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Metis and the Art of Serendipity

Samantha Copeland

There are many ways to talk about serendipity. Often, it is closely associated with the subjective sensations we express by exclamations of surprise and discovery: “Aha!” or “Eureka!” (Ross & Arfini, forthcoming). Objectively speaking, we might say that it is “an emergent property of discovery, describing an oblique relationship between the outcome of a discovery process and the intentions that drive it forward” (Copeland, 2019). All that really means is that it comes out of an otherwise linear process at a bit of an angle—the outcome is not what we set out to attain, but it’s valued nonetheless. As Lennart Björneborn (2017, 2020) has pointed out, this “bit of an angle” can also be called the “adjacent possible”: it is accessible from where we are, but we didn’t

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know beforehand it would be there. This is not to say it is only a small thing; serendipity is often used as a rhetorical notation to highlight a particularly significant chance discovery, a way to emphasise that we didn't just learn something new, our very expectations about how we might learn new things, or what kinds of things there are to learn, have been expanded or changed. Serendipity generally has a decidedly positive valence, given by the way we use the category. Thus it labels many of the most well-known discoveries in our history: medical advances such as penicillin and the small-pox vaccine, inventions like Velcro and the Post-It Note. Finally, if it is serendipity, then there is sagacity (perceptive wisdom) involved, and this sagacity is the element that separates serendipity from mere good luck.

Indeed, we find ourselves increasingly referring to serendipity *rather than* luck: the rhetorical purpose of serendipity, I have argued (Copeland, 2018, 2019), is to call out the role of agency in a chance discovery. More than mere luck, serendipity, as the term's inventor Horace Walpole declared, denotes a discovery of "accident *and sagacity*". What is this sagacity, then? Some kind of perceptual wisdom, it seems, an ability to sniff out the value in those accidental results or unexpected observations that others might mistakenly label a mistake, or dismiss out of hand, for their out-of-the-ordinariness or appearance by chance rather than skilful intention. Associated with not only the expressions of surprise, serendipity seems to entail surprise, or at least the application of the category requires that the discovery in mind be accidental, unintentional and unexpected. This mark of the unintentional is such an important part of serendipity as generally conceived that several have gone so far as to hivel off, as dubious examples, those incidents deemed to have the appearance of serendipity but nonetheless a whiff of intentionality about them. The category of "pseudo-serendipity" invented by Royston Roberts (1989) and perpetuated by others takes up this divide and marks those discoveries that happen by accidents and sagacity yet fail to fall conclusively under "the unsought" (van Andel, 1994; see also Simonton, Gilhooly this volume). Sagacity, then, is a special wisdom associated with seeing the value in chance events, a value that others would have missed, and

is specifically associated with being surprised. So how can one, we might ask, be both wise and surprised? (see Glăveanu, this volume).

Archimedean apocryphy might give us the classic example, which tells of his surprise at finding the solution to his puzzling problem by observing his own bathwater in action—“Eureka!”. However, the recent research that I will discuss in this chapter indicates something more than a confluence of problem, persona and events in a unique moment of discovery, but rather possibly a general skill, exercised by those who seem to encounter serendipity purposefully and often in their lives, research, art or craft. It is this idea of the *art of serendipity* that I will examine closely here—an understanding of sagacity, I will argue, that can include creativity but also other forms of expertise. Sagacity must be a skill or capability best exercised in response to surprise; it cannot be captured, that is, by the sense of skill that can be learned by rote and practice, towards improving the chances of a predictable outcome, it rather suggests a skill that is learned through interaction with others and the world, in a necessarily dynamic space. In this chapter, I unpack the concept of sagacity by exploring three ways we might understand the art of serendipity, through the lenses of three categories of reasoning drawn from the traditions of ancient Greece: episteme, techne, and metis. I propose that contemporary understandings of metis may provide us with the best way to capture the essence of sagacity in serendipitous discovery and invention.

In the first section, I consider types of reasoning associated with serendipity that might fit under the category of “episteme”, a word often translated from the Greek as “knowledge”. The focus here is on theoretical knowledge and the creation of new ideas. Episteme is about knowledge for its own sake; serendipitous discoveries from this perspective are surprising and valued because of the new perspective they offer, the idea and the moment of personal intuition or genius that made them happen. Through the lens of episteme, then, the art of serendipity is seen as a set of cognitive skills.

Techne is a more complicated concept to work with, due to its many uses, a pluralism that has existed from its early days in our theories about

ways of knowing.¹ It is not fully distinct from, so much as complementary to episteme. Theoretical knowledge is part of techne, as it is through techne that such knowledge can be applied. Where episteme is knowledge for its own sake, techne is knowledge towards the production of something, knowledge for the sake of that production. It has instrumental, rather than intrinsic value. Through this lens, I turn in the second section to another way of talking about the art of serendipity in the literature, as a craft or the application of strategy and skills to generate unintentional serendipity, through indirect intent and yet with a goal in mind.

The explorations and analyses offered by looking through the lenses of episteme and techne will demonstrate that something is still missing from such accounts of the art of serendipity, and so I further apply recent work on skills related to metis, or “cunning wisdom”. I argue that this maligned and oft-forgotten account of reasoning from the ancient Greeks, a grounding part of their democracy and an underlying theme in many of their mythological tales, displayed by heroes and goddesses alike, has much to contribute to our understanding of the art of serendipity as it can be practised today. As I will show, metis not only captures important aspects of sagacity that a focus on episteme and techne tend to elide or to which they give short shrift, it enables us to see sagacity as a skill developed in community, along with others, and through active engagement with chance, ourselves, each other and the world. This perspective affords an inclusive and forward-looking approach to serendipity that gives us direction as to how to direct changes in direction in response to uncertainty toward serendipitous, positive outcomes.

¹ In fact, as Serafina Cuomo (2007) describes it in *Technology and Culture in Greek and Roman Antiquity*, the task of defining techne as it was used in ancient Greece and Rome is both “arduous” and idealistic, given the variety of definitions and understandings at play, as well as their normative content. Mark Thomas Young (2017) similarly describes the complex entanglement of meanings and values used to distinguish between craft skills and local knowledge, both forms of techne, in early modern discourse about scientific practice.

Episteme

One of the more dominant tropes in serendipity literature is that a “prepared mind” is a necessary condition for serendipity. Mark de Rond, for instance, follows Arthur Koestler in highlighting the importance of what they call “bisociation”—a new connection between ideas that are already in one’s head. For de Rond, sagacity lies in the ability of someone to see meaningful relations between “matching pairs” of events or observations; as he describes it, sagacity is a capability (2014). First, note that this notion does not only present in de Rond’s approach. De Rond redescribes the generation of his matching pairs as “combinatorial play”, a concept named by Einstein, and explained most thoroughly by Paul Thagard in his work on reasoning in scientific discovery (see also Simonton, this volume).

Thagard tackles the role of serendipity in discovery through his approach to scientific reasoning as utilising combinatorial play—the generation of combinations of representations in our mind, that lead to questions, hypotheses and discovery. Serendipity is what generates surprise, in Thagard’s view: for example, in the discovery process of *h. Pylori* bacteria, Robin Warren’s “initial *noticing* of the spiral gastric bacteria can best be described as serendipitous” (Thagard, 1998 p. 114, emphasis mine). What Thagard emphasises is that Warren “just happened” upon the bacteria whilst looking for something else; it is not the outcome but rather the originating factor that demarcates serendipity here, as either a type or an initiator of scientific discoveries. What makes it a discovery—or what makes it *creative*—however, is the novelty and productivity of the combination of representations that this trigger of surprise generates in the head of the one surprised (e.g. Thagard & Stewart, 2011). In other words, Thagard separates out the surprise as a trigger for a discovery, preceding and enabling the discovery, whereas the discovery itself is constituted by the results of that surprise, in terms of new ideas about the relationships between representations. In the case of *h. Pylori*, the discovery does not happen in the moment when they found this bacteria in such a surprising place, the discovery takes place only when that observation has an effect on what Warren (and Barry Marshall) *thought* they already knew about the stomach, bacteria and

ulcers. Mere surprise does not amount to a discovery unless it generates such a novel and important combination of representations in one's mind; serendipity is the result of these combinations, so not properly captured by a focus on surprise or, even, on what has caused the surprise.

Thus, the focus here is not on the cause of the surprise, the external event or interruption, but rather on what happens in the mind. The conditions for discovery are not external but internal; even when surprised, one must also have the right representations in one's mind to combine, in order to profit off the trigger with discovery.² If sagacity is a matter of having the right ideas in one's head to combine when chance interferes, then it may indeed be captured by episteme and thus requires the exercise of cognitive skills over ideas.

Episteme is the category of knowledge in which abstract theory resides, where ideas and the relations between them are the focus. While Thagard emphasises that creativity is caused by the recombination of representations, those representations do have social and external origins. But the value of serendipity is in its contribution to what happens in the head, to those representations. Dean Simonton likewise emphasises that the essence of creativity exists in the cognitive processes that may be stimulated by the outside world, and lead to the production of objects in that world—but it is the cognitive processes that make it creativity (this volume, see also Gilhooly, this volume). The real work, that is, occurs at the level of ideas and imagination. Sagacity, then, is an intellectual capability, having to do with one's ability to bring ideas together in new combinations.

Indeed, it is true that serendipity sometimes does occur inside one's mind: an unexpected encounter or chance event may trigger a change in one's expectations or perception of the world around them, for example,

² Such a focus on what is in the mind at the moment of a chance encounter has several implications, many of which I explore in more depth elsewhere (Copeland, 2018, 2019). Some of those are implications for our understanding of discovery: by emphasising the innate or accumulated wisdom needed to see the value in an unexpected observation, one upholds the single-moment and genius-generated model of scientific discovery. But it is also well-known among sociologists, historians and philosophers of science that such discoveries occur most often in a process, and always within a context, and even extend socially through networks (particularly in modern, collaborative science) as well as over time. Here I would like to focus on the implications of the internalist approach for understanding sagacity.

even having a significant impact on how one looks at life. As this perceptual shift is experienced by the serendipitous person herself, and insofar as it is not public until or unless she makes it so, then it clearly can exist internally. Such private serendipities, however, are not paradigmatic but rather the exceptions that prove the rule: indeed, we only know about them because they *are* shared, as stories of serendipity or as contributions to a field of knowledge.³ And when they are shared, they describe the origins of a process of discovery, invention or personal growth and change; the new ideas that these unthought-of-before combinations generate lead to actions and changes in behaviour, to new theory formation and debate; they have an effect on the social and material world. In other words, even if we think that the discovery itself is an internal event, consisting only in the combination of internal, cognitive representations of what we observe and know, both the trigger of surprise that initiates that discovery and the positive outcome that deems it serendipitous are external, happening beyond one's mind and having an impact beyond one's ideas and perspectives.

This is not to say that the cognitive aspects of the “aha” moments are not important: these do play a key role in our serendipity stories, and are important to our understanding of that phenomenon, but more so, they represent one of serendipity's more interesting contributions to our personal and shared histories—its tendency to disrupt our expectations (see Ross, this volume). Serendipity, indeed, is a moment in which we encounter the world differently than usual; we look for things where we expect to find them, we find serendipity where we wouldn't have thought to look. This can lead to a shift in expectations, and thereby to how the world is perceived—and this is how Thagard puts it in respect to Fleming's shift in perceptions upon witnessing the reaction in his petri dish. While Fleming's response to that reaction was more than to merely observe, his observations (and the resulting, new conceptual combination) did lead to a shift in what he thought was possible to observe thenceforth:

³ Examples of this personal level of serendipity leading to changes in one's worldview can be found in the autobiography of ecologist James Estes (2020), for example, and in the 2008 Darwin College Lectures, the Serendipity series, particularly the last, given by author Simon Winchester (in de Rond & Morley, 2008).

...the serendipitous discovery of penicillin might be erroneously construed as simply a matter of perception, but what made Fleming's discovery novel, surprising, and important was his more complex recognition that mold was killing bacteria, producing the key conceptual combination *bacteria-killing mold*. (Thagard, 2012)

But, as I have argued elsewhere (e.g. Copeland, 2018) the *significance* of this shift is not that Fleming had a new idea, it lies in the wider effect this conceptual shift had on how we practice medicine and investigate the properties of biological substances for therapeutic potential. Even when it does lead to only personal development, recognising meaningful connections does not lead to such development unless they are seized upon as opportunities and acted upon (Napolitano, 2013, 2018). Indeed, recognition may occur but action prevented or simply not taken, and thereby serendipity lost instead of gained.

Episteme, therefore, cannot give us the whole story. Too much of what is essential to serendipity—what triggers it, and what gives it its positive valence—happens outside the head; some factors that encourage or constrain it may be cognitive, but are also environmental and even social, and any practitioner of the art of serendipity must thus take this variety into account.

Techne

If this is the case, then perhaps we should turn to *techne*, rather than *episteme*, for our understanding of how one might be prepared in the right way for the unexpected. *Techne* is the art or craft of skilled work, generally with materials and often creative, but always productive; looking at the art of serendipity through this lens will draw out how serendipitous discoveries emerge from and also influence the way we interact with the world.

Indeed, skilled encounters with the world is the focus many approaches to serendipity take up in respect to the problem of sagacity. There are three ways to understand the art of serendipity as the exercise of this kind of interactive or applicative skill. First, there are those

with sagacity in the sense of having an ability to generate more opportunities through their intentional or unintentional behaviour and actions. Second, there are those who are better able to perceive opportunities as such, than others may be. And third, there are those who display sagacity in the sense of being more able to take up opportunities when they do arise and are perceived.

Those who focus on increasing chance encounters that may lead to more serendipity often do so physically: the “water-cooler” approach to building design, for instance, that we see in the corporate offices of serendipity-savvy companies like Facebook and Apple, focusses on moving people in ways that encourage chance encounters that wouldn’t happen otherwise. From bathroom relocation to strategic placing of cafeteria lines, or in the case of the Francis Crick Institute,⁴ enforcing shared laboratory space, restructuring the spaces people walk through and work in generates new connections between them—and, hopefully, between their ideas and expertise.

James Austin points to a category of serendipity, the art of which boils down to “moving about more”, what he calls the “Kettering principle” (Austin, 2003, p. 76). “General exploratory behaviour” is likely to generate more chance opportunities, especially when accompanied by curiosity and a willingness to explore and experiment with things (see Glävenu, Turner and Kasperczyk, this volume). He contrasts, this, however, with sagacity,⁵ and I agree that this sense of generating chance is not what we are looking for here: it seems not an “art” but rather just a fact of the matter that when we move about more, things are more likely to bump into each other unexpectedly. Merely generating more opportunities does not seem to be enough, these efforts must also be

⁴ See David Matthews, *Times Higher Education*, ‘The Francis Crick Institute: Science and serendipity’, November 26, 2015; <https://www.timeshighereducation.com/features/the-francis-crick-institute-science-and-serendipity>.

⁵ Austin defines this sagacity as operating by the “Pasteur Principle”—as one can guess, this is equivalent to the prepared mind, with the “added level of chance” I note elsewhere in this chapter also noted by Austin (2003): “Some special receptivity born from past experience permits you to discern a new fact, or to perceive ideas in a new relationship, and go on to comprehend their significance”, as he describes it (p. 76). Since this approach to sagacity is remarkably passive and chance-laden, I do not use it in the paper, for reasons that should be obvious to the reader by the concluding paragraphs at latest.

accompanied by follow up; Google and Facebook cannot profit from spaces created intentionally to generate chance, if their employees are not supported in following up on their new, potentially risky, ideas about where to take the company next.

So, the art of generating more opportunities will be more than just generating chances, just as it has to be more than just making a connection. Rachel McKinnon (2014) suggests that “staying in the game” is the skill related to making one’s own luck in this way: the skills that allow you to stay in the context where chances might be generated (literally, in her article, *staying in the badminton or poker game* that she describes as examples) are those that increase your luck by increasing your exposure to chances for being lucky. Thus, the relevant skills are *indirectly* relevant, related to the skilled manipulation of the *context* rather than generating lucky opportunities in themselves. But those skills will not be specific to generating serendipity per se through chances, rather they are skills appropriate to whatever context serendipity happens to arise within—badminton skills, scientific expertise,⁶ etc. Thus, they do not necessarily differentiate those who exhibit sagacity (the specific wisdom associated with serendipity) from those who are very good at doing whatever it is they are doing: this particular approach through *techne*, that is, does not pick out what is special about serendipity.

If it is not about generating chance, then perhaps we can follow the sense of sagacity as a kind of perception and see the art of serendipity as an art of perceiving opportunities that arise by chance as such, as opportunities to pursue and not just random events or errors. This is the notion that tends to elevate the serendipitous discoverers to the level of genius in our narratives: they perceive something in a chance event that no one else could have perceived, and for this reason they are awarded Nobel Prizes and accolades for their genius. As James McAllister (2016) points out, this kind of genius associated with chance discovery is part

⁶ As Fleming noted in his banquet speech upon accepting the Nobel Prize in 1945, his skills as a bacteriologist are what allowed him to perceive and pursue the value he saw in the mold’s effects within the petri dish (and, as he notably also remarks, his lack of skills in the clinic and in chemistry prevented his own discovery of the truly remarkable properties of this substance until Florey and Chain’s team was able to). <https://www.nobelprize.org/prizes/medicine/1945/fleming/speech/>.

of what he calls the “rhetoric of effortlessness”: the idealistic depiction of a scientist who is prepared with the right knowledge and insight to see the world as it truly is, they receive the observations offered up by chance from the world and are skilled and clever enough to perceive the scientific value in those observations without hardly trying. This is the serendipity captured in Archimedes’ cry of “Eureka” and in Fleming’s near-miss when he resisted discarding the famous petri dish.

However, the passivity of this approach to sagacity does not reflect an “art of serendipity” so much as the idea of the prepared mind, mentioned already above. Following the famous quotation from Pasteur, approaches to discoveries by chance often emphasise the need for a “prepared mind”—when chance arrives, one must already be prepared to recognise its value. Which raises the question, how might one prepare for something unpredicted? Indeed, the only knowledge we have of what counts as good or sufficient preparation comes after the fact; so long as the observation or event occurs truly by chance, we cannot predict it, and thus the nature of serendipity itself belies an art, craft or set of skills that would require full preparation beforehand to be successful. Indeed, this only adds further layers of chance to serendipity: now we need the right person, who happens to be prepared in the right way, to make the right observations or to be in the right place at the right time, for serendipity to happen. But such a story will tell us only about that one instance of serendipity, with a focus on the confluence of contingencies surrounding it, and not about the art employed by those who might make serendipity happen, generally speaking. While the first approach was too broad, giving us an idea of sagacity as vaguely “skilful”, this approach is too narrow, giving us a particularist account of sagacity that we cannot generalise.

We could, then, broaden our scope and allow that it may be possible to train ourselves to more readily identify chance opportunities, as we train other senses. Perhaps we can be more attuned to opportunities through practice and attention; like with tasting wine and learning about *terroir*, perhaps we can become more attuned to the subtleties of chance. Or, like the philosopher who can see a bad argument a mile away, we might train our cognitive abilities to pick out potentially valuable accidents. Sanda Erdelez, for example, found in her research (1999) a group of

people she calls “super-encounterers” of incidental information; they rely on a mostly indescribable “method” that they find reliable for encountering useful information by chance—they “count on” serendipity to be a regular part of their research strategies⁷ (p. 26). Regular “encounterers” and “super-encounterers” differ in that the former perceives that they frequently experience serendipity in their lives, but the latter recognise a connection between how they conduct themselves as information seekers and the serendipitous experiences they have had. This idea that we can intentionally behave in ways conducive to perceiving the value in chance opportunities is picked up by approaches to sagacity that treat it as a way of life. Christian Busch picks up this theme in his book *The Serendipity Mindset* (2020), for example, where he recommends strategies for creating more opportunities through chance in one’s life, but also for perceiving the value of opportunities when they come your way. He does not stop there, however: it is equally important to take up the same opportunities and allow them to shape your life.

That is, even if we have the skills honed to pick out chances for serendipity better, this would not suffice, failing in similar fashion to the prepared mind, as I described above. Research into the nature of serendipity has noted the role of filters, pressures, and other distractions that interfere with the ability of even a prepared mind to perceive opportunities for chance discovery and/or to follow up on them. As Jannica Heinström points out, in the case of coming across incidental information, “without basic topical knowledge, there is no capacity to interpret and receive the message, without motivation there would be no interest to pick it up, and in emotionally stressed moods thought processes may be blocked against divergent thinking” (Heinström, 2006, p. 580). Factors beyond the information itself, and the preparedness of the mind to comprehend the information, may interfere with the success of a potentially serendipitous, chance encounter. Environmental differences play a more clear role influencing the likelihood of serendipity than individual differences (McCay-Peet et al., 2015). Abigail McBirnie (2008) points to what she calls “serendipity filters”, the kinds of pressures

⁷ Notably, Erdelez notes that they mention not only regularly encountering more information useful to their own purposes, but also information that is relevant to other people they know (1999, p. 26).

on time, attention and on our ability to alter our direction of inquiry and action that ultimately lead to serendipity being lost, despite the chance moment and the (otherwise) prepared mind. Bernard Barber and Renee C. Fox wrote about this exactly in their article, “The Case of the Floppy-Eared Rabbits: An Instance of Serendipity Gained and Serendipity Lost” (1958): two scientists experience the same confluence of prepared mind and chance observation, but due to a variety of other factors, only one made the serendipitous discovery about rabbit ear cartilage in the end. Thus, the threat of interference from internal and external factors means that the art of serendipity is not captured by the perception of chance, nor even of its value, alone. One must also be able to navigate the relevant contingencies in order to see the discovery through.

Perhaps, then, the art of serendipity is (also) about taking up opportunities when they do arise. Serendipity requires real “human effort”, suggests Busch: in a key example, an entrepreneur notices that a number of great speakers have been stranded in the same place due to a flight-stopping volcanic eruption, which presents an opportunity by chance, and uses his connections to create a TEDx talk series, taking advantage of the extended London layover (p. 15ff). Recognition of the opportunity was a necessary feature of this event, and the entrepreneur in question was likely uniquely prepared to take it up, but it was the taking up of the opportunity that made it a moment of serendipity with a positive outcome. So, even this “mindset” extends beyond preparedness and noticing; one must also learn how to “leverage” the unexpected, to act upon it in ways that bring advantages to oneself.⁸

To this end, it seems that learning to take up opportunities is a way of seeing the art of serendipity in strategic terms: when chance arises, one must recognise it but also know what to do with it in order to make it into serendipity. If the goal is serendipity, then one must know how to strategically manipulate the environment and context in order to generate chance and also the pathways to act upon those chances. That is, one puts strategies in place to overcome the kinds of interference I mention above: filters, pressures and time constraints that hinder

⁸ Above I referenced Christopher Napolitano’s work on serendipity in personal development, to similar effect (Napolitano, 2013, 2018).

serendipity can be mitigated through a strategic approach to tackling them or heading them off. Not only entrepreneurs,⁹ but also researchers, scientists, engineers and others have looked at how to do this, in a number of contexts. The techne of serendipity, in this sense, is a set of skills that enable us to manipulate the context in which serendipity may occur, in order to maximise the potential for its success when it does.

Material manipulation in particular brings out discussions of how to generate serendipity through strategies in context (Piñeyro, Ross, this volume). That is, in art, engineering, architecture and design, serendipity occurs through and also influences one's skilled interaction with one's material world. The art of serendipity in these examples is a strategic approach to the best methods for eliciting and allowing for such influences to happen, when the opportunity arises. For instance, Synne Frydenberg et al. (2019) tested methods for explicitly allowing serendipity to influence their research in positive ways, while working on how to improve bridge designs on arctic ships. To facilitate serendipity, they took an open mixed methods approach, having a number of options ready to deal with whatever may arise, and employed methods in innovative ways to solve problems as they came up.

This kind of approach more or less follows the sense of serendipity captured by Robert Merton (1948) in his description of the “serendipity pattern” in sociological research, which occurs when an “unanticipated, anomalous and strategic datum exerts a pressure for initiating theory” (p. 507). By strategic, Merton means to highlight the role of the observer, both in determining the value of the unexpected datum and in taking the initiative to use that datum to extend theory or take a new direction with their research. The art of serendipity, then, requires knowledge of the field as well as the insight to know how new information might change that field. I want to note something else in this pattern described by Merton: the datum “exerts a pressure”, it “confronts” the researcher, intriguing them and leading them down a new path. Thus, the agency is not all in the observer, even if the value of the observation is determined by them (or, if you prefer, recognised by they who are “steeped

⁹ As Nicholas Dew argues, for instance, serendipity can ground particular strategies in entrepreneurship, such as the effectual reasoning approach described and developed by Dew and Sarah Sarasvathy (see Dew, 2009 for an introduction to this connection).

in theory”, Merton 1948, p. 507). Serendipity patterns arise when facts about the world reveal themselves in chance encounters. The sociologist depicted by Merton must know how to take their observations forward, but they do so in the form of an active (and strategic) response to an observation made by chance.

Seeing the art of serendipity as a strategic art in this way highlights on the one hand the interaction, through manipulation and response, between the agent and the world, and thus how seeing sagacity through the lens of *techne* allows us to acknowledge the roles of trigger and outcome in the process of serendipity, unlike *episteme*. On the other hand, strategy implies a clear intentionality, even if one keeps one’s options open: the desired end to a strategy is clear, and so how one might choose a method for responding to the unexpected is constrained by the valuable outcome one wishes to achieve. In the case of the arctic ship engineers in Frydenberg et al. (2019), for example, their mix of available methods and willingness to alter pathways in response to chance events were constrained by the fact that all roads led to the building of a bridge, the criterion of success for their endeavours. If this is the art of serendipity, then, it is the art of gaining a strategic advantage over chance on the way to achieving one’s intended goal.

Consequently, while *techne* provides a way to understand the points of interaction in serendipity that happen outside of one’s head, it remains limited in its ability to account for the open-endedness of serendipity; this, I will show, can be made more clear when we look at the nature of those points of interaction more closely through the lens of *techne*. I argue, that is, that accounts of the art of serendipity that see it in the context of *techne*—as strategy or craft—bring to the fore the fact that such an art would be inherently responsive.

The encounter or confrontation of a chance observation with an observer has been a focus of researchers who see serendipity in terms of affordances, for example. Björneborn (2017) describes an affordance as, “a usage potential when environmental and personal factors correspond with each other”. It is a way of seeing something as useful to you in some way; serendipity as affordance emerges from the relationship between a person and the world. Selene Arfini describes affordance as an embodied form of awareness, “about the adaptive value of the object or the event

she is observing or manipulating” (Arfini, 2019, p. 82). Affordances are about what the world offers up to interact with or use, but they are perceived by humans who have needs and desires that shape those affordances: as a chair affords a human the opportunity to sit down,¹⁰ so chance affords those with sagacity an opportunity for serendipity. Note that in these approaches the mode is active engagement, not passive observation of what the chair, or the chance, has to offer. Whether consciously or not, the person comes together with the object or event in an embodied perception of that object or event as a certain kind of thing: in a perception of a chance observation or encounter, as an opportunity, new idea or new way of thinking about the world. Thus, the engagement is mutual, the features of the person and of the world together create the affordance; serendipity, in this light, emerges *in response*.

Likewise, the strategies described by Frydenberg et al. (2019) represent an attempt at least to be less goal-oriented and more responsive. The art of serendipity, as they describe it, includes four elements (which they take from Rivoal and Salazar (2013), and expand upon). Sufficient background knowledge, the first criterion, reminds one of the prepared mind; under their anthropological approach, however, this becomes reflexive interpretation, or the ability to foreground one’s own knowledge in a situation in order to acknowledge its limitations. Likewise, the criterion of an inquisitive mind is not about the freedom to be curious, but rather the ability to “build serendipitous outcomes with sagacity rather than happening upon them” (Frydenberg et al., 2019, p. 1902). Thus the focus is on relationships rather than events and process over outcome. The third criterion, creative thinking, takes up the need to allow data to “develop naturally” rather than by force, by acknowledging the human aspects of rich data collection. And finally, good timing is not about being in the right place at the right time so much as it is about attending to the opportunities for relationship building that will ultimately lead to the serendipitous sharing of different perspectives and collaborative problem solving. Thus, rather than design for serendipity itself, the group approached serendipitous design innovations as something that emerges

¹⁰ For a cat, in contrast, the chair may afford a landing pad for a complicated series of jumps to the kitchen counter. Humans and cats, and others with varying needs, abilities, or experiences, will see different affordances in the objects they encounter.

from the context when we focus on inclusion and iteration, and attend to the limitations of our own understanding and imagination. The techne here is a craft of reshaping one's strategies and methods in response to what happens along the way to one's goals; setting out the criteria above, the research team is attempting to formulate a set of guidance or heuristics meant to ensure the right kinds of response.

A similar approach can be seen in the work of Ana Piñeyro (2019; this volume) when she writes of serendipity in relation to textile design. Hands-on engagement with different materials can lead to unforeseen results, insofar as the materials themselves have agency within these interactions: they move, react, respond and change as we work with them, and in ways we might not predict if we constrain their properties first through design (March & Vallée-Tourangeau, this volume). Serendipitous moments illustrate this fact about materials, encouraging designers to seek first to explore, rather than manipulate or control, the material properties of textiles. The experience opened up new possible outcomes, and so it was, as she calls it, a "generative mistake": not the accident itself, but how it affected the process and thus what came about as a result was what made this serendipitous (i.e. what was *generated* by the mistake). Likewise, the process model favoured by many information scientists (e.g. Makri & Blandford, 2012) includes not only the recognition of an opportunity but its exploitation as well. As I noted in my early work on serendipity, the valuable outcome is a necessary feature of serendipity, and this requires taking some kind of action in response to chance (see also Townsend & Mikkonen, 2019, p. 1856).

As Wendy Ross has pointed out in her work, luck must be enacted (Ross & Vallée-Tourangeau, 2021; Ross, forthcoming). In experiments with interactivity, for instance, where participants were asked to move tiles (or not) in order to create words from an anagram set, the same circumstances (an accidental shifting of the tiles into a legitimate word) could produce different results. The results, that is, depended entirely on whether the participant *noticed* the potentially valuable combination of tiles as such and *responded* in turn by calling the experimenter's attention to the word. Unless an individual "capitalises" on the lucky chance presented, that is, there is no serendipity (Ross & Vallée-Tourangeau, 2021, p. 852).

Techne, as an art or a craft, however, is often understood as the skilled application of theory to the world. So, strategies, rules, heuristics and methods for manipulating our world indeed could fall under techne. What I will argue in the next section that such accounts of sagacity as techne miss, however, is the reciprocal and reflective nature of the interactivity between the chance and the person: it is not a prepared mind within which chance may take seed in the form of a novel combination of ideas, directed from outward in, nor is it directed from inward out, as in the application of rules or skills to a particular kind of situation or to produce a particular result. Rather, it requires an active engagement in the form of responding to a changing environment, in which one's predictions about what will happen have proven unreliable. For these reasons, I now propose that metis, rather than episteme or techne, is the better lens through which to understand the art of serendipity.

Metis

I begin with an exploration of what kind of reasoning metis represents.¹¹ While episteme and techne have enjoyed long and fruitful traditions in philosophy, metis has been virtually lost to discussions of reasoning until fairly recent work in classics and organisational theory, which aims to recover its potential as a useful category, both descriptive and prescriptive. In general, metis can be summarised as “cunning wisdom” (Detienne & Vernant, 1978). The goddess of that name, Metis, was the first wife of Zeus and the mother of Athena;

Metis....intervenes at moments when the divine world seems to be still in movement or when the balance of the powers which operate within it appears to be momentarily upset...The cunning of Metis constitutes a threat to any established order; her intelligence operates in the realm of

¹¹ I owe the idea for this exploration of Metis in the context of serendipity specifically to a memorable dinner conversation with Mark Thomas Young. Errors made here in the use and interpretation of concepts such as episteme, techne and metis are all my own, and I happily refer the reader to work by Young for a more complete and nuanced investigation (e.g. Young, 2017, 2019).

what is shifting and unexpected in order the better to reverse situations and overturn hierarchies which appear unassailable. (Detienne & Vernant, 1978, p. 108)

A shape-shifter, she embodied cunning wisdom as she avoided the attacks of her husband until he tricked her into assuming the shape of something small and swallowed her. Already pregnant (the source of Zeus' anger, feeling threatened), she took this opportunity to manufacture the armour Athena was notoriously wearing when she burst forth in birth from Zeus' head (or thigh), thereby protecting her daughter in way she had not herself been protected from the king of the gods (Detienne & Vernant, 1978, p. 182).

Odysseus is probably the most well-known Greek paradigm of metis; he was “frequently praised for having metis in abundance and for using it to outwit his enemies and make his way home [in the *Odyssey*]” (Scott, 1998, p. 313). In his recent book, W. D. Holford (2020) provides a more contemporary example of metis, or cunning wisdom. In January of 2009, pilots Captain “Sully” Sullenberger and Jeffrey Skiles successfully (without loss of life and few injuries) ditched an airbus on the Hudson River after losing their engines. Holford points out that the landing “involved improvisation in the face of ambiguous information involving complex technological systems” (p. 10). He goes on to say that “Such improvisation was deemed successful in that the operators were able to ‘dynamically match’ themselves to the system’s new and sudden non-routine operations” (p. 10)—note here the role of adaptation and response to a changing situation with new terms, while still applying the expertise the pilots had already. They were not prepared for this situation, but they were prepared to respond well to this kind of situation, *which they found out in the process of responding*.

Metis is all about responsiveness: one must be prepared, yes, but not only in the sense of having the right expertise or body of knowledge at one’s command. And it requires more than having ideas or representations that can combine in novel ways. One must be prepared to interact with the changing situation in which one finds oneself, whether that be an epistemic situation (thus requiring knowledge-based preparedness) or engine failure in the plane one is flying (requiring an embodied

response). *Metis* thus incorporates the theory of episteme, and the application of *techne*, but in situations where we cannot make assumptions or predictions about what might happen next.¹² Thus, it is rather perfect for the art of serendipity.

One thing that needs to be noted is the rhetorical valence of words like “cunning”: it calls to mind associated words, like cheating or manipulating; “the despised weapons of women and cowards” in our historical rhetoric and narratives (Detienne & Vernant, 1978, p. 13).¹³ It is the word used to describe the cleverness of the Greeks when they took Troy by Trojan horse (Young, 2019, p. 17). Sean Silver (2015) points out that this idea of *metis*, because it includes “tricks and stratagems”, is distinct from the kind of *techne* that is grounded in episteme—such “oblique” methods of discovery contrast with direct application of theory. Recent work has made the idea of *metis* more robust and pointed to the suppression of its status as a legitimate form of reasoning by Platonic and Aristotelian ideals of systematic knowledge, garnered by experts and attainable by only the contemplative few (Detienne & Vernant, 1978). As Holford points out, *metis* is inherently *human* knowledge, and as such, discoveries made by *metis* emerge from our human, embodied and lived experience, and are thus not captured well by the rational

¹² Readers familiar with Greek modes of reasoning may wonder why I do not speak of *phronesis* here, rather than *metis*. Briefly, *phronesis* is a mode of reasoning we employ when we have to consider the particularities of a situation in order to know the right thing to do. But it is not so much a reflexive, responsive mode of reasoning, as *metis* is. Work on *phronesis*, in contrast to the work on *metis* I use here, does not emphasise the role of chance and ambiguity, nor parallel the recent work on serendipity, so the strong parallels I draw here between episteme, *techne* and *metis* do not hold for *phronesis*. While I have touched in other work on the moral aspects of *phronesis* (Copeland, 2020), I also leave open for now the question of whether there are virtues associated with *metis*, as there are with *phronesis*. Exploring such overlaps and distinctions between them is a matter for another paper.

¹³ As James Scott points out in respect to how Odysseus’ *metis* is described in myth, “The emphasis is both on Odysseus’s ability to adapt successfully to a constantly shifting situation and on his capacity to understand, and hence outwit, his human and divine adversaries” (Scott, 1998, p. 313). But when we are talking serendipity, we turn this on its head: rather than escaping from a situation, serendipity is about taking up an opportunity for increased value (as I noted in the introduction, it has a distinctly positive valence in our rhetoric). There is thus more to explore about the relationship between *metis* as “cunning”, its negative valence, and who has been said to have *metis* in our narratives, as well as who gets the credit for being serendipitous in science (e.g. see Copeland, 2018) but that also lies outside the scope of this particular chapter.

reconstructions of our scientific methods that we publish in journals and abstract into theory (Holford, 2020, pp. 5–6).

There is a line of thought in the literature on serendipity that allows us to understand the responsiveness and manipulative aspects of metis without the negative valence associated with cunning, and that is the framing of serendipity as play. Most recently, Björneborn has worked with the idea of haiku as a method for researching serendipity: as he puts it in a presentation of the experiment, “using haiku as a reflection tool in my research, in itself provided an unplanned value – a serendipitous experience”.¹⁴ Playing with the concepts by trying to fit them into the constraints of haiku poetry revealed new truths through the experience—this required more than combining representations in new ways, it included a manipulation of the ideas as material things in order to reveal novel “matching pairs”. Pek van Andel mentions play as one of the patterns of serendipity he identifies in the literature and through story (van Andel, 1994); he also mentions practical jokes and a sense of humour as precursors to serendipitous discoveries. Turning everyday ways of doing things on their head through humour and play can create the kinds of combinations that we found in the section on episteme through active engagement not only with ideas, but with each other and the world.

A similar trope can be found in the work of Umberto Eco, who draws a comparison between lunacy and serendipity: serendipity happens when things turn out to be quite different than they seem, where stupid beliefs turn out to be more correct than the prevailing wisdom, or where mistakes and errors become victories over chance. Eco’s *Serendipities: Language & Lunacy* (see the 1998 translation by William Weaver) offers a series of essays from this perspective. This theme is also identified in Bacon’s approach to chance discovery in his depictions of scientific discovery as a kind of hunting-like craft: “There is, in Bacon’s words, a kind of “madness” here” (Silver, 2015, p. 249). Again the negative valence shows through in a way, as these metaphors of lunacy and

¹⁴ From a blog post about that poster presentation, retrieved from here (March 2021): <https://theserendipitysociety.wordpress.com/2020/01/27/haiku-reflections-in-research-on-serendipity/>.

madness imply an overturning of reasonable methodology (the application of theory) in favour of metis (the embodied response). In neither of these cases, however, does madness imply an unreasonable outcome: the madness lies in the recognition that the usual, “more reasonable” methods would have missed out on the discovery made. So it is unreasonable in the sense of not being episteme or techne; it is, however, a reasonable response to a surprising world.

As *human* reasoning, metis is not merely rational when successful, but practical, taking in social, contextual and temporal factors. Further, it is an explicitly embodied form of reasoning (Holford, 2020, p. 19). James Scott (1998) suggests it requires the “art of locality”: “The subtleties of application are important precisely because metis is most valuable in settings that are mutable, indeterminant (some facts are unknown), and particular” (p. 316). Holford follows Scott and others to suggest the following methods for cultivating the skills of metis:

- (i) the internalization of formalized abstract knowledge (techne/episteme);
- (ii) the internalization of formalized situational knowledge (as formalizations of past collective experience), (iii) social practice and dialogue/deliberation, and (iv) repetitive individual practice of technical knowledge within real situational contexts involving indwelling. (Holford, 2020, pp. 8–9)

While heuristics are employed in metis, these are not hard and fast rules but rather encapsulate adaptive capabilities that responsive reasoners can shape to fit the circumstances. Thus, rather than applying rules, knowledge gained from theory and experience may be formalised but must also be internalised. Holford thus draws parallels with the pragmatic approach to knowledge-as-practice found in theorists such as Dewey or Haack (Holford, 2020, p. 13), or the tacit knowledge that Polanyi theorised.

In Holford’s list of methods for cultivating metis quoted above, “indwelling” is emphasised as a technique. In the article by Frydenberg et al. (2019), we see a similar emphasis on indwelling as a method for cultivating serendipity: in the example they describe as a “contextual wake-up call”, the serendipitous exchange occurred because the designers

were there, on the boat, when certain conditions prevailed, and could experience for themselves the effects of those conditions on the usability of their design (p. 1907). Adopting the perspective of the boat crew by putting themselves in the same situation allowed the designers in this case to put their expertise to use to respond to a situation they hadn't imagined before they had encountered it. To gain that perspective, they needed to dwell within it: this is not so much a strategy applied to a situation, as it is a way of understanding the situation and continuously re-formulating a strategy from within. Further, in response to that situation, one brings to bear one's own expertise and perspective on the problems and opportunities that arise.

To reinforce this idea that there is something about the unique perspective, gained from lived experiences of responding to uncertainty and not necessarily from an acquiring of a particular set of skills or facts to have at the ready, I turn to Miriam Solomon's argument for understanding creativity through the lens of standpoint theory. Solomon (2006) points out that even where the creative product is a novel combination of cognitive resources, more than this combination is required: creative individuals are seen as having an additional "intrapersonal intelligence" that allows them to sort the worthy from the unworthy combinations to pursue (here she follows Gardner, 1994, on p. 230 of Solomon, 2006), *and* they need to have a diversity of resources, a social context that provides the (conceptual and environmental) materials needed for the cultivation of creativity through practice (Solomon, 2006, p. 231). Standpoint theory highlights the fact that individuals have an epistemic advantage, due to their unique perspective in the intersectional and social environment they have dwelled within (Solomon, 2006, p. 232ff). Standpoints are "epistemically fruitful" and reflexive (Solomon, 2006, p. 233): they are expressed in an attitude towards one's own perspective, as a productive contribution to the knowledge and understanding of the group. Like the "cunning" of metis, expressing oneself creatively from one's standpoint is not a way to be "nice" (Solomon, 2006, p. 234), it is a response to the world and an assertion of one's own expertise in response to new situations.

Similarly, Scott (1998) draws on the example of "traditional cultivators" of the land, when it comes to making changes to our agricultural

techniques. Scientists and inventors may generate ideas and equipment, but when the cultivator himself applies a solution, the effects on his own livelihood are intimate and immediate. Further, while he may lack the theoretical knowledge that could explain why some solutions work and others don't, he has knowledge that a scientist would lack: dwelling within the context means he notices details about the land, the seasons and the interactions within the system that is his farm, that an outsider could not witness (Scott, 1998, p. 324). Traditional cultivators developed complex techniques not through the application of theory, but through responsiveness to the contingencies that influenced the success of their practices. What Scott labels *metis* among the cultivators, recalls Solomon's points about what standpoint perspectives can bring to the table.

To bring this discussion back to the art of serendipity, our understanding of the responsiveness that I argued is required for serendipity is now made more robust by recognising that, rather than an application of set heuristics or technique, as in *techne*, such responsiveness comes from one's reflexive awareness about one's own expertise in response to an uncertain or dynamic situation, as with *metis*.

In the serendipitous incidents examined by Riika Townsend and Jussi Mikkonen (2019), we see this in the description they offer of the kinds of research behaviours they observed: "In all cases we emphasized researcher reactions, facing unforeseen incidents and unexpected outcomes as potentials rather than failure, and actively cross-pollinating knowledge" (p. 1867). At the level of organisations, we see this in the attitude of "generative doubt" that Miguel Pina e Cunha et al. (2015) have recommended for companies that wish to encourage serendipity: as a combination of preparedness and openness, conceiving of doubt as a legitimate attitude for an organisation to take allows that organisation to respond better to dynamic situations. Strategies such as these will oscillate as the situation changes, as what counts as preparedness is reassessed. And importantly: "The cultivation of doubt as a legitimate organizational state plays a critical role in the process of making serendipitous work acceptable" (Pina e Cunha et al., 2015, p. 14). Adopting an attitude of generative doubt, that is, creates a space in which the art of serendipity can be practised.

Practitioners of the Art

Given what I have said about the relationship between metis, serendipity and standpoint above, one might wonder whether the art of serendipity is an art at all, whether it can be mastered, or if it is, after all, a denotation of mysterious and innate “genius” tendencies that the serendipitous naturally have. That is, if sagacity is truly a *unique property* of an individual, then it might be that no term of apprenticeship can hope to transfer such a skill, and our analysis of the art of serendipity would be moot. But this would be a misreading of the evidence given thus far. In this section, thus, I want to highlight the interaction between the individual with metis and the context in which the art of serendipity can be practised and learned. Indeed, I want to suggest that the art of serendipity, when practised, leads to the cultivation of metis, a way of reasoning in the world and, indeed, vice versa: that metis is a way of reasoning that can be practised and refined, and doing so generates serendipity in turn.

First note that the skills involved are contextual. If we want to create more chances, then we need to cultivate the skills of the game, recall, to keep ourselves “in play” longer so that we have the chance to take up those chances as opportunities in the first place. Further, the role of indwelling and tacit knowledge highlight that the art of serendipity will be particular to the local context, rather than a universalisable set of learned rules or methods. While metis is depicted in mythology as the saving grace of a goddess or hero in a dire situation, such extreme conditions are not needed for metis to be a useful way of reasoning. Every day we experience uncertainty at multiple levels, and we are called to act in response to changing situations when we are parents, chefs, drivers, pilots or engineers, even when we are solving anagram puzzles for our psychology professor. Not all responsive reasoning is metis, and not all metis is “cunning” or in response to an adversary or tricky situation. Metis does come into play whenever the environment itself is changing, when our skills and experience are being called upon to respond differently to the world than they have before, and we are called upon to recognise our own expertise and to apply it strategically, despite this uncertainty.

The art of serendipity is to use metis in the context one is in, to acknowledge one's own standpoint within that context and use one's expertise to notice and utilise what others may miss. Thus the responsiveness of metis translates into an art of understanding how to act and observe, and to bring one's own unique expertise to bear, within a given situation. Such situations begin with surprise, but also or rather with discomfort and unease, when the situation is risky or one's response is also a responsibility. Or it can be taken up as a more generally positive attitude or approach, so that we find ourselves living in a surprising world (see Glăveanu, this volume). When we look at serendipity through the lens of metis, that is, we can also look at metis through the lens of serendipity: while metis captures the way we respond defensively to risk and uncertainty, it can also capture the way we respond positively through wonder and curiosity.

The cultivation of metis as sagacity towards serendipity in individuals will need external support; it needs to take place in an environment conducive to and even encouraging of serendipity. As tacit, embodied knowledge, learning how to reason with metis must be done experientially, through interaction with others and with the world. Thus, individuals must be given the space to explore, respond and interact in order to practice those skills. As Cunha et al. (2015) suggest, the attitude of an organisation that sees doubt as a legitimate practice towards their own goals and strategies encourages serendipity because it encourages the people within those organisations to see the unexpected as opportunities for enacting change (p. 16). Stephann Makri et al. (2014) suggest several ways that computer interfaces can not only create more chances for serendipity in their users but also may support the cultivation of serendipity related skills: for instance, if technology highlights potential patterns for us that we may not have noticed on our own, we in turn may become more likely to notice such patterns when they arise without the technology's help (p. 2191). The art of serendipity is not the art of generating that particular pattern in that case, but rather the art of knowing patterns may arise, and identifying them, even when we do not create them ourselves. Creating spaces, whether organisations, institutions or computer dashboards, in which we can practice the skills of metis—is how metis might be taught.

The situation in which we find ourselves exercising metis is seldom an interaction between oneself and only the world; generally speaking, these kinds of situations are also social. With Odysseus and his antagonists, or Metis and Zeus, the response is in direct response to someone; the dynamic nature of the system is due to the dynamic nature of this conflict between foes. Again, however, there does not have to be conflict (and certainly not on the grand scale of the *Theogony* or *Odyssey*) for there to be dynamism: as Holford points out, metis is the reasoning that grounds democracy and other agonistic human enterprises. The pragmatic approach taken by those who employ metis is, “a naturalistic approach that view[s] knowledge as arising from an active adaptation of the human organism to its environment” (p. 13). Democracy is about the integration of diverse standpoints, “in acts of free self-determination and self-governance” (Holford, 2020, p. 14); reasoning in democracy is learned through practice, by autonomously exercising one’s reason in a public forum; metis is accessible to all who learn to reason in such an environment. As Gary Fine and James Deegan (1996) point out in relation to serendipity in ethnographic research, when it comes to being fortunate in building the right relationships to gain access to the context of study, “Research can be conducted with many good contacts, rather than with a unique, heroic one. The question is not about establishing relations with only the right person, but rather whether the researcher can make use of the relationships” (Fine & Deegan, 1996, p. 441). That is, more important than the unique confluence of contingencies that lead one to meet the right person is the response one has to that person when they meet: relationships are built on how we respond to one another, not by merely bumping into one another by chance. Martin Sand and Karin Jongmsma (2020) discovered in their research with practising scientists who experience luck in their careers and practice, that while they see scientific practice as an area over which they exercise some control, the social connections that build their careers in that practice are susceptible—not always in a problematic, but in an essential way—to serendipity (p. 580). Making serendipity happen, like metis, has as much to do with how we respond to each other as with how we respond to chance itself.

Indeed, when we respond together to serendipity, it is possible to simultaneously create a space in which serendipity can happen by supporting each other. The art of serendipity is not necessarily a solo art, it can be practised by groups; this kind of trans-disciplinary experience is described by Townsend and Mikkonen (2019, p. 1864). In the first case they describe, researchers were validated in their uncertainty in a way that enabled them to follow up on a serendipitous opportunity with confidence. In another case, an unexpected result led first to conflict and then to researchers contributing their diverse expertise towards a novel solution. Shifts in the roles that individuals played within teams, as a consequence of an unexpected need for different expertise, “created an open-minded research space within the design team allowing to be more flexible in other explorations” (p. 1866). Thus, responding as a group to serendipity made the group as a whole more able to respond well to chance in other instances as well. Recall the third method of cultivating metis described by Holford (2020): “social practice and dialogue/deliberation”. The indwelling that is required for the responsiveness of metis is more than just being in the right place; it is engagement with that environment and with the people who dwell there too.

So, one who practices the art of serendipity has to do so in an environment that supports this practice, and the art itself is the practice of bringing one’s own expertise to bear in response to the unexpected. This includes both social and embodied awareness of both one’s own role within that environment and the capabilities one has to contribute in the situation that are unique to oneself. Indwelling in this context is an active engagement; the practice of engaging is how we develop the art of responding well, and responses can be described as the unique confluence of individual expertise and the unexpected. This is the art of serendipity, and the reasoning involved is captured best through the lens of metis.

Conclusion

I have argued in this chapter that metis best captures the art of serendipity; cunning intelligence is a way to describe how we encounter the unexpected, as individuals who are uniquely prepared (or not) within the situation they find themselves to respond well to changing circumstances, ambiguity and uncertainty. This art is an exploratory art, and it is grounded in the general expertise that individuals have in respect to navigating their own particular circumstances. That is, those who practice the art of serendipity leverage their individual capabilities in novel ways when chance events offer the opportunity to do so. It is not a feature of the chance itself, but rather of the response that generates serendipity, at the level of the individual, the group or the organisation. Thus, the art of serendipity is a responsive art, as metis is a responsive reasoning.

What understanding the art of serendipity through metis brings to light is the embodied, relational and responsive nature of serendipity itself. The cultivation of sagacity, as a consequence, requires the cultivation of individual agency: individuals must be given the support and encouragement to bring their perspectives to bear when they might enable fruitful responses to unpredicted results. Dialogue and deliberation are part of the process; while serendipity may happen sometimes in the head, it happens more often out in the world, in the space between people as they sort out whether they are faced with a mistake or an opportunity, and rework what looks at first like madness into discovery. Most importantly, when we practise this art of serendipity, it can shape the possible outcomes of our research processes and practices, expand the potential of our methods, and generate new spaces for exploration and transdisciplinarity that form when we respond together to the unexpected.

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