

Bringing Together Perception and Personality

Aleksandra Maria Rogowska, *Synaesthesia and Individual Differences* (Cambridge University Press, 2015)

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Synaesthesia tends to be defined as an unusual phenomenon, but it is unclear just how unusual it actually is. Estimates place synaesthesia's prevalence in the general population vary widely, with researchers citing anywhere between .05% for linguistic synaesthesia to 26% for time-space synaesthesia (13). These wide-ranging estimates exist, at least in part, because synaesthesia has typically been treated as a dichotomous variable, and there is little consensus about where the boundaries between "synaesthete" and "non-synaesthete" lie.

Aleksandra Maria Rogowska suggests that a shift in focus might help resolve these definitional problems and help researchers understand synaesthesia's scope more accurately. The proposed shift turns attention away from the condition itself and focuses on its relationship with various dimensions of personality, exploring how synaesthesia fits in with other functions of the brain (2). Despite the fact that scientists, poets, artists, psychologists, and intellectuals of every ilk have been fascinated by cross-modal perception, these questions and many like them have gone unanswered. In the 1980s, Rader and Tellegen examined the connections between synaesthesia, intelligence, and personality, but according to Rogowska, researchers have been notably quiet about synaesthesia's relationship to individuality in the intervening thirty years.

Are synaesthetes more creative? More empathetic? Easier to anger? More prone to headaches? More likely to be right- or left-brained? Do they readily trust other people? Do they make decisions quickly, or will it take them forever to decide what dumplings they want at dim sum? Rogowska argues that questions like these, which probe the connection between synaesthesia and individual difference, could hold the key to a deeper, fuller, and more complex understanding of the cognitive phenomena connected to sensation. *Synaesthesia and Individual Difference* offers "the first investigation of the interrelationships between linguistic-colour synaesthetic associations and traits of personality and temperament" (151). In these pages, synaesthesia is not an isolated trait; it finds sympathies and clashes with attention, gender, imagination, and emotional excitability. Synaesthesia, for Rogowska, is one facet of the complicated and fascinating tangle of individual identity, and it should not be removed from its knotty context.

Overall, *Synaesthesia and Individual Difference* offers a preliminary case study for considering synaesthesia, not only as a cross-modal sensory condition, but as a form of association with deep, strong connections to individual human experience. I say "preliminary" because this is how Rogowska herself frames the book. Her claims are based on a series of studies that were conducted on a limited group of subjects—141 students from the Opole University of Technology in Poland. Out of dozens of documented types of synaesthesia, Rogowska focuses only on linguistic-color synaesthetes, a category into which only nineteen of her participants fell. This is a small sample size, with a non-diverse group of subjects, and a limited scope of synaesthetic experiences. Rogowska openly acknowledges these limitations, and she repeatedly emphasizes that future work needs to include participants who differ in age, occupation, life-experience, and synaesthetic type.

Despite the studies' limitations, she is a meticulous researcher. Rogowska dutifully documents her testing methods and results (of which there are many), so for the data-driven reader, there is plenty of analytical fodder. Rogowska is also extremely well-versed in synaesthesia research, and she meticulously cites previous research on synaesthesia, explicitly highlighting places where her work aligns with and diverges from current thinking. She also, helpfully, draws attention to places where there is no unified line of "current thinking," and she explains how her methods might shed new light on these impasses. The book contains an extensive bibliography, and while Rogowska's book is a preliminary study, it is steeped in a deep knowledge of the field.

Based on the data that Rogowska has collected, I will give you a quick cheat sheet for the questions above. There does not seem to be a direct connection between synaesthesia and creativity, but synaesthetes do seem more open to unusual experiences (113). There is a weak connection between empathy and color-linguistic associations (123). Stronger synaesthetes more frequently and easily experience anger (133). Linguistic-color synaesthetes tend to have more headaches than non-synaesthetes (60). Synaesthesia occurs more frequently in lateralized men and one-sided women (55). Strong synaesthetes may be less likely to trust others (128). Synaesthetes may be prone to disinhibition, so they might make more impulsive decisions (146).

As a simple picture, this list may provide clues as to the kinds of connections that interest Rogowska, but it doesn't do justice to the nuance, depth, and care that she puts into her findings. These simple sentences are accompanied by caveats, paragraphs of proof, and more complex descriptions of how different forms of synaesthesia fit into the picture. Over the course of five chapters, Rogowska digs into the connections between synaesthesia and a wide range of individual differences. Chapter one examines the extent to which linguistic-color synaesthesia is a continuous and normal trait, considering its consistency over time and the scope of synaesthetic associations. Chapter two focuses on the best methods for identifying synaesthetes and investigates whether synaesthesia is more commonly associated with a particular gender or body-sidedness. The third chapter uncovers the relationship between linguistic-color synaesthesia and cognitive capacities like visual color discrimination, memory, imagination, and attention. The fourth chapter focuses on absorption, engagement, creativity, Jungian types of mind, intelligence, and emotional intelligence, while the final chapter focuses on personality and temperament, considering inhibition, extra/introversion, neuroticism, openness, and sensitivity.

Ultimately, the book's value lies more in its suggestive nature than in its final conclusions. Rogowska's goal is to demonstrate how studies of synaesthesia might be brought out of their specialized, isolated contexts into broader conversations about human traits and associative thinking. She makes a compelling case for treating synaesthesia as a continuous variable, with deep connections to personality and individual difference. Her research sheds fresh light on the nature of synaesthesia, encouraging researchers to rethink their approaches and to try to understand the phenomenon in a larger context. Through Rogowska's eyes, it is possible to think of synaesthesia, not as a rare or unusual occurrence, but as a fundamental and common one, which has the power to further illuminate the nature of human perception. Creative writers sometimes use books of prompts to generate new ideas, and Rogowska's book is something of a scientific version of this concept; it is a generative and evocative piece of work, designed to stir the field so that new ideas can emerge. Her goal is to lay the groundwork for future questions, approaches, and hypotheses.

Notably, those future questions can be tackled using tools already at the disposal of synaesthesia researchers. Rogowska uses a bricolage of accepted tests and theories to explore

“new possibilities for explaining the phenomenon of synaesthesia” (154). For example, she evaluates the social tendencies of synaesthetes by combining data from the Linguistic-Color Association Test, the Big Five model of personality, and the Formal Characteristics of Behavior-Temperament Inventory. In doing so, she found that synaesthetes demonstrate significantly higher levels of extraversion than non-synaesthetes, but stronger synaesthetes tend toward introversion (128-9). Obviously, there is limited evidence, but using her small sample size, Rogowska models how researchers might use existing diagnostics to arrive at new conclusions with larger, more extensive studies. Ultimately, the book offers both a realistic and optimistic depiction of the field.

Rogowska is a strong advocate for combining testing methods. In fact, she argues that the most robust research combines subjective and objective methods for identifying test subjects. Historically, synaesthesia research relied heavily on subjective psychological methods like interviews and questionnaires, which aren't always reliable and may increase the likelihood of false-positives. On the other hand, more objective measures, like test-retest consistency measurements, may also result in false positives because synaesthetes and non-synaesthetes share a number of associations. Is it a form of synaesthesia to think of blue as a sad color, or is it because of learned cultural connotations? Rogowska argues that because both approaches are faulty, synaesthesia researchers have to combine first-person reports with experimental third-person methods until more reliable methods can be developed. In essence, Rogowska advocates a multi-faceted approach to synaesthesia, using a battery of existing techniques.

That might already sound like an ambitious goal: to combine a host of disparate tests, all of which result in large amounts of data, into a single, workable set of conclusions. But Rogowska wants to open the perspective even wider, calling for interdisciplinarity. She frequently refers to the possible connections that synaesthesia research could have with other fields. For example, in chapter two she wonders, “Does synaesthesia arise as a defensive mechanism against dyslexia?” before concluding, “This speculation requires verification by numerous studies in the fields of neuroscience, psycholinguistics, and psychology” (58). Later, she suggests that studying the connections between synaesthesia and intelligence, creativity, and absorption could “be useful in explaining not only the development and evolution of language and human thinking, but also mental disorders such as autism, schizophrenia, depression, and mania” (124). Developmental psychology, cognitive science, neuroscience, medicine, evolutionary psychology, genetics, linguistics—all of them have some bearing on the topic.

Rogowska makes a compelling case for expanding the domain of synaesthesia studies, but it is possible that this combinatory approach opens up just as many new difficulties as possibilities. Sympathetic though I am to interdisciplinarity, it is unclear just how all of these perspectives could be brought to bear cohesively. From a practical standpoint, it is difficult to envision a specialist in one area who would be able to effectively combine methods and practices from at least three other fields without dedicated collaboration or guidance. There are a number of basic foundational questions that could significantly impact the entire study. What makes the Types of Mind Scale a better option than the Myers-Briggs Type Indicator? Which field's definition of “temperament” is most fruitful? Rogowska displays a thorough, methodical, and extensive knowledge of multidisciplinary tests, and her methods may offer a robust model, but it seems unlikely that there are very many researchers who could cross so many fields without making conceptual or practical errors.

Indeed, such concerns come into play in this book, despite Rogowska's thorough explanations. She plumbs other disciplines for techniques, like projection on latent structures

regression analysis, but for the most part, she does not enter into deeper engagement with the perspectives that other disciplines have on synaesthesia. What is the latest literature on associative thinking? Are there major problems associated with using Piaget's theories on childhood development? Rogowska is very knowledgeable about previous synaesthesia research, but when she brings up other, potentially related areas of study, the specifics are vague. Other disciplines often function like toolboxes or sites for application, rather than complex organisms with their own sets of blind spots and disputes. Moreover, Rogowska does not offer much detail about how her studies might play into these respective fields. For example, if this research is useful to linguists, how so? What do linguists currently say about synaesthesia? Other fields already have their own perspectives, and in order to really foster dialogue, the conversation has to move in two directions.

Given that the book is about generating new research leads, Rogowska is not obligated to offer conclusive evidence, nor is she required to master every discipline in the human sciences and social sciences. That said, the book would have been more effective if she had more explicitly addressed such concerns head-on. It is one thing to say that synaesthesia "may shed some light on the human development of perception, thought, and language" (1), but it is another to see how those connections might be made within current institutional frameworks. Such a thorough treatment would be a lot to expect from a single researcher or even a team of researchers, so my goal here is not to contradict or belittle Rogowska's aims and arguments. In fact, I am extremely sympathetic to her claim that synaesthesia research should be more wide-reaching. But it is important to acknowledge that, in order to truly reach Rogowska's goal of a multi-faceted, multi-disciplinary, larger-scale picture of synaesthesia, much more cross-disciplinary collaboration will be necessary, and a larger audience will need to be drawn directly into the conversation. Her project is a worthy but undeniably and incredibly ambitious one.

While Rogowska states that the anticipated audience for her research is sizeable, the style of the book did not always seem to take that audience into account. The book's back copy claims, *Synaesthesia and Individual Difference* "will appeal to students and scientists of psychology, cognitive science, and social science, and to those who are fascinated by unusual states of mind." The information within its pages absolutely has the potential to do, but by and large, the book still seems to be written for a specialist audience already familiar with synaesthesia. While Rogowska often defines terms from her research framework (e.g., what is "absorption"), there are many occasions where she assumes that readers will already be conversant with synaesthesia research. Rogowska uses specialist terms confidently and precisely, but her ready familiarity sometimes precludes non-specialists from easy understanding.

Of course, Rogowska is not writing a trade book for a casual audience, but she is purportedly writing for a larger, scientifically inclined audience that would benefit from knowing more about synaesthesia. For example, she appeals to educators in a section dedicated to creativity, where she suggests that the extraordinary skills of many synaesthetic artists, musicians, and scientists are the result of hypercompensation for learning difficulties. Gifted individuals often flourish artistically because they adapt in order to overcome adversity. As a result, Rogowska explains, "The education of gifted children with synaesthesia should be based on their preferred learning style with the use of synaesthetic associations to release their unique potential" (114). This is a fascinating insight, and one that might assist teachers, child psychologists, or other individuals working with special needs children, but overall, the book is not written in such a way that educators would find that information accessible.

This is unfortunate because, overall, she makes a convincing case for extending the scope of synaesthesia research and for linking it more thoroughly to individual difference. Bringing synaesthesia studies into conversation with topics like childhood development, dyslexia, schizophrenia, and aura perception could open up new, significant insights. The boundaries between these phenomena are likely more porous than research has allowed.

Indeed, reading this book, one feels over and over that the boundaries of synaesthesia are much more permeable than has been recognized. In fact, this is one of the book's strongest and most intriguing insights. Rogowska affirms the need for a redefinition of synaesthesia, and her data suggests that synaesthesia can be viewed as a continuous trait that can be compared and correlated with any other continuous human trait (13). She explains that a "synaesthetic trait" should be understood as "a strong tendency to use involuntarily abstract associations between particular features of intra-modal or cross-modal mental representations, which pertain to both the sensory and the semantic levels of cognitive processing" (31-32). More crucially, she concludes that "synaesthesia may be determined by an almost infinite number of factors," including learning processes, emotion, personality traits, environmental variables, metaphor-based connections, and cognitive processing levels. In other words, synaesthesia may be inherited, but it also may be developed and crystallized over time. It is just as readily the product of learning and memory as of biology.

Rogowska writes, "Synaesthesia may be simply yet another type of common association, rather than a mysterious and extraordinary phenomenon." What is synaesthesia, after all, if not a form of association? Indeed, so many of Rogowska's respondents linked specific months to specific colors (e.g., March to green), that it was difficult to determine whether those respondents had month-color synaesthesia or whether those were ordinary semantic associations (38).

Researchers have frequently tended to treat synaesthesia as binary; a person either has it or does not. Or, at the very least, they have tended to focus only on the strongest, most certain cases of synaesthesia, failing to take the weaker, less consistent associations into account (31). Yet Rogowska's studies show that the line between common associative thinking and full-fledged synaesthesia is not always clear. The author makes a compelling case that synaesthesia might be more fruitfully understood as a spectrum, rather than a simple case of "have" and "have-not." Rogowska's treatment of synaesthesia as a continuous variable revealed that linguistic-color synaesthesia is not anomalous but is, instead, an involuntary and abstract form of association, which may be a kind of tacit knowledge. She explains, "...we may all be some kind of synaesthete, but each of us demonstrates a unique pattern of mixed senses, similar to our unique epidermal ridges. This specific synaesthetic pattern may reflect an individual history of interaction between cognitive development and the environment, but also between our cognitive abilities and dysfunctions at particular stages of our development" (68).

Some people have strong, consistent synaesthetic linkages (e.g., "b" is always a particular shade of purple). Researchers can confidently identify these individuals as synaesthetes. But Rogowska found that the responses of many of her participants were less clear. Some experienced weaker cross-modal associations; some had associations that shifted over time; many had associations that shifted with mood, circumstances, and even weather. Changeable though they were, they were still cross-modal. Could these associations be considered "synaesthesia," or should they be discounted as basic cognitive processes?

If synaesthesia is treated as a spectrum, rather than as a binary, the scope of pertinent questions is instantly and exponentially expanded. How does synaesthetic association relate to other, more mundane or common forms of associative thinking? What is the place of cross-

modal sensation in human perception and psychological functioning? And how do weaker synaesthetes understand and navigate the world around them?

Furthermore, this spectrum-view means that researchers will need to devote much more attention to the developmental side of synaesthesia. The binary perspective of synaesthesia obscures the fact that synaesthetic experiences are often tied to certain life events, sometimes result from drug experiences, or only emerge at certain stages of human development. There are a host of factors that can alter a person's cross-modal perception. For example, Rogowska notes that grapheme-color synaesthesia is tied to social systems of symbols, and it cannot emerge at birth. Similarly, other kinds of cognitive-based synaesthesia, like orgasm-color, ordinal-linguistic personification, and personality-color synaesthesia, only emerge at specific stages of childhood. There are indicators that, in some cases, synaesthesia develops as a compensatory mechanism when a person has difficulty with certain skills, and synaesthesia may actually be a kind of tacit knowledge gained from experience. (67; 30-31). In other words, synaesthesia varies, not only person to person, but also across time. Rogowska's treatment of synaesthesia takes that variability into account, and it consequently offers a more complex, fluid vision of synaesthesia, cross-modal perception, and associative thinking in general.

As a historian, it is simultaneously encouraging and disheartening to hear Rogowska's arguments for a broader definition of synaesthesia. Her spectrum argument is convincing, illuminating, and exciting, but it also makes me wonder how we got to the binary definition in the first place. In many ways, Rogowska's notion of synaesthesia harkens back to an earlier, nineteenth-century understanding of the phenomenon. The term "synaesthesia" was not coined until 1892 by the French physician Jules Millet, but for most of the nineteenth century, accounts circulated in artistic and scientific communities of individuals who could hear colors and produce "inner visions." Some physicians treated cross-modal sensation as a pathology. Others, like the psychologist Eugen Bleuler, suggested that synaesthesia was an atavistic trait that had not yet been fully eliminated by evolution. Others still treated synaesthesia as a gift of imagination, divine insight, or a sign of artistic genius. Spiritualists encouraged their followers to cultivate color vision, claiming that with practice, anyone could see auras or understand the deeper meaning of colors. Artists, like the Symbolist poet Arthur Rimbaud, hoped to draw nearer to the truths of the universe through cross-modal sensation. Philosophers dug deep into the phenomenon of colored afterimages, and composers latched onto color-music, building organs and pianos that would unite the senses.

Nineteenth-century perspectives on synaesthesia reached little consensus about what constituted synaesthesia. (Remember that for most of the century, the term didn't even exist.) But through all of the conflict, it is possible to discern an overriding notion that cross-modal perception was something that could be cultivated, developed, or eradicated with effort. Some people had it more strongly than others, but in theory, all humans could access synaesthetic perception. (Although many intellectuals didn't see why one would want to.) Synaesthesia was fluid, variable, evolving, and diverse. It was not a clear-cut case of black and white. It was a palette as wide as the rainbow.

We have gained a lot of knowledge about synaesthesia since the late nineteenth century, and there has been a great deal of excellent research that has helped us understand this complicated cognitive phenomenon. But Rogowska offers a model reminiscent of this earlier view, and it will potentially open up to new kinds of understanding and expand the reach of synaesthesia research. Contrary to many nineteenth-century writers, Rogowska does not suggest that it is easy—or even universally possible—to acquire cross-modal perception, but she does

emphasize synaesthesia's connection to human development, psychological experience, and individual needs. She convincingly shows that synaesthesia might have as much to do with context and environment as with the brain itself.

Rogowska concludes with the following self-assessment: "The present result did not provide strong evidence for most of the questions. Instead, new possibilities for explaining the phenomenon of synaesthesia were explored here" (154). It's true. This book is an exercise in possibility. On almost every page, there seems to be a useful idea, an innovative approach, or a well-informed hypothesis. *Synaesthesia and Individual Differences* is a promissory note suggesting wider angles, innovative avenues of research, and illuminating research to come. The final line of the book asserts that synaesthesia research is "helpful in explaining synaesthetic perception, as well as non-synaesthetic cognitive processes, in the areas of genetics, evolutionary psychology, developmental psychology, cognitive neuroscience, and personality and linguistics" (154). The scope of Rogowska's book is expansive, and I can certainly see researchers from many fields gaining insight from this book. It is not always evident how accessible the material will be for non-specialists, but overall, Rogowska has made a convincing case for the need to investigate synaesthesia's connection to personality, temperament, and other individual characteristics.