

Art, Science and the Meaning of Research

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It is a commonplace that scientists do research. We might reasonably ask the scientist to justify his or her research, to explain how it is done, and to disseminate the results. But that research is what the scientist does is not in question. With artists, however, it is precisely the opposite. It would have been unusual, in the past, for artists to admit to carrying out research, and even more unusual for the public to recognise it as such. Nowadays however, for a variety of reasons – partly institutional, partly to do with funding, but largely connected to changing practices in art itself – more and more artists present what they are doing as research. And this leaves the public puzzled. Are they pretending to behave like scientists? And if they are, what are they trying to find out, and what kinds of knowledge do they think their art can contribute that science cannot? That artists often find such questions difficult if not impossible to answer only serves to increase public suspicion.

In this lecture I would like to turn these normal expectations upside down. In brief, I shall argue that research is fundamentally a practice of art, in which science has consistently fallen short. If scientists truly believe that what they are doing is research, then it is for them to prove it. This means holding up a spotlight to their own practices, and asking difficult questions about the real meaning of research and what it takes for science to live up to its demands. Perhaps, if scientists are to regard themselves, and to be regarded, as engaged in research, they should start behaving a bit more like artists. Indeed, many do, but they are still the exceptions. Following their example, however, would be a first step towards a convergence between science and art that the world, in its present juncture, badly needs. This does not mean, of course, that art should cease to question its own practices. But by resetting the default, by subsuming scientific research under the rubric of art rather than artistic research under the rubric of science, I believe we can restore the balance necessary for their proper integration.

Let me suggest an analogy that, I think, takes us to the heart of the problem. 'Explore' is a word that both scientists and artists often use. But what of explorers themselves? A few years ago I attended a symposium on perception and exploration, held in a small town in the Scottish Highlands.¹ It was attended by local people, hillwalkers, a number of artists and one world-famous mountaineer, invited for the occasion. The hillwalkers and artists spoke with enthusiasm about their exploration of the highlands, following familiar tracks and trails. Immersed as they were in the landscape, they found in it a source of perpetual astonishment: the ever-changing skies, the play of light, shadow and colour, the comings and goings of animals, the sprouting and flowering of plants, intriguing stones and rock formations, even the occasional archaeological find attesting to the long history of human habitation of the region. There was always something to catch one's attention, and to pursue further.

¹ This was the Hielan' Ways Symposium, *Perceptions of Exploration*, 14-15 November 2014, Tomintoul, Moray.

But when it was the mountaineer's turn to speak, it was with a tone of unmistakable regret. 'There are no explorers any more', he exclaimed, 'only cavers!' Now that every mountain peak had been conquered, many by the man himself, short of starting afresh on another planet, the only future for exploration, he thought, lay underground, in a kind of upside-down mountaineering that would carry the torch of humanity to ever greater depths rather than to the most ascendant heights. How could it be, I wondered as I listened to his speech, that while the hillwalkers and artists could keep on exploring, without end, the mountaineer was convinced that it was all over?

Evidently, they were relating to their environment in very different ways. To the mountaineer, the world presents itself as a *terra incognita*, already laid out in perpetuity and awaiting the footprint of man. With that final step on the summit, the previously unknown peak is converted into one that is known: it is 'discovered' and placed on the map. That many of these mountains had been walked for generations previously by indigenous people, with a view not to conquest but to supplication – such as to request divine help for clement weather, abundant crops, and good health – did not appear to be of concern to our mountaineer. To him, native inhabitants counted no more than the animals that grazed the slopes. Of course, the same peak could be climbed again and again, but in the mountaineer's book, every climb is a repeat performance that, adds nothing to the original discovery. At best, it offers a kind of confirmation.

This, however, is to assume that the mountain remains forever as it was, on the side of a constant nature as against the campaigns of human history periodically launched in its colonisation and conquest. For artists and hillwalkers, however, the landscape of exploration is anything but constant. On the contrary, it is changing all the time. It may certainly be familiar from having been walked many times before, yet every walk is different – a particular going along together of human lives with the lives of plants and animals, with the formation of rocks and stones, with the weather and with the hills themselves. For walkers immersed in this ever-changing landscape, the idea that a hill climbed once is climbed forever is simply absurd.

Now when artists speak of research, they are for the most part implicitly comparing their practice to the explorations of hillwalkers. Scientists, by contrast, would equally implicitly compare themselves with mountaineers. So the question is: to which of these versions of exploration does the concept of research apply? It should be obvious by now that I am siding with the artists and hillwalkers. The choice is not arbitrary, however. We have to take sides, I believe, if we are to reach an accommodation with the world that is in any sense sustainable. The mountaineer's regret stemmed from a belated acknowledgement of the unsustainability of his own practice. There were no more peaks to climb. All is known; he had nowhere further to go. If research is not simply to be an instrument of colonisation, of closing down the world for future generations (or of sending them underground or to other planets), then we have no alternative but to join *with* its human and non-human inhabitants in the collective task of keeping life going. And that means taking the meaning of research quite literally.

In its literal sense, research is a second search, an act of searching again. Maybe you are looking for something, or trying to find something out. Your initial inquiries yielded results that were, at best, insufficient. Walking in the hills, you might have got a little lost. So you try again, perhaps with a different approach, taking a different path. And again, and again. Every search both doubles up on what you did before, and is yet an original intervention that invites a double in its turn. You will likely never find what you seek, for it has a way of receding as fast as you approach, or – chameleon-like – of altering its character. The mountain, as we have seen, is never the same twice. But you carry on undeterred, driven by an insatiable desire. It is a desire that seems as strong, and as imperative, as the will to live. You call it curiosity. Research is not a technical operation, a particular thing you do in life, for so many hours each day. It is rather a way of living curiously – that is, with care and attention. And as such, it pervades everything you do.

What then, are you looking for, that so evades your grasp? Are you, like a detective, hunting down the facts, trying to get at the bottom of what happened? Or, like a customs officer, re-searching the premises for hidden contraband? Or perhaps you are a novelist, or a playwright, casting around for ideas from which to build a plot. Or a hillwalker, searching for a place you remember. You could be any of these. But as any detective, customs officer, novelist, playwright or walker will tell you, finding the facts, nailing the ideas or identifying the right spot will never finally resolve the case. The criminal is convicted in court on the grounds of evidence, but guilt lives on in the unrelenting trials of conscience. Smuggled drugs are discovered, yet they have a material afterlife in the minds and bodies of those who may have produced or ingested them. The novel or play may be completed, but its characters continue to work their way into the experience and imaginations of readers and audiences alike, carrying on in their own life-stories. The walk may be finished, but the place lives on in memory. And so on.

In short, something always escapes, always overflows our most determined attempts to pin things down. That slippery, fugitive and ineffable quality is *truth*. And research never ends because it is, fundamentally, a search for truth. For many today, truth is a scary word, better kept inside quotation marks, if used at all. It conjures up terrifying images of the violent oppression wreaked, in the name of truth, by those who have appointed themselves as its worldly representatives or ambassadors. We should not, however, blame truth for the wrongs committed in its name. The fault lies in its totalisation, in its conversion into a monolith that stands eternal like a monument, timeless and fully formed. This rests on a delusion, on the part of its self-appointed guardians, that they are themselves *above* truth, that they are the masters of it, and truth theirs to command. Human history is studded with delusional projects of this kind, each catastrophic for those subjected to it, and each ultimately smothered by the sands of time. Today, in this era of the Anthropocene, they include massive projects of geo-engineering that would fix the planet once and for all, heralding a new era of total human control.

Research, to the contrary, rests on the acknowledgement that we can never conquer truth, any more than we can conquer the living earth. Such conquest is for immortals. But for us, mortal beings, truth is always greater than we are, always beyond what – at any moment –

can be physically determined or grasped within the categories of thought. Truth is inexhaustible. Wherever or whenever we may be, we can still go further. Thus research affords no final release into the light. Remaining ever in the shadows, we stumble along with no end in sight, following whatever clues afford a passage. This is hardly conducive to optimism, to the belief – common among theorists of progress – that the best of all worlds is only just around the corner. But while it may not be optimistic, research is always hopeful. For in converting every closure into an opening, every apparent solution into a new problem, it is the guarantor that life can carry on. And for this reason, research is a primary responsibility of the living.

If research, as I maintain, is the pursuit of truth, and if truth ever exceeds the given, then there must always be more to research than the collection and analysis of data. It must go beyond the facts. The fact stops us in our tracks, and blocks our way. ‘This is how it is’, it says to us, ‘proceed no further!’ This is not to suggest that truth lies *behind* the facts, calling for a superior intelligence armed with theoretical power-tools capable of breaking through the surface appearances or ideological mirrors that deceive the rest of us into thinking that we can already tell reality from illusion. We have no need of Marxist intellectuals with heavy duty equipment to clear the obstacles. Nor is it to suggest that truth lies *within* the facts, as some kind of unfathomable essence that will forever hide from us, sunk into itself, as contemporary advocates of so-called ‘object-oriented ontology’ like to tell us. It is rather to insist that what appear to us, in the first instance, as blockages turn out, when we search again – that is, in our *re*-search – to be openings that let us in.

It is as though the fact rotated by ninety degrees, like a door on opening, so that it no longer confronts us face-on but aligns itself longitudinally with our own movements. And where the fact leads, we follow. ‘Come with us’, it says. What had once put an end to our search then reappears, in *re*-search, as a new beginning, a way into a world that is not already formed, but itself undergoing formation. It is not that we have broken through the surface of the world to discover its hidden secrets. Rather, as the doors of perception open, and as we join *with* things in the relations and processes of their formation, the surface itself vanishes. The truth of this world, then, is not to be found ‘out there’, established by reference to the objective facts, but is disclosed from within. It is indeed the very matrix of our existence as worldly beings. We can have no knowledge of this truth save by being in it.

This, for example, is how the veteran Scottish hillwalker, Nan Shepherd, came to know the truth of her beloved Cairngorms, as celebrated in her now classic book *The Living Mountain*. She did not walk the hills in order to summit them, or to look down from peak after peak onto domains now conquered by a panoptic view. From a distance the mountain might look like a peak, with its summit pointing determinedly heavenwards, pronouncing as fact its height above sea level. That is what goes down on the map. But it no longer looks like a peak once one is embarked on the slopes, nor does the summit look like a summit when we eventually reach it. It is more a plateau that happens to be of higher elevation than its immediate environs. Shepherd writes of lying outstretched on the plateau, ‘under me the central core of fire from which was thrust this grumbling, grinding mass of plutonic rock, over me blue air, and between the fire of the rock and the fire of the sun, scree, soil and

water, moss, grass, flower and tree, insect, bird and beast, rain and snow – the total mountain. Slowly I have found my way in'.²

Shepherd is not on top of the mountain but enveloped by it – by its overwhelming and indeed unfathomable truth. She is knowing the truth of the mountain from her being-inside it. This knowing-in-being, I contend, is of the essence of research. Now for those who hold that true knowledge of the world can be had only by taking ourselves out of it, and by looking at it from a distance, this contention will of course be completely unacceptable. That's how our mountaineer saw the world he had set out to conquer. His pictures were all of the mountains he had climbed, seen from afar, or of men dressed up in all their gear, ready for the campaign. For him as for the many who think like him, mountains are objects, and objectivity is the very hallmark of truth.

It is indeed understandable that in a world where facts often appear divorced from any kind of observation, where they can be invented on a whim, propagated through mass media, and manipulated to suit the interests of the powerful regardless of their veracity, we should be anxious about the fate of truth. To many, it seems that in this era of post-truth, we are cast adrift without an anchor. We are right to insist that there can be no proper facts without observation. But we are wrong, I believe, to confuse observation with objectivity. For to observe, it is not enough merely to look at things. We have to join with them, and to follow. And it is precisely as observation goes beyond objectivity that truth goes beyond the facts.

Two things follow from this. First, if research is the pursuit of truth, then it can have nothing specifically to do with innovation. This might seem an odd claim to make. In the language of progressive development, embraced as much by science as by corporate industry, research and innovation appear joined at the hip. What possible meaning can be given to research, if it is not about coming up with new facts, or new ideas, that were not previously within the compass of human knowledge? Is research not intended to enlarge the compass? How can we possibly progress, by way of research, if we keep on rediscovering what we already knew? Indeed for contemporary science and industry, locked into a global economy of knowledge in which only innovation sells, truth appears to take second place to novelty. The critical thing is to demonstrate how this idea, or that fact, exceeds or overtakes what was previously thought or known. This only begs the question, however, of how to decide whether an idea or fact is new or not.

Novelty, in an absolute sense, can only be demonstrated by comparing our results with everything that has gone before. Do we, then, every time we come up with a result, have to trawl through all the ideas that have ever been thought, or facts that have ever been noted, to check that it has never previously been proposed or recorded? This is like the mountaineer, checking that no-one before has scaled a particular peak. If it turns out that someone has, then his claim to have 'discovered' it would risk being discredited. An extraordinary amount of effort, in science, is devoted to trying to demonstrate the novelty

² Nan Shepherd, 1977. *The Living Mountain: A Celebration of the Cairngorm Mountains of Scotland*. Aberdeen: Aberdeen University Press, page 93.

of discovery. But not only is this, for the most part, virtually impossible in practice; it is also ludicrous in principle. This is because the world itself does not stand still while we subject it to repeated examination. Nor do we, being part of that world, remain still while examining it. As we have already seen with hills and mountains, ideas and things have lives – they carry on – and it is no more possible to revisit exactly same idea, or to rediscover exactly the same thing, than it is, in the famous analogy of Heraclitus, to step twice into the running waters of the same river. In short, nothing is ever new, since nothing ever repeats. Research, knowing-in-being, means joining with the ways of the world, and following them wherever they go. Like the river, like the mountain, like life, they have no final destination.

The second thing is that curiosity, in research, is a practice of care. That curiosity and care go together, in the attention we pay to things, should be obvious from the fact that both words share the same etymological root (from the Latin, *curare*). Yet in the practice of science they are more commonly separated. For scientists, it is a condition of objectivity that they should refuse any relationship – any form of involvement whatever – with the things or phenomena that capture their attention. This condition is generally met by means of methodology: a rigid set of procedures expressly designed to immunise researchers from direct contact with the materials of study. Indeed the competition for innovation in the knowledge economy has given rise to something approaching a methodological arms race, driving scientists ever further from their objects. Their ideal of curiosity is ‘blue-sky research’, in which investigators are free from all commitment and responsibility towards what they study, to follow their own bent. It is for others to worry about how their results might be applied, if at all.

However if truth lies beyond objectivity, then there comes a point in its pursuit when, in our observations, the things we study begin to tell us how to observe. In allowing ourselves into their presence rather than holding them at arm’s length, in attending to them, we find that they are also guiding our attention. Our eyes and ears, hands and minds, absorb into their ways of working a perceptual acuity attuned to their particular ways of moving, of feeling and of being. Attending to these ways, we also respond to them, as they respond to us. Research, then, becomes a practice of *correspondence*. It is through corresponding with things that we care for them: it is a labour of love, giving back what we owe to the world for our own existence as beings within it. Research as correspondence, in this sense, is not just what we do but what we undergo. It is a form of experience. For in experience, things are *with* us in our thoughts, dreams and our imaginings, and we with them.

In practice scientists, like the rest of us, are immersed in the lifeworld and, just like hillwalkers, are ever attentive and responsive to the rustlings and whisperings of their surroundings. The chemist Friedrich August Kekulé, in a lecture recalling his discovery of the structure of the benzene molecule, offered this advice to every young scientist: ‘note every footprint, every bent twig, every fallen leaf’. Then, he said, you will see where next to place your feet.³ For Kekulé, science was a sort of wayfaring, or as he called it, ‘pathfinding’. Corresponding with things in the processes of their formation, rather than merely being

³ The citation is from an English translation of Kekulé’s address by O. Theodore Benfey (‘August Kekulé and the birth of the structural theory of organic chemistry in 1858’. *Journal of Chemical Education* **35**, 21-23, 1958).

informed by what has already precipitated out, the pathfinder not only collects but *accepts* what the world has to offer. In this more humble profession, I believe, rather than in arrogating to itself the exclusive authority to represent a given reality, scientific inquiry can converge with artistic sensibility as a way of knowing-in-being.

For in practice, scientists are differentiated – as much as are artists, and indeed people everywhere – by the specificities of their experience and the skills arising from them, not by the territorial demarcation of fields of study. Science, when it becomes art, is both personal and charged with feeling; its wisdom is born of imagination and experience, and its manifold voices belong to each and every one who practices it, not to some transcendent authority for which they serve indifferently as spokespersons. And where scientific pathfinding joins with the art of research, to grow into knowledge of the world is at the same time to grow into the knowledge of one's own self.

It is here, I believe, that we can begin to see where science can converge with art. Long divided along a split between fact and fantasy, truth and illusion, science and art have commonly been supposed to strain in opposite directions. While science, it is supposed, digs down to the bedrock of objective reality, art takes flight into the realms of imagination. According to those who think like this, if science needs art it is merely to give the mind freedom to roam, to come up with novel ideas. Only when tested against the facts can ideas born of the imagination lay any claim to truth. That was Kekulé's view: his idea for the structure of the benzene model, he claimed, had come to him in a dream, but no dream can pretend to truth until confirmed by waking understanding. And if research is about the establishment of such truth claims, then there can be no research that is not scientific.

But if truth lies *beyond* the facts, then science can become research only insofar as it is willing to forgo objectivity and follow the way of art, into a worldly correspondence that foregrounds the unison of imagination and experience, in a world to which we attend and that attends to us. It would be for science, then, to join with art in the pursuit of truth as a way of knowing-in-being, through practices of curiosity and care. Therein, finally, lies the meaning of research.