
Resonant Space

JON MCALICE

This is a revised version of a public talk given by Jon on April 25, 2021 at The Nature Institute (and available for listening at our podcast, In Dialogue With Nature, natureinstitute.org/podcast). Here the oral character of the presentation has been retained.

I WOULD LIKE TO SPEAK about a topic that appears to cross many of the arbitrary boundaries we draw in our ongoing attempt to make sense of the world we experience. Resonance is a phenomenon well known among physicists. Yet it also seems to play a role in living organisms. It is also something we speak about in relationships between people. I feel a sense of resonance for certain people. Others don't resonate at all. Ideas can also resonate with us. I'd like to explore with you the question of resonance as it relates to the way we understand things — resonance as an aspect of human consciousness.

I am going to begin in 17th century Holland. In 1655, Christian Huygens, the Dutch inventor of the pendulum clock, placed two ladderback chairs back-to-back about three feet apart. He laid a board across them and hung two identical pendulum clocks from it. Why? Huygens was searching for a means of determining longitude. At the time, sailors who ventured beyond the sight of land had no way of determining exactly where they were at any given time. Whereas latitude, relative north-south position, could be determined by observing the stars, there was no comparable reference point for determining longitude. Huygens quite rightly thought that the key lay in clocks but had yet to design or find a clock able to keep time accurately during a long ocean crossing.

The discovery Huygens made as he observed the two clocks did not help him solve the riddle of determining longitude. As he watched, the swing of the two pendulums became synchronous, although in opposition to one another. When he wrote of his discovery to the Royal Society of London, he described it as “an odd kind of sympathy.” Through a felicitous combination of luck and ingenuity, Huygens had stumbled onto a phenomenon that continues to challenge physicists to this day. What he described as an “odd kind of sympathy” is a resonance phenomenon. Sympathetic resonance occurs under varied conditions. Common to all of them is movement. In the world of acoustics, it appears when we take two similar tuning forks, one of which is mounted on a sounding body. If we strike one fork and bring it into proximity

with the other, the latter will also begin to sound. This can be demonstrated quite beautifully using a cello or other stringed instrument. If one fork is held against the top of the cello, then the second fork struck and brought close to the first, the entire instrument begins to sing. Even when we then quiet the first fork, the instrument continues to resonate.

Although there is no direct, mechanical connection between the two vibrating metal forks, the second fork begins to sound when the first is brought close to it and continues to sound when the fork initially struck is stilled. The resonance is sympathetic: the second fork vibrates in sympathy with the first. We have a specific relationship between two bodies in which one picks up the vibration of the other and continues to let it sound. They do not touch one another. There must be a space between them. This space is known as the resonant space.

In what follows, I'd like to take a closer look at this space “in between.” I am not going to focus on its physical properties. What interests me is to what extent this question of resonance and the characteristics of resonant space can cast light on the riddle of human consciousness and how the world comes to have meaning for each of us.

In recent years there has been an awakening interest in how we relate to and come to know the world around us. The way we experience the world and our relationship to what we encounter contrasts starkly with the dominant paradigm we use to explain this relationship. Common to neuroscience is the conviction that what we experience is, in reality, a construction, perhaps an illusion, created by the brain. I was recently speaking with a young man, an apprentice gardener who asked, “Do you really think people believe that?” I answered no, I don't think most people believe that. Most of us trust that the world is real and intuitively recognize that the answer to the riddle of consciousness and meaning is not to be found in the complex chemistry of neural networks. It is time we learned to trust our experience. Perhaps it is the key to a better understanding of how we bring the world to consciousness.

If we reflect on the growth of our own understanding, we soon recognize that there is a quality of reciprocity between the world and ourselves. Consciousness grows out of encounters. We must be in the world to come to know anything about it. At the same time, the world we are in changes as we come to understand it. The challenge we face is to learn to characterize this relationship in ways that do not place the person experiencing world — ourselves — outside of what is taking place. Our consciousness of the world and the world itself are not two separate discrete entities. We are in the world and of the world, a relatedness that includes human consciousness. Relatedness is innate in the act of knowing. The way we experience this relatedness colors the way we know.

A Space of Learning

One person who has turned his attention to these questions in recent years is a German sociologist and political scientist from the University of Jena. I first discovered Hartmut Rosa through a friend in Germany who sent me the link to an essay on *Resonance Pedagogy*. This essay bears the subtitle, *When it crackles in the classroom*.¹ Rosa and his colleague Wolfgang Endres took a look at school culture from the point of view of resonance. The central question had to do with learning and the conditions under which students learn and are able to retain what they learn. They point out that learning is something that happens between child and world. It is dependent on a quality of experienced relatedness between the child and “world.” Rosa and Endres characterize the resonant classroom as a learning space where the reciprocal nature of the relationship between the learning child and the world holds sway. Teachers are on the whole quite aware of this. The best moments in a classroom are the ones that crackle, where the space is rich with shared attentiveness and students are completely caught up in the wonder and joy of discovery and insight.

I recently introduced a group of middle school students to the riddle of the circle. When I teach, I ask myself what series of experiences will allow my students to enter fully into the task at hand? What sequence of events will allow the students to internalize the question to the point that it comes alive in them and between them? With this group of students I began by giving them a long rope and asking them to measure the driveway. To do so, they first had to measure the rope, organize themselves, stretch the rope,

mark the end point, re-stretch the rope and so on. I think you can picture the process. This is a full-body activity. I continued then along the same lines. Once they knew the length of the driveway, I asked them to walk it off and keep track of their paces. Each of them walked it three times down, then three times back up, counting their paces each time. We averaged the six trips, then divided the total length of the driveway by the average number of paces, giving each student a sense of how far they travel each time they take a step. This is something that is very individual. Taller students tend to have longer paces, shorter students shorter ones. But even then there are differences that reflect the student’s attitude towards the world. The way we each

place ourselves on the earth and move across it is individual.

Having calculated our paces, we took shorter ropes, measured them and with one student standing at the center of an imaginary circle other students took turns holding the end of the

rope and walking around her while they counted their paces. The rope was the radius, and the students paced the circumference. We did this a number of times with ropes of different lengths until the students began to get a feel for the relationship. From there we moved on to smaller circles where they could measure the diameter, then find the circumference using a bit of string. All the measurements were written up on the board. The students divided them up and began to calculate the ratio of the circumference to the diameter.

If you ever want students to practice their arithmetic, don’t give them work sheets. Get them involved in something real. Let them measure real things in the real world. They become involved with what they are doing and the work of figuring out what they have found also becomes something real. By engaging with the world, the riddles that are there come to life for them. They are neither distant nor abstract. The space between child and world becomes fuller and richer. The atmosphere in the classroom shifts. You can see the students sitting a little straighter, leaning forward as they work. Their cheeks take on color. The boundary between the children and the circle has become somewhat fluid. The space that has opened up between “world” in the form of a circle and the students learning to know it — of being engaged with it — that space takes on a different feel. This atmosphere is what Rosa describes as resonance or a resonant space of learning.

If we reflect on the growth of our own understanding, we soon recognize that there is a quality of reciprocity between the world and ourselves.

Recognizing Reciprocity

How can we work today to consciously or intentionally enliven this space between subject and object, between individual and world?

It is very clear that the last year has highlighted the need to work more intentionally with questions of knowing and meaning. We have experienced first hand how difficult it is to cultivate a resonant relationship with what is happening in the world. How do we begin to sift through the various opinions and bits and pieces of information to gain a meaningful relationship to SARS-Cov-2, to Covid-19, to the different streams of intent shaping public consciousness? Leaving out all the problems caused by media and government: How *is* a person supposed to find a resonant relation to a virus? Many aspects of our civilization cripple the ability of the individual to engage. This is a challenge we face as a society. Can we begin to recognize engagement and resonance as necessary forms of relatedness? Perhaps resonance is not simply a metaphor, but an essential aspect of being part of the world.

In his more recent work, Rosa focuses expressly on resonance as a fundamental gesture of consciousness. In *Resonance*, his most comprehensive work on the topic to date, he gives us four characteristics of this gesture of relatedness. He begins by saying that "... resonance is a kind of relationship with the world in which subject and world are mutually affected and transformed."² In his view, the resonant relationship is such that not only the subject, but the individual who meets and becomes engaged with the world is changed. The world, the other, also changes. He speaks thus of a reciprocal relationship between the knower and what is known. This is immediately evident in interpersonal encounters. "Resonance is not an echo, but a responsive relationship requiring both sides to speak with their own voices."³ This is to some extent what we hear when we listen to the tuning forks. The second fork doesn't merely echo the first one. It is its own voice that we hear.

Rosa then points out that this only occurs under certain conditions: "Resonant relationships require that both subject and world be sufficiently closed or self-sufficient to

each speak in their own voice while also remaining open enough to be affected or reached by the other."⁴ This is a significant statement. The experienced boundary between world and self is essential for the development of resonance in a relationship. The possibility of resonance rests on the experience of discontinuity. World begins where I experience my own boundaries. The experience of boundedness awakens me to the space between myself and the world that I encounter.

This is, for Rosa, a completely objective experience. "Resonance is not an emotional state but a mode of relation that is neutral to the emotional content. We can love sad stories."⁵ It is a mode of relatedness in which we can be and are touched by what we experience. The world does not leave us unmoved.

In contrast to the mode of relatedness he terms resonant, Rosa describes its polar opposite: the experience of alienation. "Alienation denotes a relation of relationlessness in which subject and world find themselves inwardly unconnected from, indifferent toward, and even hostile to each other."⁶ The experience of alienation is one of the great challenges of modern times. Whereas a resonant relationship can be seen



as a reciprocal movement of shared growth, alienation tends towards an increased sense of distance and isolation. The world grows mute, and we become less and less able to engage with it in ways that allow us to hear what it has to tell us.

The experience of alienation is relatively new. The late writer and thinker, Barry Lopez, spent much of his life exploring the way human beings relate to nature. He was a very fine observer of nature and of the way different peoples place themselves in relation to the natural world. He spent a great deal of time with indigenous communities in various parts of the world. He speaks of the dichotomy Rosa describes in a slightly different manner. He speaks of it in terms of place, suggesting that we as modern individuals often have the tendency to not truly *be* anywhere, even if we are physically present in a given space. He suggests that we would rather *think* about the fox slinking through the meadow, than *be with* the fox slinking through the

meadow.⁷ It is this habituated inner distance from the sensuous, tangible world that, when taken to the extreme, leads to the mode of alienation that Rosa speaks of. It is an embodied gesture of distance through which we rob the world of her voice. We make her mute.

In consequence, the individual human being also experiences their self as inconsequential. When the world ceases to speak, we lose our voice. When the world ceases to mean something to us, we experience meaninglessness. This lack of meaning, the loss of the experience of meaning, is the inner expression of a lack of a sense of connectedness. Alienation is the enactment of an embodied sense of separateness.

There is a need today to learn to move intentionally into a new space of relatedness. To be able to experience ourselves as conscious individuals in connection with the world. Can we craft spaces of resonance? Experienced spaces resonant with interest in which the world can bring herself to expression in me?

Living into Attention

I'd like to describe a series of resonance-making steps that I first became aware of in an encounter with a cactus in a desert in Southern California. The details are not necessary to relate here, but it was a close encounter, an intimate encounter. It was one of those moments in my biography when the world taught me something important about being a self. It awakened the questions in me: What are the stages of crafting an intimate relationship with the natural world? How do we learn to move in the right way to become resonant with what is alive in the natural world? The movement I am speaking of is inner movement. What is the quality of inner movement that allows me to *be with* world in such a way that world can resonate in me?

The first step is, of course, that we have to get out into the world in order to meet what is there. This means we also have to quite literally get out and move. Encounters with the world do not take place in front of a computer. Moving through the world is a fascinating experience. If we are attentive, we realize that the world is constantly changing as we move. It never stays the same. Imagine a tree. As you move past the tree, its shape, its coloring, the play of light and darkness — all change constantly. The tree as a perceptual reality is in constant flux. You can stand at a distance and see the whole tree from one perspective. As you draw closer the tree changes. You are able to see a part of it more clearly but you see less of the tree.

This dynamic relationship between the changing world and the moving human is something we don't often pay attention to. The world is constantly showing us different aspects of herself as we move through her. If we are attentive

to the changing world as we walk, we realize that she always shows us some new aspect. There is a very gratifying practice of walking the same path every day while being attentive to what the world is going to show me anew each day. These are often little things, things that are easy to overlook.

This first step of going out into the world and attending to what comes to meet us I would like to call "encountering." It demands of us a combination of wakefulness and openness, the willingness to meet the world and notice what it has to offer in this place, in this moment. Inherent in this attitude is the recognition that the world comes towards you. It comes to meet you. Goethe spoke of it as the world thrusting itself upon you.⁸ I experience this when noticing something causes me to slow down. Something in the world comes to meet me, I notice it, I slow down. This is a key moment. I need to make a decision. I can either turn towards what has come to meet me or I can turn away. I am free to do either one. Encountering and noticing are in a certain sense given; they happen. The decision to turn towards, however, is not given. It is something I choose to do. By choosing to do so, I place myself in a new relationship to the world. It is a relationship that bears a gesture of intentionality.

Early one morning, I found two geese swimming on our pond. It is not uncommon to find geese there at this time of year. Rather than walk by and continue on my usual path into the woods, I paused and listened to their calls. The rhythm of their back and forth caught my attention. The two geese were in sync with each other. They were engaged in a rhythmic call and response. I lingered and listened into the exchange wondering what it was that I was party to. Was this the beginning of a mating ritual? Were they telling each other stories?

Not long ago, I had a similar experience. We had had a late winter snow, enough to cover and soften the landscape. The ground was once more pure white. I was walking along a small stream. The water was very dark against the whiteness of the fresh snow. It was flowing along through hillocks and tufts of snow, sometimes seen, sometimes unseen. The flowing water, dark against snow, has a sinuous quality. As I was watching it I noticed another dark sinuous movement, as fluid as the water. My first thought was that there was another arm of the stream that I hadn't noticed before. But that thought didn't feel quite right; dissatisfaction with my initial judgment drew me to look more closely. I turned towards it, following the movement and sure enough, when it emerged from behind a rock just downstream of where I was standing, I saw that it was an otter, the first I have seen since moving here years ago. It was a deep, rich black and its movement was so fluid, so sinuous that it was hardly discernable as being different than the water with which it moved. Yet its presence in the landscape was very different than that of the water.

The moment of dissatisfaction is often present when we choose to turn towards something. It is the recognition of something new, something that is not yet a part of our accustomed sense of the world. We can also speak of it as a moment of productive discomfort, the presence of something new, something that asks us to make space, to grow.

The act of turning towards what the world has extended to us rests on an openness for what comes to meet us, our willingness to be open for an “other.” Turning towards is the affirmation of this openness.

Now something new comes into play. We focus our attention, we attend to.

Something in the world draws our attention and we respond by focusing our attention.

The response strengthens the stream of attention that draws us into relationship with what we are attending to. Taking the example of the otter, I found myself observing, trying to anticipate where its movements would take it.

It drew my attention along with it, yet it could only do so because I gave it my attention.

Something like a dialogue emerges. I found myself listening to the movement of the otter, quite consciously living into it.

The practice of these first four steps — encountering, noticing, turning towards and attending to — not only shifts our relationship with the natural world, it also changes how we meet one another. The world would be a different place if our general attitude was one of joyful anticipation for what each turning, what each new moment, has to offer. I think that it would be fair to say that many of the changes we hope for in the world would become possible if we were to develop a life practice based on these first four steps, if we were to go out into the world open for new encounters, if we were awake enough to notice what the world brings to meet us, if we were to choose to turn towards what we meet and to attend to it and enter into dialogue with it.

Resonant Science

We can also, however, take this a number of steps further. If we choose to do so, this life practice becomes a discipline and the basis for a new kind of science. The first four steps lead me to a relationship with the world that is enriching and through which I develop a sense of trust, a sense of belonging. It can awaken in me the question whether the world also is enriched. If I attend closely to a certain plant

and begin to know it, the world grows richer for me. I notice the plant in many different settings. When I attend to the plant and find joy in its presence wherever I meet it, does something also change for the plant?

Does the way we engage with the living world have an impact on its vitality? If we take our own experience as embodied beings in a living world, we recognize that the plant, for example, is only there for us if we engage with it. The presence of the plant is dependent on our being conscious of it. Does the way we are conscious of the plant in its *plantness* make a difference? This is a question we will have to take

seriously in the coming years. We use the living world without ever considering whether it also needs something of us. Over the course of time, using nature for our own needs has evolved into various forms of abuse or exploitation. We have come to act as though the world were something foreign to us and we to it. If friends lose interest in one another the friendship dies. What happens to the earth if we lose interest in it? Is human interest an in-



tegral part of the vitality of the living world?

When we attend to the world, we begin to realize that certain things stand out for us. Different people meet and notice different things within the same context. Certain things speak to each of us more strongly than other things do. And some things awaken in me as a question, a riddle. Engaging with the experience of the world as riddle, as something to be solved through your own engagement opens up a next stage in the crafting of resonant space. It is one thing to meet an otter, be moved by its presence and enriched by the experience. It is another thing to engage with the otter, to live with it or let it live on in me — to begin to wonder about the nature of otterness. The otter is a remarkable creature. Have you ever watched an otter move? It flows, in and out of the water, along the banks of the stream. What is the nature of an animal that brings itself to expression in this sinuous, flowing movement?

I can choose to give my attention and interest in an ongoing manner to this riddle of being an otter. I can live with it and return to it. The encounter with an otter does not have to merely be an isolated incident in life. I can begin to cultivate a relationship with the otter's way of being in the world. I can think about it, I can reimagine it. I can go back, sit quietly on the bank of the stream and hope that the otter shows itself again. Perhaps it will, perhaps not.

The choice I make is to let the otter become a part of me. I wonder about the otter, and embody this wonder. I learn to know the otter's tracks, its den, where it fishes and where it swims. With time, I gain a sense of the otter's bodily form, its physiology, I learn to know what it eats, the way it lives: it begins to make sense. I begin to keep track of what I observe and discover. Others have also studied the otter. What have they observed? I engage with the riddle of 'otterness' intentionally. And I deepen my relationship with the otter.

This deepening has consequences. I begin to catch glimpses of the unique way the otter has of being in the world. In other words, I begin to hear the otter's voice. Each glimpse widens my sense of the otter and sharpens my ability to observe the otter anew. The dialogue that ensues becomes increasingly dynamic and also curiously intimate. I find myself caring about the otter. I feel a growing sense of responsibility for it. The more deeply I understand the otter's way of being, the more resonant the otter's voice becomes in me, the more I care about the otter.

The experience of the reciprocity between understanding and caring casts a light on an essential aspect of a Goethean approach to a scientific understanding of nature. It is not simply a different way of coming to knowledge about the world. It is a way of approaching knowledge that expresses itself in me as the impetus to care. It is a science of caring rooted in the capacity to understand.

The possibility for resonance rests on the experience of separateness. Without the experience of distance, we would not be able to choose to care. As the philosopher Emmanuel Levinas pointed out, hospitality is only possible when one has something to give and knows that they have it.⁹ A scientific approach that does not engender in the scientist a deeper sense of responsibility may provide valuable knowledge but will ultimately lead to a way of knowing that is barren of human warmth.

This is something we can recognize in many of the arguments concerning the ecological consequences of modernity. If we only think of bees and the problem of apian mortality in terms of the loss of pollinators and the possible effects on the global food supply, we will not be able to make the life choices needed to share the earth with them. We can only learn to live with the bees in a way that allows the bees to also thrive if we are able to experience them not as things but as living presences: when we are able to hear them, when their way of being in the world resonates within our own. This is the practice Goethe enacted and described. By doing so, he demonstrated a path of scientific understanding that leads to greater intimacy with the world. He teaches us to see in ways that also allow us to hear in the language of the phenomena themselves.

I'd like to return to Barry Lopez for a moment. One of his

last essays is titled "The Invitation."¹⁰ In it he describes traveling through the Arctic with a group of indigenous friends. At one point they came across a grizzly bear eating a caribou. Lopez describes the difference between his friends' response to this incident and his own. One of the remarkable things about Lopez's writing is his honesty and lack of sentimentality. He writes,

Their framework for the phenomenon, one that I might later shorten to just meeting the bear was more voluminous than mine and where my temporal boundaries for the event would normally consist of little more than the moments of the encounter itself, theirs included the time before we arrived as well as the time after we left. For me the bear was a noun. The subject of a sentence. For them it was the gerund bearing.

He goes on to describe how they follow this *bearing*, the being of the bear enacting itself in the landscape. They have a sense of where the bear has come from and where the bear will go. He concludes:

A grizzly bear stripping fruit from blackberry vines in a thicket is more than a bear stripping fruit from blackberry vines in a thicket. It is a point of entry into a world most of us have turned ours backs on in an effort to go somewhere else, believing we'll be better off just thinking about a grizzly bear stripping fruit from blackberry vines in a thicket. The moment is an invitation and the bear's invitation to participate is offered without prejudice to anyone passing by.

REFERENCES

1. Endres, Wolfgang and Rosa, Hartmut (2016) *Resonanzpädagogik: Wenn es im Klassenzimmer knistert*, Weinheim Basel: Beltz Verlag
2. Rosa, Hartmut (2019) *Resonance, A Sociology of Our Relationship to the World*, Cambridge Medford: Polity Press (p. 174)
3. Ibid. (p. 174)
4. Ibid. (p. 174)
5. Ibid. (p. 174)
6. Rosa, Hartmut (2020) *The Uncontrollability of the World*, Cambridge Medford: Polity Press (p. 30)
7. Lopez, Barry (2015) "The Invitation," *Granta Magazine* vol. 133 (November 18, 2015)
8. Goethe, Johann W. von (1792) "Der Versuch als Vermittler von Objekt und Subjekt," in Goethe's Werke, Hamburger Ausgabe, Bd. 13 (Munich: Verlag C. H. Beck, 2002, pp. 10-20). Translation, Craig Holdrege (2010) <https://www.natureinstitute.org/article/goethe/experiment-as-mediator-of-object-and-subject>
9. Levinas, Emmanuel (1961) *Totality and Infinity: An Essay on Exteriority*, Dordrecht Boston London: Kluwer Academic
10. Lopez, Barry (2015) "The Invitation," *Granta Magazine* vol. 133 (November 18, 2015)