optar por el título de Magister den Artes Sonoras (MA. In Sonic Arts).
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## CÓMO CITAR:

Páez Moncaleano, José Manuel. 2020. "Kite Lutherie: Sonic encounters around Wind-Human collaborative crafting". *Cuadernos de Música, Artes Visuales y Artes Escénicas* 15 (2): 206-227. <http://doi.org/10.11144/javeriana.mavae15-2.klse>

## Kite Lutherie: Encuentros sónicos en torno a la artesanía colaborativa entre el humano y el viento

### [RESUMEN]

Este texto resume el viaje que emprendí para mi proyecto de investigación-creación de lutería experimental colaborativa. Mientras cursaba mi Maestría en Artes Sonoras, me interesé profundamente en el carácter y la presencia del viento con el que tropezaba constantemente en Belfast, Irlanda del Norte. Adoptando el enfoque cosmopolítico propuesto por Isabelle Stengers, leído en el marco de las artes contemporáneas, evaluaré la viabilidad de presentar el proceso de fabricación de sonidos como una plataforma de colaboración en la que se permita la interacción de actores humanos y no humanos. Mientras me preguntaba cómo establecer mecanismos de intercambio sónico con el viento, redescubrí las prácticas locales de fabricación de cometas y comencé a estudiar la cometa usando herramientas conceptuales traídas de la teoría alemana de los medios, particularmente el trabajo iniciado por Friedrich Kittler. Es un hecho físico que la cometa no podría volar si faltara el Viento o el Humano; por lo tanto, en ese sentido, argumentaré que el vuelo de la cometa puede presentarse como *Kulturtechnik* siempre que ambos actores se vean afectados por el resultado de la acción colaborativa. Yendo un paso más allá, exploraré la construcción de cometas en términos de lutería experimental como un proceso en el que el “instrumento” final es en realidad el resultado de la interacción viento-humano-sonido.

**Palabras clave:** Lutería, viento, práctica popular, interfaz, sonido, *kulturtechnik*.

## Kite Lutherie: Encontros sônicos em torno ao artesanato colaborativo entre humanos e o vento

### [RESUMO]

Este texto resume a viagem que empreendi para meu projeto de pesquisa-criação de luteria experimental colaborativa. Enquanto eu cursava meu Mestrado em Artes Sonoras, me vi profundamente interessado no caráter e a presença do vento com o qual tropeçava constantemente em Belfast, Irlanda do Norte. Adotando um foco cosmopolítico proposto por Isabelle Stengers, lido no marco das artes contemporâneas, avaliarei a viabilidade de apresentar o processo de fabricação de sons como uma plataforma de colaboração onde seja possível a interação de atores humanos e não humanos. Enquanto eu me perguntava como estabelecer mecanismos de intercâmbio sônico com o vento, redescobri as práticas locais de fabricação de pipas e comecei a estudar a pipa usando ferramentas conceituais vindas da teoria alemã da mídia, particularmente o trabalho iniciado por Friedrich Kittler. É uma realidade física que a pipa não poderá voar se faltasse o Vento ou o Humano; portanto, nesse sentido, argumentarei que o voo da pipa pode apresentar-se como *Kulturtechnik* sempre e quando ambos os atores sejam afetados por resultado da ação colaborativa. Indo um passo mais além, explorarei a construção de pipas em termos de luteria experimental como um processo onde o “instrumento” final é, na verdade, o resultado da interação vento-humano-som.

**Palavras-chave:** Luteria, vento, prática popular, interface, som, *kulturtechnik*.

*Climbing and carrying, carrying farther, higher  
 The longing in the breast and planted feet  
 And gazing face and heart of the kite flier  
 Until string breaks and — separate, elate —  
 The kite takes off, itself alone, a windfall.*  
 (Heaney 2010, 92)

> Yes, it is a fact that, from the very first day a kite was lifted on the sky, sound was around gracing its timid dance with elegant subtlety: A tenuous buzz must have prowled the edges while, at the very heart, the swollen sail emitted a weak roar out from the constant whips over the crackling wood sticks. Knots and strings rubbed by *Wind* but also pulled and plucked far from the ground had given contour to the humble sonority of such aeolian gamelan that lost its own voice while being dragged deep into the sky.

However, it does not mean that, every time a kite is flown, the whole ecstatic contemplation of the acoustical phenomena is needed as a demanded precondition. Conversely, it is not a difficult task to trace back in time a reiterative historical negligence towards the kite's sonic properties in almost every tradition around the world. While kites were achieving important accomplishments on many other fields, sound was slowly forgotten. Fishing, war surveillance, telecommunications, aerial photography, meteorological measurements, and even electricity harvesting compound a short list with outstanding activities in which a kite has proven to be more than just a children's toy by allowing a hand, an eye, a brain, etc., to grab, to see or to collect data in a way never conceived before.

Having said that, this project will keep some distance from this sophisticated kite-crafting practice for considering that a playful and ludic approach could be a more suitable environment for the project needs. However, it does not mean that there will not be place for useful insights coming in from the "technical" side, leading to the broadening and enrichment of the investigation. Even more, it is by understanding that throughout centuries, kites have been technically modified (in order to give better responses to specific tasks), that the kite itself can be studied as a tool (i.e., an instrument)<sup>1</sup>.

The reader is warned to avoid the confusion that the concept of "instrument" might present for the discussion. I am not intending to hastily jump over the musical field using an opportunistic analogy as an excuse. Nonetheless the project will take advantage of the uncertainty around where the 'instrument' meets the musical. Coming back from the disambiguation, it should be said that the reason why it is relevant to associate the kites with the notion of "instrument" is because, upon doing so, the actual foundations of the research structure are being raised: A kite that comes out from *technical*<sup>2</sup> development, and a folk practice seen as a *kulturtechnik* (Krämer and Bredeckamp 2013, 25).

This topic will be fully developed later in the text but, for now, it might be enough to point out that, in regard to the kite's "instrumental" quality, not unlike the fisherman, the photographer or the meteorologist, I could say that, at the beginning, there was just this goal in mind that couldn't be fully achieved by myself due to my biological limits. The kite seemed to overcome those barriers and allowed me to get closer enough to my objective. Therefore, it was the task that found the kite.

## Wind

Imposing, sturdy, almost tangible. In Ireland, I pleasantly met *Wind* as I had never known before: one that passed making the roofs tremble in its path; one that didn't hide its voice behind the tree leaves or accepted being overpowered by the thunder or the storm; one that even dared to stop my walk and put in question my dexterity on piloting my own body, constantly changing the course of my steps before they reached the ground. Then I concluded that that sort of wind, fearless and reckless, was defying me: As if it were a respectful duel between two well-known honest rivals, I started to find in every blow and gust an act of provocation that demanded a smart reply from me. Without being sure what kind of challenge *Wind* was inviting me to (e.g., combat, endurance, courtship, dance, etc.), I judged it was the best to try a simple conversation first.

The meeting would take place around the field of the cosmopolitics of the contemporary art: concept that according to Gómez-Londoño (2013) acquires a deeper meaning in Stingers work leading to:

Indicate new politics and an analytics that consider the natural link of the things of the world (human and non-human) as mutually independent. Latour proposes the cosmopolitics as an integrated unity where the interactions with non-human beings renew the epistemic issue, the psychology and aesthetic of being modified by this interaction. (15)<sup>3</sup>

However, to make wind and man share the same table, it will be necessary to walk a different path from the one proposed at the basis of the historical, European anthropocentric epistemology. Instead, a quite more suitable approach can be found at the core of some American ancestral practices.

Perhaps a more suitable framework for understanding the scope for a wind-human interactive model is the one quietly developed deep in the Amazonian jungle, where, for centuries, native tribes have been empowering human and nature reunions in what they call the "Maloca" — the grant house — (see Figure 1): a sacred gathering place that represents the entire universe at a human scale (Peña 2010, 49). In that place, the organizational structure operates as a big network built from the interconnection of multiple nodes that can be indistinctively human or non-human (Becerra 1988, 20). Therefore, the entire network is being fed with the individual contributions that will affect as much as will be affected by the synapsis with some other nodes (Borrero and Pérez 2004, 78), thus giving place to a complex communicative system that induces collaborative knowledge production by allowing the conversation of different agencies (Hildebrand 1983, 198). Malocas are, therefore, live sanctuaries that preserve a huge compendium of wind-human encounters.



Figure 1. Maloka's façade  
Source: Carlos Duarte (2015).

*Wind* creates and *Wind* destroys. It carries the rain, but it can also hold it back. According to its direction, it will bring abundance, or it will spread diseases. Thus, the fact that several traditions around the world properly placed *Wind* as an active participant in mankind's creation and many stories agree on highlighting its role as an educator of the human race should not come as a surprise. Most of the times it doesn't even receive a specific name, although, especially inside the more advanced pre-Hispanic cultures, it is given the "deity" title. Cuchaviva for the Muyscas, i.e., "glowing air" or "arch of heaven," the defender of women in labour (Simón 1892, 287); *Wauyra Tata* (Father Wind), for the Aymmaras, jealous god and husband of the earth (Cáceres 2006, 8); Ehécatl in Aztec mythology<sup>4</sup> (Figure 2), always present on the living beings breath and on the breezes that bring the clouds, depicted with a snail shell on his chest because "it is the wind" who makes it sound (Miller and Taube 1997, 84), (De Borhegyi 1966). However, from all the winds that I came across in my readings, one turned out particularly meaningful for the research, and the more I read about it, the more I was sure that it was the wind I met.

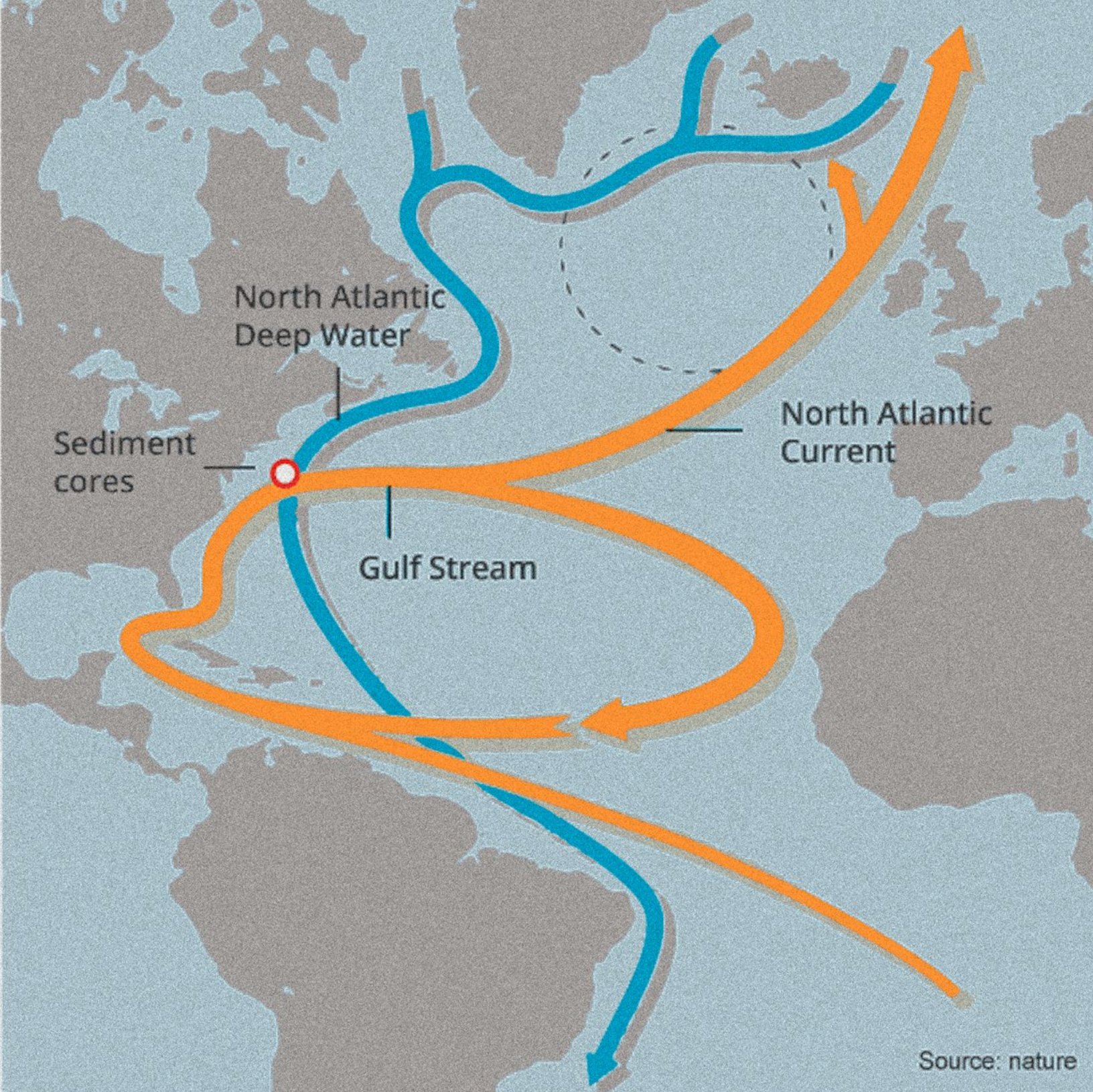
Hurakán was his name, and according to the Mayan mythology, he was the god of the fire, the wind and the storm. He was one of the three gods that participated on the first attempt of creating mankind. The hurricane is named after him (Emanuel 2005, 18). According to the Popol Vuh (Tedlock 1996; Ortíz 1947, 249), his name means *heart of sky* although other sources point out that it might be also translated as "the greatest of the gods" (Brinton 1881, 625). Hurakán is the name I accepted to call the wind that had defied me. Hurakán will be the wind I'll try to sonically converse with.



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Fig. 2 Quetzalcoatl, the god of wind and learning

Source: Tishler (1966).



V  
V

## “Weave, weaver of the wind”

Figure 3. The Gulf Stream movement across the Atlantic

Source: Chen, Xianjiao, and Ka-Kit Tung (2018).

The last sentence from Joyce (1922, 25), always reminds me of an Irishman who I heard saying that the green of Ireland was in fact somehow related with Mexico, and I would have let the incident vanish away from my memory if I hadn’t accidentally found out about an ocean current that goes all around the Atlantic — physically connecting the Gulf of Mexico with the west coast of Ireland (MacGarrity 1979, 43; Bjerknes 1964, 4), the Gulf Stream<sup>5</sup> — while I was studying the winds across the island. This “ocean river”<sup>6</sup> (See Figure 3) is not just responsible

for washing the whole Ireland (Joyce 1922,16), but at the same time it nourishes tropical storms and hurricanes (Ocean today n.d.). Nothing so remarkable, and yet I find it captivating to think that the wind that I might be interacting with could have actually come straight from Yucatán, perhaps still carrying within it the furious voice of a forgotten god.

## The Kite

However, giving him a name was not enough. There were still a number of subjects that needed to be addressed before moving towards exploring human-wind dialectics. A crucial issue to be tackled in this line was the actual separation between both interlocutors — not in terms of feet or miles, since, as expressed earlier on, *Wind's* presence tended to be far too close, to the point of being confused with an impolite intrusion of my privacy, but in terms of communicative closeness. What I realised at this stage in the research was that, even when I did hear and feel *Wind* surrounding me, I would never make myself to be felt by *Wind*; I couldn't have reached his head, or talked to his ear, or attempted to invade his own space, basically due to *Wind's* own nature. But even if I had found a way to do so, I wouldn't have had the means to know whether he got my message and agreed with it, or he just ignored it. Maybe he added something afterwards, or he might have tried to give me space to keep talking, but I wouldn't have ever found out about it. The absence of feedback jeopardized every attempt of overcoming the latent sensorial-frustrated experience inside the current Wind-Human interactive model. Confronting this obstacle, two paths were running down in opposite directions each one exposing quite dissimilar solutions.

One choice could have been to stop struggling against the fact and accept that perhaps *Wind* and *Human* were never meant to meet in such a humanised perspective; that at the end of the day, the whole idea of "being defied by the wind" was utterly nothing but a human impression and, without any pragmatic evidence of provocation from *Wind's* side, the last *Wind* shouldn't be blamed for any reason whatsoever. Given the case that despite what has been expressed above, *Human* still felt attracted to the idea of working with *Wind* then, after accepting in the future not to raise false accusations, *Human* will be allowed to approach to *Wind* as long as he does not request from it an answer back in any way. It'll be a unilateral initiative and therefore interacting won't be needed. The *unwinding* man could enjoy *Wind's* presence from the healthy distance of a pleasant passive listening.

Undoubtedly, by accepting such a solution, the project would have taken a completely different course; however, by embracing the interactive component I glimpsed an alternative solution in which kites were implied.

By rejecting "resignation" as a feasible solution, I soon found myself walking in the opposite direction. The second path exposed a completely different scenario and led me up to rediscover the kite as a crafted — folk — technology capable of contributing to mediatise human-wind interaction in order to overcome the above-exposed communicative impasses. "Mediation" turned out to be a winding path, though, and engaging in reflection up until this point required getting strength and nourishment from along the road. Firstly, the path dropped me in Andean ground at the feet of the kite's folk tradition that I grew up with in Colombia.





v  
v

Figure 4. Traditional Colombian Kite prototype built for the project by the author

Source: Own picture.

## Kite crafting

Three *guadua*<sup>7</sup> sticks are tied up hard right in the centre, forming an asterisk shape. You want to make sure that you cut a small portion of wood out of every cane right at the junction point before tying them up, so once they are put together they will fit perfectly and hold their positions, contributing to strengthening the kite's structure. Then a string is passed around the six tips of the *guadua*'s asterisk leaving a small knot on each of the tips just to ensure that every section is evenly tensed. When the string is back at the beginning, a hexagon shape should be accomplished. The whole skeleton of wood and strings is now covered with the sail, which can be made from very low-density paper or with a better luck it'll be a plastic sheet with the printed image of your favourite cartoon character. The tail shouldn't be a problem: newspaper strips, old socks or fabric scraps will do the job, although the length, it will have to be readjusted depending on how strong the wind is pulling the kite (see Figure 4).

During my childhood, every August I witnessed swarms of these handmade kites being raised like huge ladders to the sky, temporarily painting the vast canvas at their back. However, if only one of those kites had been given eyes to gaze at the ground, it would have found a very similar situation, but occurring on a different background: little splashes of colour running all around the field flying their own kites or going after the ones that seemed to fall, while bigger splashes (slightly pale) are gathering near to smoky dots. Park stalls selling their handmade kites but also offering the "American" models made in China (of course), fathers flying kites, siblings launching and rescuing the kites, younger siblings winding strings and playing around, mothers cheering, nursing, tidying, feeding, chasing, etc. At the end of the day, one by one the stains of colour of both sky and ground would vanish away while calm and neatness are re-established until the next occasion (Matisse 2000). In the meantime, tangled kites over trees and electric wires, will remain hoisted as a reminder for all those who dare defy the wind by kiting.

Returning to the path now endowed with the critical reflection about the Colombian kiting practice, I found myself being driven towards Gaelic lands once again: I had not seen but a single kite during the time I lived in Northern Ireland, so I ventured to build my own and try to fly it. The results surpassed my expectations: First of all, I concluded that there was no reason that could explain the absence of kites in Belfast's skies, apart from, perhaps, laziness or a likely inexistence of continued kiting traditions on the island. Secondly, a rather obvious fact that turned out to be deeply significant later on in the research struck me: The kite needs both *Wind* and *Human* in order to fly properly. A strong gust might threaten to lift the kite and drag it away for a while but in a few seconds the kite (that never flew but stumbled), would hit the ground. Once *Human* gets involved, by opposing to *Wind*'s pull and ensuring stability in the system, the kite does find its way up and will remain in the sky as long as both sides agree to insist on such task.

Through the kite, *Wind* and *Human* are virtually connected and closer than ever before. By using a kite, Wind-Human interaction gets equipped with visual and haptic resources that will aim to overcome the sensorial frustration and to supply real time feedback at both ends of the string. However, what in fact makes the kite an effective medium is that, before even levelling the conversers' position or balancing their discursive forces, the kite allows to be permeated, invaded by the action of both *Human* and *Wind*. The project, therefore, celebrates its transformative potential and recognises the crucial role that kite plays on the alchemical process of interactive knowledge construction. That's why instead of underlining the idea of media as an emptied transitory space, the approach of *Kite Lutherie* chose to proceed by occupying media itself. What it means is that I wasn't as interested in ensuring that the data travelling from point A to B wouldn't suffer alterations during the transduction procedures, as in studying the data's behaviour once it abandoned its source and found itself cohabiting the media with many other data streams. Neither *Wind* nor *Man's* space, but their interactive coexistence in the media, is what structures a Kite-Mediated Communication model that guaranteed equal significance to all three contributors. *Wind*, *Human* and the kite, under the umbrella of the "Sonic" Maloca laid the foundations for a promising collaborative exploration exercise.

## Dialogue

*Cultural techniques are operative processes that enable work with things and symbols; they are based on a separation between and implied 'know how' and an explicit 'know what'; they can be understood as skills that habituate and regularize the body's movements and that express themselves in everyday fluid practices.*

(Krämer and Bredekamp 2013, 27)

*Wind* was the original concern: I wanted to probe its interactive potential. The kite as a cultural technique was the instrument that allowed such exploration. And now, sound was chosen as the system's interchanging protocol.

Without a doubt, the kite flying experience forced the discussion to turn back to the kite: Being the selected medium, (the encounter space where the dialogue takes place), the kite should guarantee the means to enable the interlocutors' sound expression.

Two statements that slightly tackle this regard were already introduced at the very beginning of the text, and it may be worthy to recall them in this context hoping they would offer useful insights about how to proceed onwards in the research. The first of them stated that the kite does already have a sound, which would imply that the problem would have been solved even before being reviewed. Along the same lines, it could be added that kite's sounds are mainly provoked by the action of *Wind*, *Human* or by the contact between the kite's own components by themselves. One way or another sound is the response to a kite's incoming gesture and, hence, it's real-time feedback for an interactive process.

On the other hand, the second sentence argued that sound is not usually a kite's crafting concern, which suggests that, despite sounding due to the inevitable acoustical phenomena, kites might need to be improved in order to result in more attractive sound devices. Redesigning the kite while considering its sound being as relevant as the aerodynamics that rule its flight will positively broaden the kite's expression palette, making it a more suitable sonic interface.

As can be seen, both statements present very different positions about the best way to work out the sound interaction in the kite. And yet, instead of choosing one over the other, the research embraced the two approaches for considering them functional complements that, by working together, could expand the understanding of a kite and its sounding capabilities.

In response to the initial inquiry, and inspired by the two above-mentioned statements, an equal number of investigative lines were coordinated in order to mine the best of each position. It is noteworthy that these two lines will also be present during the phase of test and construction of the actual interface. However, at this point in the research, they have been assigned to nurture the reflexive process by searching for valuable referents to the project's framework.

## The kite as a sound device

From the perspective of the kite as an already fully operational sound device, the research started with a very rigorous study of the kite's features that evaluated on what way every component was susceptible to produce sound and what gestures from the flyer or the wind were inducing such sounds. The study drew in other voices that had been asking the same question from before: What does the kite have to offer on its own?

One of the answers that I found deeply relevant for the project came out from the vast research of Juan Miguel Suay (2000), a Valencian engineer, who, for more than 15 years, has managed to gather an impressive collection of studies about kites. Suay's interests cover the meticulous analysis of the physics describing a kite's flight, the resolute historiographic exercise of kiting traditions throughout time around the world, and the personal hobbyist kite crafting practice collected in his many tutorials in which, apart from instructions, he often includes a brief outline of the kite and its context.

A second reference is the continuous work of French artist Jackie Matisse who has forged a captivating relationship with kites. Her reflection, eminently on the visual field, has driven her to explore the expressiveness of individual parts of the kite, exhibiting a particular interest in the possibilities of their tails. Her practice is absolutely respectful with the kite's composition, but it hasn't kept her from broadening the kite's conception to the point of building undersea kites<sup>8</sup>.

A final influence is Ken Gregory and his sound installation, *Wind coil sound flow* (see Figure 5). This is a piece that, unlike Matisse's, deconstructs the kite's essence and reconfigures it in a creative way. However, what I find attractive about the piece is not just the final product but the way Gregory accomplished it. *Wind coil sound flow* is the result of Gregory's research<sup>9</sup> inside what he himself called the "kite lab," a place/space that retrospectively seems politically close to the "Maloca" I spent most of the time working in. Gregory does consider sound in his reflection, and his specific approach is contemplated during the construction phase.

An important detail that had not previously been discussed but that the research (and common sense) shed light on was that, even after acknowledging the kite's sound qualities, the fact of the kite being raised up higher and higher makes it difficult for the flyer on the ground to perceive sound at all. During the next stage of the research, this investigative line will focus on studying several ways to listen to the kite.



## The kite as a hackable device

The second line found its more important reference in one specific folk kiting practice in which the sound turns out to be particularly meaningful, to the point of having forced the kite's evolution in order to satisfy its sonic needs. *Diều sáo* is the original name given to the representative kite of this tradition (see Figure 6). From the Vietnamese language, it translates to "Kite Flute," due to the arrangement of wind-played bamboo resonators that are attached to the kite's structure; so, whenever the kite is lifted into the air, the wind trapped in the resonators will produce a distinctive complex sonority as a result of the superposition of the individual flute tones carefully selected beforehand. From these kiting practices, the project adopts the interest for exploring different wind-played kite attachments and, at the same time, it embraces the idea of acoustically amplifying kites. Supporting the research around these topics, a quite relevant reference is the work of Uli Wahl ("Windmusik"), not only for his very complete aeolian devices archive, but also for his genuine closeness to craft kiting practices. It is through Wahl that I found out about the *Diều sáo*. And his website will be widely consulted along the project, especially when following his remarkable efforts on replicating the sonic approach of the Vietnamese tradition (Ferment, Tondellier, and Wahl 2008).

As regards wind-played devices, it is relevant to mention the influence of aeolian enthusiast Chris Dodson ("Got wind? Make music!"), who had been working with wind, kites and whistles for a while. It is indeed his "wind wand" that gives the project the chance to include the elastic bands on the list of soundable materials for hacking or augmenting the kite's sound pallet.

A final experience that contributed to widening the project's perspective in terms of *Human-kite-Wind* interactions, was indeed the sound installation *Audible Forces*. Produced by "Oxford Contemporary Music" in 2013, the project managed to gather the pieces and sonic perspectives of seven sound artists, all of them exploring the scope of wind-driven sound sculptures.

Figure 5. Detail from "Wind coil sound flow"

Source: Ken Gregory (n.d.).

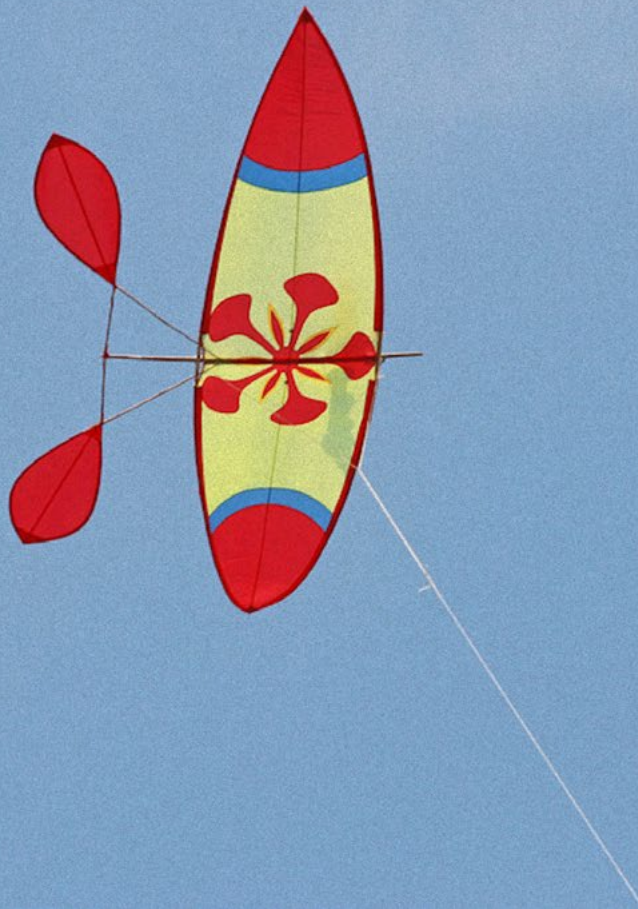


Figure 6. Diều sáo  
Source: Dieusao (2015).

Nourished both by developments in folk practices from around the world, and also by the wind encounters of sound artists, engineers, aeolian enthusiasts, among others; I found myself with an expanded list of resources or approaches that could enrich the kite's sound hacking attempt. Among this list are whistles, bands, flutes, chimes, tails, and sails. This research line will keep inquiring about how to sound a kite.

## Laboratory

Every time I walked into the lab, the only premise I embraced was to make a better prototype for a kite acoustic interface, and despite not even mastering my own traditional kite crafting practice, no restriction was allowed in terms of models, sizes, sound attachments or materials. Every incoming thought was given the chance to prove its worth, being materialized and tested via iterative design. The reflexive process derived from several procedures taking place in the lab was recorded in a sketchbook, from which excerpts will be presented whenever the discussion so requires.

A whole range of prototypes was considered for the kites: from origami paper kites, to more typical diamond shape and hexagonal models, adding a few kites coming from foreign practices like the *Rokkaku* from the Japanese tradition and even including a refurbished umbrella as an experimental approach (see Figure 7); such variety on the test subjects was submitted to a rudimentary and empirical comparative study that attempted to yield out the more appropriate kind of kite according to the requirements of the project. Special efforts were dedicated to studying the *Diều sáo*, for considering it the evolutive result of a kite crafting cultural technique. What it means is that this particular kite, as a technology applied to the execution of a specific task, has been improved over the years by the reflection aroused by



Hexagonal Kite  
(Latin America)



Diamond Kite  
(Western tradition)



Umbrella  
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Rokkaku  
(Japan)

its continuous usage within the community that have kept the tradition of kite singing alive. So basically I saw in the *Diêu sáo* a suitable platform on which I could start thinking about the interface from, which by having found a solution to the challenges I was facing now, could push the research one step forward.

However, it was not just the kite's shape: the flutes of the *Diêu sáo* also guided the exploration of wind-driven sound devices. In a first approach, the goal was to evaluate the viability of reproducing the Vietnamese whistles out of the local materials I had access to. For the resonant body, instead of the hollowed pieces of bamboo, plastic tubes, metal pipes and cardboard rolls were tried; while for the flute head, beer caps, cardboard cones, cork, and Styrofoam were used. However, with the flute heads there was more to tackle than just choosing the material: There was the lack of traditional knowledge, as well as the lack of the required wood-carving expertise. That is why at the very beginning I tried to minimise the craftwork by selecting objects that could exhibit significant similarities with the flute head's shape, so I would not have to carve out but slightly modify the surface to resemble that of a whistle. It did not work quite well, so I found myself back at the beginning.

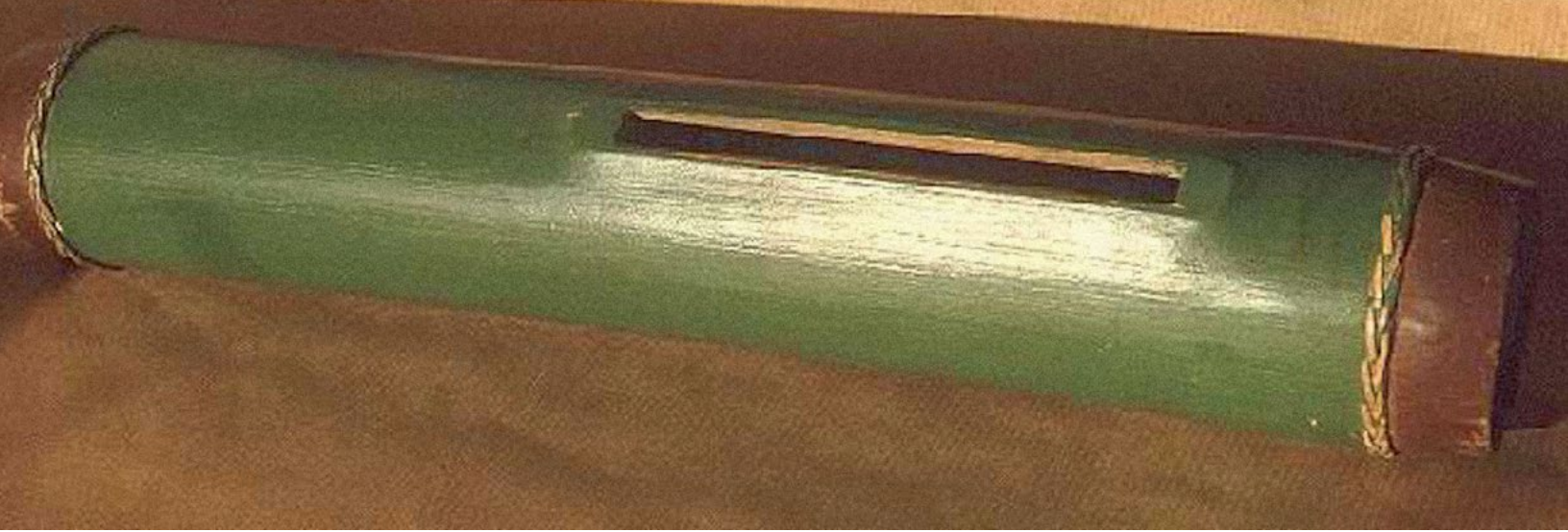
In the meantime I carried out the first kite flying tests, yielding overwhelming results: After three days of intense trials, the only kite that ever flew properly was (unsurprisingly), the only one I had experience with from before: my traditional kite. The other tested subjects emerged from tutorials or crazy ideas that I tried to follow verbatim, and yet their evident failure led me to a good number of significant conclusions:

- Evidently it is not just the kite but also the tradition that nurtures and exercises the kite's practice.
- The lonely flights of the Colombian kite contributed to the understanding of the man's gestural possibilities when interacting with a kite. How the string line acts as a transducer carrying up data sent from the ground that affects the kite's stability and position in the air, and carrying down the wind's pull when it threatens to take control over the kite (see Figure 8).
- Kites also fall: The experience with the other four inoperative kites opens to me the mistake as a creative choice. From the beginning, I had been concerned with building devices that could go up and up, but after the test I started to explore the poetics of the error embracing the possibility of inducing the kite's failure.
- The high number of failed attempts also suggested that there was something in my practice still being unattended. Five were the kites I had made and four were the kites *Wind* sent back.



Figure 7. Early kite prototypes

Source: Own picture.



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Figure 9. Indonesian flute  
Source: Uli Wahl (n.d.).

Although in a different perspective *Wind's* contribution was more than just breaking the kites apart, nearly at the end of the first tests, wrapped in a sturdy gust, it brought the tin can: a lightweight hollow cylindrical item that, during summer time, can be easily found on almost every corner of Belfast city. Affordable and accessible, the can was also easily sounded for being an almost ready-made resonator for the wind flutes. But is the discovering of the Indonesian singing kites tradition ("windmusik") what indeed reveals the can's hidden potential: Instead of complicated carved heads, the Indonesian flutes (see Figure 9), make use of a thin slit along the resonant body, through which the wind may enter and exit, leaving a sound trail in its way.

The same principle is thus applied to the tin can, which by this time becomes a crucial subject in the lab, where replicating the Indonesian flutes was just the beginning of the research of its sounding possibilities. Cans of different sizes and thickness are tried out in relation also with the slit's dimension and its effect over the frequency. Cans produce mostly homogeneous sounds that could be heard at a considerable distance from the source, nonetheless an interesting result is obtained whenever the ideal wind speed was surpassed: A beating movement of the slit edges results in a subtle buzz that fouls the original pure "flute" tone giving place to a more complex sonority which, to an extent, resembled a seagull's squawk.

In a similar way, cans are involved in the process of crafting the kite. The idea behind it is extremely simple: having proved their whistling skills it could be useful if cans were structural parts of the kite's composition. In the Lab, kites with tin can skeletons, as well as kites with tin cans attached to the wood skeletons are prototyped and tested afterwards (see Figures 10 and 11), but in contrast to the successes on the whistles research, the kites failed: After one flight, the can-skeleton kite was torn to shreds while, on the other hand, after several attempts, the can-attached kite never remained in the air for more than 30 seconds. With regard to the tin's sound the tests carried out had revealed the can's only weakness: Any perturbation on its surface will stop the sound production. It means that, by the first hit of the kite against the ground, the sounding capabilities of the kite would have been drastically compromised. Figure 10. Kite prototype using a whirl tube and a thin can arrangement as structural axis

## Current design

The rising number of kite casualties demanded a turn in the investigation. It was not the materials' fault (at the end of the day, they had been constantly changed), but it was not the design's fault either. Neither the weather conditions nor the lack of background studies could have been blamed. The single factor that has not been called into question yet is the man and his ego. In my pride and eagerness to supply a suitable interface for collaborative participation, I paradoxically left behind my interlocutor. I assumed that, since I was the one with the hands



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Figure 10. Kite prototype using a whirl tube and a thin can arrangement as structural axis

Source: Own picture.





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Figure 11. Prototype with elastic bands and thin cans attached to a kite's false structure

Source: Own picture.

and fingers, it was my job to build the kite. What I realised afterwards was that, when establishing a communicative building process, the interaction began indeed by both parts crafting together a mutually agreed mediatic instrument. In that vein, the kite was not meant to be made by man alone, but as result of a human-wind collaborative lutherie exercise.

Could it be possible, then, to inaugurate a lutherie practice out of the interaction between human and nonhuman? An initial reply will be given later on in the conclusion, but, for now, in an act of reparation, I step aside on the research so *Wind* can put forward its point of view. It is time to listen.

The last sentence recalls the earlier concern embraced by the first investigative line (the one inquiring about Kite as a sound device), and although it might look as if this research path has remained somewhat inactive, the truth is that it has been devising a different approach for tackling the listening issue. By ignoring, for a moment, the kite's body, the research turns to study a kite's component that hasn't been sound-explored that much: the string line.

So, for the current design (see Figure 12) — a simple traditional hexagonal kite — is implemented: wood structure made from bamboo canes, and twisted nylon thread for the line and for surrounding the skeleton. For the sail and tail, plastic trash bags and fabric hand towels respectively were kindly supplied by Martha from the Queen's University maid service.

In regard to the body and the factual inconvenience of its sounds getting lost in the distance, for the most recent prototype, the project attached a piezoelectric microphone and an FM transmitter to the back of the kite. On the ground, an analogue FM radio tuned at the same frequency as the transmitter was broadcasting, receiving kite's sound mixture captured by the single pickup.

The line finds a completely different treatment. The works of Dodson ("Got wind? Make Music!"), and Wahl ("windmusik"), showed the string as a long thin oscillating wire played by the wind. There's a wide bibliography already written about long wires, and the kite line behaves exactly the same. In order to amplify the subtle wind howl carried by the string, a first acoustical attempt



inspired on Wahl's "tin aeolian harp" is implemented. Made from a leftover cardboard pipe, an eye hook screw and a sheet of strong plastic able to withstand tension, the resultant acoustic amplifier presented a single inconvenience: To effectively listen through it, one would have had to detach themselves from the kite breaking any link that could have been established with the wind (see Figure 13).



Figure 13. The Acoustic resonator being tested

Source: Own picture.

The current design aims to overcome such impasse by resting the resonator on the flyer's lap, therefore facilitating flying the kite, while listening to the wind. The FM receiver is placed inside the resonant body and volume and tuning controls are projected over the surface of the interface's surface. Finally, because the radio signal has already been amplified, a small piezo pickup is placed right below the eyehook to capture the oscillations on the string. This signal passes through an amplifying circuit and, after its volume control, it will meet the radio signal at the speaker output.

Whistles have also been improved at this stage: the technique to craft the Vietnamese flute head has finally been mastered and they are carved out from a high-density Styrofoam (Figure 14). Headed flutes and slit flutes are put together in small sets. Instead of being attached to the kite's body they will be attached to the string. There are no restrictions to consider while arranging the flute sets: They can be sorted beforehand or during flying; they could be organized according to pitch, timbre proximity, sizes, etc., but regardless of the method, what stands out on this approach is that it makes of Kite a customizable modular interface.

However, the purpose of the current prototype was not to advance on that line but rather to evaluate the interactive process on the three different scenarios corresponding to each one of the sounding kite approaches presented right above. On the kite's body, for example, the recently-mounted FM transmitter effectively empowers the flyer on ground (see Figure 15) by allowing him to listen to what the wind is doing on the kite and thereafter react whether agreeing or disapproving although in the current model, a circuit's limitation prevents the human to keep listening after the kite surpasses a certain height. The line is another scenario where the human obtains the chance of listening to the wind, and despite the previous approach, the distance only affects the sound's frequency. However, the system is tension-dependent, which means that the human can partially control it by releasing the line or by winding it back. For being the contact microphone directly attached to the bucket's inner surface, undesired sounds are being amplified. Finally, the whistles approach presents a particularly interesting interactive model for demanding the joint action of *Wind* and *Human* to get the can flute to sound. The flute modules (despite hanging from the kite), will need to be moved in space to reach the exact angle at which the wind makes the



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Figure 14. Lab-made  
"Vietnamese" head flute  
on Styrofoam

Source: Own picture.

can resonate, but even if the can is at the proper angle, *Human* has the possibility of truncating the attempt at sounding by destabilizing the line. In a similar way *Human* is also in a position to force a can to sound by creating a small air current, by pulling the string or releasing it abruptly. The gestural expression involved in this dialogue promises to be an extended subject that still needs to be studied.

In general terms, the prototype fulfilled its purpose by depicting the wind-man interaction in three different scenarios. It also made evident its own limitations and, by doing so, pointed the way the research should follow afterwards.

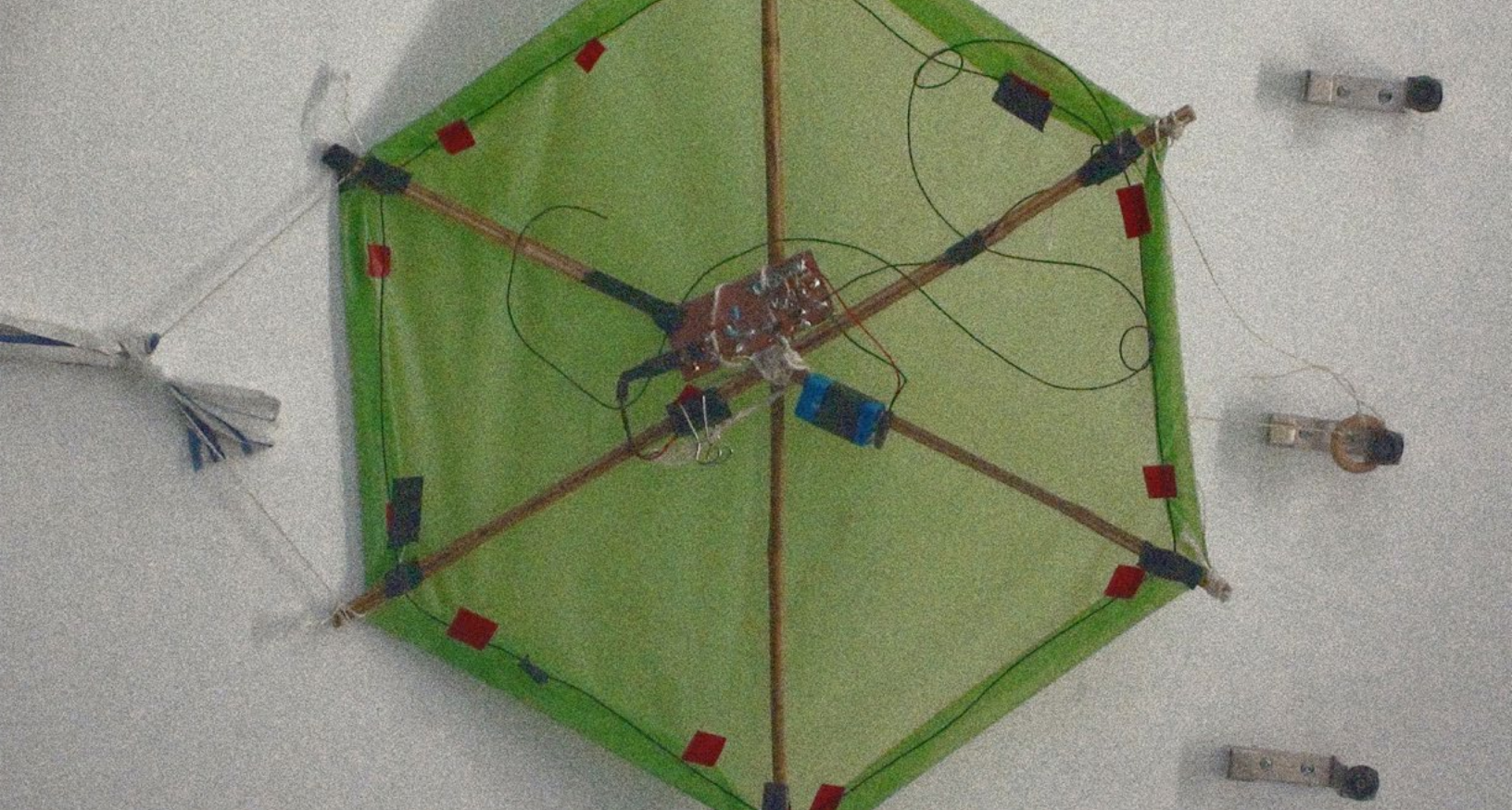
The idea of a human performer seated while "playing" a kite, turned out to be completely inappropriate for a normal kiting exercise where free human movement is a natural response to the homologue freedom of the kite in the sky. Later designs will need to face the portability.

On the other hand, the FM transmitter (see Figure 16) will need to be improved to expand the range of signal coverage and thus ensure constant feedback for the human performer.

The issue also opens a door for research on kites as listening devices; the use of the kite as transducer for catching signals traveling on the air in the near future has been considered.

## Conclusion

At the beginning of the project I envisioned a fully functional kite-interface that could allow a *Wind-Human* collaborative sound exploration, and yet, at the time this lines are written, the current state of the project presents a slightly different result. A vast research on ancestral traditions set the basis for wind understanding and kite construction. An anatomical study of the kite throws relevant information in terms of gestural interaction. A personal interest in working on local found repurposed objects leads the research on materials that will be used for the kites, affecting both the aesthetics and the functionality of the final devices. Studies about the kite-sound relationship



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Fig. 15 Hacked radio and FM transmitter circuit

Source: Own picture.

Figure 16. Circuitry attached to the last prototype for transmitting wind's effect over kite structure through FM broadcasting

Source: Own picture.

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are undertaken from two different perspectives: the kite as a fully functional sound device, and the kite as a malleable platform that could be enhanced in order to ensure a richer sonic experience. Implementing the Maloca concept inside the lab dynamics contributed to freeing the interchange among the three communicative actors (medium and conversers) from hierarchical restrictions. The interactive design pushed the research by improving on the construction mistakes of the previous kite. Three suitable scenarios in sound interaction are identified within the kite. Cautious research about the can's sounding possibilities is permeated by kiting traditions from Vietnam and Indonesia, resulting in a re-appropriation of ancestral knowledge at the service of sonic exploration. By abandoning the performativity as the final goal, the project seeks to delve further into the understanding of the expressiveness behind the crafting practices. *Wind* marks the speed with which the research advances: from productive weeks flying kites with wind in abundance to periods where the entire research is enclosed in the lab due to the lack of it; the project will learn to organize the calendar depending on *Wind's* availability. The cognitive process moves the project from the idea of *Wind* duelling *Human* to the idea of *Wind* and *Human* crafting together. The continuous failure with the "Kite lab" approach brings into question the imposed requests *Human* was making and sets the basis for a wind-human collaborative lutherie. Thus, the first interaction doesn't happen in the performance field but during the kite crafting process. While inducing small amounts of error in the flight of the kite, the project found that not always the result was the kite's fall but instead it kept raised in the sky, making it clear that *Wind* also assumed *Human* errors.

In perspective, the project stands closer to the starting point than to a visible end. The research has shown a single bit of the expressive possibilities of a *Wind-Human* kite Lutherie.

... *And after the fire, a light murmuring sound.*

(1Kgs 19,12)

## NOTAS

1. Diccionario de la lengua española (2019): Instrumento Lat. Instrumentum object used to do a job. (Translation offered by the author).
2. Oxford English Dictionary (2004): "Technique" from Greek tekhnē 'art'.
3. Translation offered by the author.
4. Quetzalcoatl wearing around his neck the "wind breastplate".
5. On the influence of the Gulf-stream on the climate of Ireland, see Professor Hennessy (1859).
6. Image accessed from Cheng (2018).
7. The "guadua" is a native plant very similar to the bamboo, widely used in Colombia as a timber source.
8. Sea Tails (1983) is a six-monitor, three-channel video installation. Film footage by Molly Davies. Underwater kites by Jackie Matisse. Electronic score by David Tudor.
9. "An electro-mechanical system that poetically reproduces the processes involved in operating an Aeolian Kite Instrument" Presented by Ken Gregory in San José Bienal 2010.

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