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Explaining the Esoteric Imagination

*Towards a Theory of Kataphatic Practice**

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Abstract

The imagination is central to esoteric practices, but so far scholars have shown little interest in exploring cognitive theories of how the imagination works. The only exception is Tanya Luhrmann's interpretive drift theory and related research on mental imagery cultivation, which has been used to explain the subjective persuasiveness of modern ritual magic. This article draws on recent work in the neuroscience of perception in order to develop a general theory of kataphatic (that is, imagery based) practice that goes beyond the interpretive drift theory. Mental imagery is intimately linked with perception. Drawing on "predictive coding" theory, the article argues that kataphatic practices exploit the probabilistic, expectation-based way that the brain processes sensory information and creates models (perceptions) of the world. This view throws light on a wide range of features of kataphatic practices, from their contemplative and cognitive aspects, to their social organization and demographic make-up, to their pageantry and material culture. By connecting readily observable features of kataphatic practice to specific neurocognitive mechanisms related to perceptual learning and cognitive processing of mental imagery, the predictive coding paradigm also creates opportunities for combining historical research with experimental approaches in the study of religion. I illustrate how this framework may enrich the study of Western esotericism in particular by applying it to the paradigmatic case of "astral travel" as it has developed from the Golden Dawn tradition of ritual magic, especially in the work of Aleister Crowley.

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Keywords

mental imagery – predictive coding – interpretive drift theory – kataphatic practice – astral travel

1 Introduction: Explaining the Esoteric Imagination

Practices that aim to produce subjectively powerful experiences are commonplace in the history of esotericism. From conversations with angels through crystals and erotic encounters with Divine Sophia, to adventures on the astral plane and the channelling of ascended masters from the Pleiades, esoteric practitioners often seek special knowledge through intimate experiences with mediators. Scholars have long agreed that “imagination” is central to these practices, and it has even been suggested that the imagination is a defining characteristic of esotericism itself.¹ Wherever one stands on the issue of definitions, it seems safe to say that esotericism has historically been intertwined with kataphatic spiritual practices²—that is, practices that focus on sensing, visualizing, and feeling the divine directly.³ Indeed, the kataphatic focus on positive, personal experience of mediators gives to esoteric practices much of their heterodox feel.

But what does it really mean to say that esoteric practices rely on the imagination? What *is* the imagination in the first place, and how does it help us explain how phenomena such as angel scrying, clairvoyance, or astral projection work? How are we relating these events to categories such as “dreams”, “hallucinations”, “fantasy”, and plain-old “perception”? Esotericism scholars tend to be silent on these matters. In the present article, I will draw on recent perspectives from the neuroscience of perception and the cognitive science of religion in order to suggest an explanatory model for kataphatic practices *in general*. In order to illustrate the model and demonstrate its usefulness to historians of esotericism *specifically*, the bulk of the article (Section 5) is devoted to explaining a particularly paradigmatic case of esoteric kataphatic practice: the astral

1 Faivre, *Access to Western Esotericism*, 12.

2 See Asprem, ‘Esotericism and the Scholastic Imagination’.

3 I am assuming a kataphatic/apophatic distinction along the lines used in the study of mysticism. On this view, “kataphatic” (*kataphasis*, “affirmation”) refers to techniques that stress the active development of mental imagery and sensations, while “apophatic” (*apophēmi*, “to deny”) refers to attempts to quench or still the mind by stopping any mental content from arising. See e.g. Egan, ‘Christian Apophatic and Kataphatic Mysticism’.

travel exercises that have become a staple element of occultist magic due to the popularization of the magical systems of the Hermetic Order of the Golden Dawn and, especially, Aleister Crowley.

I consider Golden Dawn-style practice, in which I include Crowley's elaborations, paradigmatic for two reasons. First, it has been at the centre of the debate about the psychologization of magic, and is therefore a key case in studies of the shifting *interpretations* of imagery-based practices.⁴ Secondly, Golden Dawn practices were at the basis of Tanya Luhrmann's groundbreaking study, *The Persuasions of the Witch's Craft* (1989), which is still, rather amazingly, the *only* major attempt to embed occultist magical practice in an explanatory framework consistent with contemporary cognitive science.⁵ I will therefore open this article by discussing Luhrmann's "interpretive drift" theory (Section 2). I share two important assumptions with Luhrmann's work. First, that the relevant meaning of the term "imagination" is the ability to form *mental imagery*⁶—which, moreover, can belong to any of the perceptual modalities and not only vision. Second, that kataphatic practices—esoteric or otherwise—provide techniques for cultivating mental imagery. In other words, kataphatic practitioners do not just learn to talk in a different way, as constructionist approaches sometimes insist, but really do alter their experiential repertoire. Talking with angels, or traveling on the astral plane, are *skills that can be trained*. The objective of any explanatory theory of kataphatic practice must therefore be to understand the causal factors that allow such training to take place, and to identify the material, bodily, and mental techniques that practitioners have at their disposal in order to hone the skill.

4 See especially Hanegraaff, 'How Magic Survived the Disenchantment of the World'; Asprem, 'Magic Naturalized?'; Pasi, 'Varieties of Magical Experience'; Plaisance, 'Israel Regardie and the Psychologization of Esoteric Discourse'. See also Owen, *The Place of Enchantment*, 148–185.

5 But see Sledge, 'Between "Loagaeth" and "Cosening"'; Klaassen, 'Subjective Experience and the Practice of Medieval Ritual Magic'; Asprem, 'Reverse-Engineering "Esotericism"'. The situation is, of course, different if we look at magic as a general concept. See especially Jesper Sørensen, *A Cognitive Theory of Magic*.

6 "Imagination" is not a well-defined technical term in current psychological science. Broadly speaking, I differentiate two meanings that are analytically (and probably neurologically) distinct: the ability to create mental imagery, and the ability to create novel representations. The point in separating these two is that mental imagery appears to be a special kind of representation, that is processed differently from, e.g., linguistic or propositional representations. For a survey of the evidence of imagery as a separate kind of representation, see Kosslyn, Thompson, and Ganis, *The Case for Mental Imagery*.

Pursuing this objective takes me beyond interpretive drift, to a recent neurocognitive theory of perception known as predictive coding (Section 3).⁷ According to this view, perception is a guessing game. Rather than passively recording incoming sense data, the brain and the nervous system actively tries to predict changes in the environment by producing models that are constantly tested against experience. The percepts that we experience are the models that best explain the body's current situation. They are the brain's best guesses of what is out there, based on previous experience and current predictive performance. I argue that this prediction model, which has recently been embraced by some researchers in the cognitive science of religion,⁸ provides an ideal framework for making sense of mental imagery cultivation (Section 4). This model explicitly relates mental imagery to the perceptual process, and embeds perception itself in a generalized model of expectation-based learning. The predictive coding framework makes it possible to demonstrate how kataphatic practices exploit the way the brain processes sensory information. After showing how we can use these principles to pay closer attention to little-discussed aspects of astral travel practice (Section 5), I close with a discussion of the new lines of research that are opened up by this approach (Section 6).

2 The Cultivation of Imagination and the Inner Senses

2.1 *The Theory of Interpretive Drift*

Framed by the rationality debate in anthropology, Luhrmann cast *Persuasions* as the study of 'a case in which apparently irrational beliefs are held by apparently rational people,' with an aim to 'identify the elements which seem important to explaining how they do so'.⁹ The theoretical objective was to explain how humans are capable of experiencing and understanding the world in radically different ways. Luhrmann followed educated, middle class English people that joined small magical groups, described her own participation in the courses and exercises that were prescribed to aspirants, and studied how participants acquired new skills that eventually turned them into accomplished

7 For a particularly lucid discussion by a leading philosopher of mind, see Clark, 'Whatever Next?'

8 Schjoedt et al., 'Cognitive Resource Depletion in Religious Interactions'; Andersen et al., 'Mystical Experience in the Lab'; Taves and Asprem, 'Experience as Event'. See also Markússon, 'Indices in the Dark' (this issue), for an application of the same framework to a wholly different problem.

9 Luhrmann, *Persuasions of the Witch's Craft*, 13.

magicians. Luhrmann described this learning process as “interpretive drift”, defining it as ‘the slow shift in someone’s manner of interpreting events, making sense of experiences, and responding to the world’.¹⁰

One might get the impression that the learning process provides *interpretations* of “raw” experiences that “just happen”, but this would be an incorrect reading. As Luhrmann showed in the chapter on visualization practices—and in more recent research, as we shall soon see—the specific techniques that budding kataphatic practitioners are taught bring them to pay attention to the content of their own minds and to a variety of bodily sensations in ways that result in entirely novel kinds of experience.¹¹ The process of becoming a magician does not only result in a drift of interpretations, but in the rebuilding of the practitioner’s experiential world. An explanatory theory of the learning process must therefore account for how and why certain practices can effect lasting changes in people’s external and internal perceptions.

2.2 *Mental Imagery Cultivation as an Object of Research*

The cultivation of mental imagery has been on the radar of psychologically informed anthropologists since Richard Noll published a seminal article on the subject in 1985.¹² Noll’s paradigm influenced the interpretive drift theory, but Luhrmann and colleagues have pushed this line of research further in more recent work.¹³ Their “Spiritual Disciplines Project” investigated how Charismatic Christians learn to hear the voice of God, focusing on the hypothesis that kataphatic prayer techniques with a heavy emphasis on seeing, feeling, and talking with Jesus may have an effect on practitioners’ abilities to form mental imagery, as well as increase their chances of reporting spontaneous experiences that they appraise as spiritually significant. It should be noted that “imagery”, in this context, does not refer to *visual* representations alone. Luhrmann and colleagues prefer talking about “inner sense cultivation” in order to highlight that they are interested in imagery related to any of the perceptual modalities (smell, hearing, touch, taste, and vision), including the interoceptive, vestibular, and proprioceptive “bodily senses”.¹⁴

10 Ibid., 12.

11 Ibid., 180–202.

12 Noll, ‘Mental Imagery Cultivation as a Cultural Phenomenon’.

13 See Luhrmann and Morgain, ‘Prayer as Inner Sense Cultivation’; Luhrmann, Nusbaum, and Thisted, “Lord, Teach Us to Pray”; Cassaniti and Luhrmann, ‘The Cultural Kindling of Spiritual Experiences’; Luhrmann, *When God Talks Back*.

14 Respectively, these are the sense of the body’s autonomous systems, like heartbeat, respiration, and the digestive system (interoception), the sense of balance (vestibular sense),

The Spiritual Disciplines Project has documented that kataphatic prayer has a measurable effect on people's abilities to visualize and their likelihood of reporting certain kinds of anomalous experiences.¹⁵ However, the research has also shown that these techniques do not have the same effect on everyone: Some people are kataphatic "naturals", while others never learn to see or feel much of the spiritual world. In particular, they found that people who scored highly on tests of the personality trait "absorption" were much more likely to get something out of kataphatic prayer techniques.¹⁶ Further support for individual difference effects are found in research on mental imagery vividness in general: personality factors such as schizotypy¹⁷ and fantasy proneness¹⁸ are also associated with higher reported vividness, while there appears to be a modest gender difference in favour of women.¹⁹ In other words, both *specific techniques* and *individual differences* are causal factors that influence mental imagery ability.

The Spiritual Disciplines Project has uncovered a number of intriguing *correlations* between personality factors, spiritual practice, vividness of mental imagery, and the propensity to hallucinate, but it does not provide an *explanatory* account of these connections. That is, it does not propose mechanisms that specify how proximate causes interact to produce the effects.²⁰ In what follows, I will suggest that the neurocognitive predictive coding framework, as an action- and expectation-oriented theory of perceptual learning, offers such an account. Importantly, it directs our attention to aspects of the training process that go beyond those covered by inner sense cultivation alone, and pinpoints specific proximate causes that are involved in such practices.

and the sense of body ownership (proprioception). For an up to date discussion of these (and related) aspects of the sensorium, see Ritchie and Carruthers, 'The Bodily Senses'.

15 For a detailed discussion of the procedure and analysis of the results, see Luhrmann, Nusbaum, and Thisted, "Lord, Teach Us to Pray", 164–171.

16 See especially Luhrmann, Nusbaum, and Thisted, 'The Absorption Hypothesis'.

17 Oertel et al., 'Mental Imagery Vividness as a Trait Marker across the Schizophrenia Spectrum'.

18 Aleman and de Haan, 'Fantasy Proneness, Mental Imagery, and Reality Monitoring'.

19 Isaac and Marks, 'Individual Differences in Mental Imagery Experience'.

20 I assume a causal-mechanistic view of explanation along the lines presented by Craver and Tabery, 'Mechanisms in Science'. For in-depth discussions, see Asprem and Taves, 'Explanation and the Study of Religion'; Taves and Asprem, *Explanation: A Primer*. For an accessible overview, see also Asprem and Taves, *Building Blocks of Human Experience* (URL: <http://bbhe.ucsb.edu/>).

3 Imagery as the Mind's Hypothesis: A Predictive Coding Account of Imagination, Perception, and Hallucination

The predictive coding framework holds that the content of our experience is the result of internally generated models rather than passive recordings of what is “out there”.²¹ More specifically, it holds that these internal models are *predictions*—they are the brain's best attempts at guessing the body's current situation. Contrary to the old-school empiricist view, sense data does not provide raw materials for conscious experience; the sensory stream's role is rather to test aspects of models generated inside the brain. The brain guesses x about the world, and gets the rest of the body to test the prediction by acting on the guess and turning to expected stimuli. If expectations do not work out, an error signal is sent back to the brain. When such signals are low, the hypothesis is confirmed and we have a stable percept. When error signals increase, the prediction fails and the brain starts looking for new models that might better explain the sensory stream (see fig. 1).

In short, predictive coding is a computing principle that is implemented in the organization of the nervous system, which provides the organism with a cost-efficient strategy for interacting with a complex world. A distinctive feature of this strategy is that it uses *probabilities* based on what has happened in the past in order to make “guesses” (or models) of what is happening now. Technically, these expectations are known as “prior probabilities”, or priors.²² On this view, *mental images* are our stock of perceptual hypotheses, based on expectations from past experience (i.e., priors).²³ Like percepts, imagery arises as internal models in the cortical areas responsible for a given perceptual modality—thus, a visual mental image will correlate with neural activity in the visual cortex indistinguishable from the activation during visual percep-

21 The framework has been developed at the intersection of neuroscience, cybernetics, and embodied cognition, especially in the work of Karl Friston and collaborators. See e.g. Friston, ‘A Theory of Cortical Responses’; idem, ‘The Free-Energy Principle’; Friston et al., ‘Perception as Hypotheses’. See also Rao and Ballard, ‘Predictive Coding in the Visual Cortex’; Corlett, Frith, and Fletcher, ‘From Drugs to Deprivation’. A systematic and accessible discussion is available in Clark, ‘Whatever Next?’ I build primarily on Clark's philosophically provocative understanding, and refer to the open peer commentaries to his article for further references.

22 This term is lifted from Bayesian probability statistics, which is the mathematical framework of predictive coding.

23 Clark, ‘Whatever Next?’; 197–199; idem, ‘Perceiving as Predicting’.

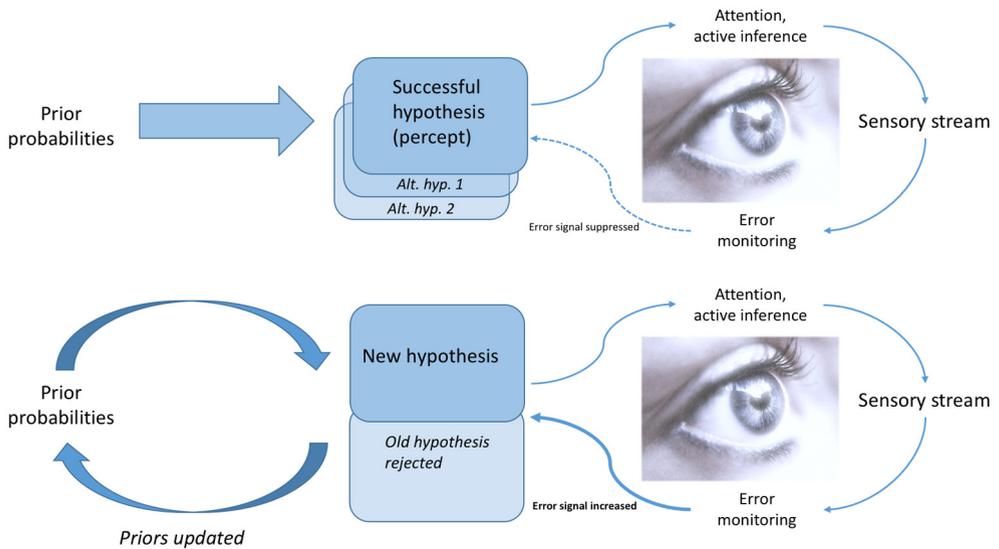


FIGURE 1 *The sensory process according to predictive coding. Prior probabilities (expectations) inform the production of internal models that try to actively guess (infer) what is “out there.” The top illustration shows a steady state where a clear percept is held in view. The second illustration shows an old hypothesis being rejected and replaced for another as error signals increase. This, in turn, leads to an update of the priors. Models corresponding to the new hypothesis are more likely to be generated in the future.*

tion.²⁴ How vividly the image is experienced depends on how well these internal models suppress prediction error at a given moment—prediction error being the brain’s indirect proxy for how well the internal model fits with the outside world.²⁵

The error signalling process is always imperfect. Mismatches between an internal model (the image) and the world outside may happen when they shouldn’t (leading to failure to recognize features that are actually present, or a search for more far-fetched patterns), or not happen when they should have (leading to misperceptions or hallucinations). Not only are imagination and perception intimately related to each other, then, but they also stand on a continuum with other experiential categories such as dreams and hallucinations.

24 See Rao and Ballard, ‘Predictive Coding in the Visual Cortex’. See also Kosslyn et al., ‘Visual Mental Imagery Activates Topographically Organized Visual Cortex’; Cui et al., ‘Vividness of Mental Imagery’.

25 Clark, ‘Perceiving as Predicting’.

TABLE 1 *Key concepts of predictive coding*

| Term | Meaning |
|---------------------------|---|
| Internal generative model | Cortical areas generate models of the expected activity on the levels below them in the neural hierarchy. Generative models are <i>predictive hypotheses</i> of expected lower-level activity, based on prior probabilities. They are tested (and updated) by the processing of bottom-up error signals from the sensory periphery. |
| Prior probability | A (Bayesian) statistical concept expressing the estimated chance of some future observation based on what has happened in the past. Prior probabilities are constantly updated through feedback-based interaction with the environment (learning). |
| Error signal | Error signals represent a mismatch between an expected outcome and an actual outcome. They track the inaccuracy of an internally generated model and the activity below it in the neural hierarchy, which it tries to model. |
| Top-down processing | Predictions produced by internal models are signalled downwards in the neural hierarchy, from the cortex to the sensory and motor systems. When top-down processing dominates, subjects experience what they expect. Top-down processing is associated with, e.g., unambiguous perception, hypnotic induction, pattern-recognition, hallucinations, and dreams. |
| Bottom-up processing | Error signals are sent upwards in the hierarchy, from the sensory periphery toward the cortex. When the error signal is strong and bottom-up processing dominates, subjects will experience constantly shifting, novel perceptions and thoughts. Bottom-up processing is associated with, e.g., attention, learning, disorientation, confusion, and paranoia. |

The predictive coding framework helps us specify some of the physiological variables that modulate such perception-like experiences, offering important clues to how and why mental imagery may take on perceptual qualities.

Some of the causal factors involved come to view when we look at the more extreme cases of altered perception, such as hallucinations. Hallucinations have usually been defined as compellingly realistic perceptions that occur without a corresponding external stimulus.²⁶ The predictive coding model complicates this picture, because it rejects the view that percepts are built up “bit by bit” from sense data. Both percepts and hallucinations are internally generated predictions (mental images) that successfully suppress prediction error at a given moment. In hallucinations, however, this happens because the error monitoring process is impeded in ways that favour top-down processing.²⁷ This can happen in many ways. One is to cut off the external sensory stream altogether, whether by removing external stimuli or by blocking the processing of information from the senses to the central nervous system. This accounts for the hallucinatory experiences associated with sensory deprivation and some forms of visual impairment (like Charles Bonnet Syndrome), but it also occurs on a physiological level during REM sleep, when the brain’s access to sensory and motor systems is blocked.²⁸ Error monitoring may also be disrupted by interfering with the neurotransmitters that mediate both top-down prediction signals and bottom-up error signals.²⁹ Alterations on this level are a part of the picture in hallucinations induced by drugs, psychopathology, and REM sleep alike.

3.1 *Cultivation Beyond the Brain: The Role of Patterned Practices and Material Culture*

Mental imagery becomes more vivid when top-down processing outweighs bottom-up processing of prediction errors. While sensory deprivation and intake of psychotomimetic drugs are capable of jumbling this balance in ways that produce dramatic shifts in perception, the effects are generally short-lived.

26 See, e.g., Sacks, *Hallucinations*, ix–xi.

27 See especially Corlett, Frith, and Fletcher, ‘From Drugs to Deprivation’.

28 See *ibid.*, 523–526; Hobson and Friston, ‘Waking and Dreaming Consciousness’; cf. Hobson and Friston, ‘Consciousness, Dreams, and Inference’.

29 Error signals are thought to be mediated by AMPA and GABA receptors while top-down predictions are mediated by NMDA receptors. A range of neurotransmitters such as dopamine, acetylcholine, and serotonin, are thought to regulate the “gain” or “weight” on these signals. For a discussion, see especially Corlett, Frith, and Fletcher, ‘From Drugs to Deprivation’, 517–519.

In our context, we are more interested in processes that can create lasting shifts in the ability to form and sustain vivid imagery. To understand such processes, it is necessary to consider not just the body-bound mediation of predictions and errors in the nervous system, but how the organism as a whole interacts with environments and material objects in specific practices sustained over time.

As we have seen, the predictive coding framework casts perception as an adaptive learning process. Past experience creates expectations that allow the brain to create new internal models, which are actively tested against the sensory stream. This is a very general learning strategy, where the conceptual, perceptual, and motoric flow into each other.³⁰ For example, when we learn to read a new alphabet, we begin without internal models for the shapes of the letters. A novice in Hebrew might find that the letter aleph looks nothing like any letter they know from the Latin alphabet. In predictive coding terms, a constant stream of prediction error is sent upwards in the cognitive hierarchy as the student examines the letter, leading to acute attention to detail (edges and shapes) as the brain struggles to find a hypothesis that might predict the sensory stream from the paper. Eventually, the brain comes to expect certain shapes (i.e., new priors are formed), which is to say that the student comes to create an internal picture of the letter that allows her to identify it *without* paying attention to all the details on the paper.³¹ Processing now subtly shifts from bottom-up to top-down. After the alphabet has been internalized in this way, the same process is repeated on the word level; at first, prediction error dominates, and attention is turned to minute visual details as the student identifies every single letter as they appear in order, but eventually, internal models of whole words are formed, which lets the proficient reader identify words without paying close attention to how they are spelled. As the process unfolds, the brain learns to regulate the sensory stream and thus the level at which error monitoring takes place, by shifting attention through the movement of the eyes' saccades.³²

Simple examples like this suggest that “culture”, in the sense of regularly repeated behaviours, or “patterned practices”,³³ has deep effects on percep-

30 See Clark, ‘Whatever Next?’

31 Reading proficiency in a given alphabet alters how we classify letters and process the visual data of letter shapes. For a recent study using Arabic as example, see Wiley, Wilson, and Rapp, ‘The Effects of Alphabet and Expertise on Letter Perception’.

32 On the role of saccades in testing perceptual hypotheses, see especially Friston et al., ‘Perception as Hypothesis’.

33 Roepstorff, Niewöhner, and Beck, ‘Enculturing Brains through Patterned Practices’, 1052. For empirical evidence of such effects, see e.g. Henrich, Heine, and Norenzayan, ‘The Weirdest People in the World?’

tual processing. Interacting with environments in patterned ways selectively shape our sensory input, and, over time, these repeated behaviours give way to expectations and internal models that, effectively, structure the repertoire of what can be perceived. *Material culture*, in the shape of objects, architecture, signs, tools, etc., plays a central part. Internal models are sustained by patterned engagements with material objects and built environments, which is especially important in cases where they are far removed from anything encountered in humanity's ancestral habitats.³⁴ Thus, societies tend to construct highly specialized 'designer environments', which allow individual brains to build and sustain very specific and abstract sets of expectations.³⁵ The artificial 'cognitive niches' that result from such long-term, interactive, and material engagement with designed stimuli make it possible to 'induce the acquisition of generative models whose reach and depth far exceeds their apparent base in simple forms of sensory contact with the world'.³⁶

4 Towards a General Theory of Kataphatic Practice

Vivid mental imagery depends on two factors: Strong priors, and weak error signals. While pharmacological interventions can potently alter the balance between top-down and bottom-up processing on the short term, practice and material culture are essential for gaining systematic, long-term effects. Such long-term learning will include a seamless mix of conceptual, perceptual, and motoric aspects: learning a letter, for example, involves the concept of the letter (including phonemic links), a percept (a visual shape), and an oculomotor movement (eye movement confirming the shape). Moreover, people process error signals differently. Some people are more easily given to top-down processing than others—from the extreme example of patients with schizophrenia, whose disturbed dopamine transduction contribute to delusions and hallucinations,³⁷ to highly hypnotizable subjects, who appear able to suppress error signalling and upregulate top-down processing in the presence of certain social and material cues.³⁸

34 See Malafouris, *How Things Shape the Mind*.

35 Clark, 'Whatever Next?', 195.

36 Ibid.

37 Corlett, Frith, and Fletcher, 'From Drugs to Deprivation'; Fletcher and Frith, 'Perceiving is Believing'.

38 See the discussion in Taves, *Revelatory Events*, chapter eleven.

How can these insights help us understand kataphatic practices in which practitioners seek to interact directly with what they consider to be a spiritual world? First, they help us distinguish four generic features of any learning process: internalization of conceptual frames, the regulation of attention, the use of “designer environments”, and uneven advantages depending on individual cognitive and personality differences (i.e., “talent”). Under each of these generic categories we can point to specific features relevant to kataphatic practice: conceptual knowledge about different kinds of experiences (event schemata); attentional practices focussed on internal mental and bodily cues; material objects and environments that hamper error monitoring and facilitate top-down processing relative to specific event schemata; and a selective advantage for personality traits associated with heightened mental imagery vividness and/or a top-down processing style.

At its base, any successful kataphatic practice must instil a new set of expectations (priors) that allow for certain experiences to be generated and recognized at all. These expectations must not only be about individual percepts, but must provide *event models* that predict *sequences* of percepts, attribute causal and intentional relations between sequences, and allow them to be integrated within the person’s life story.³⁹ Event models will, for example, allow the practitioner to recognize that a certain unfolding of images is a “vision” and not a “daydream”, or that an internal voice is that of a spirit and not just one’s own thoughts. *Event schemata* are a significant part of such event models: Schematic knowledge of specific *types* of events is actively used to predict what will happen next. To be able to do this we form separate categories of events in semantic memory, which allow us to distinguish different types of events (e.g. visions and daydreams) from each other, enabling us to infer the likely causes behind what happens, interpret its significance, and take appropriate motor actions based on prior expectations.

Successful kataphatic practices must provide event schemata for internally generated imagery, which should typically be related to a broader conceptual structure that makes the event relevant to the person experiencing it and suggestive of specific courses of action. For example, an event schema for “talking with an angel” will recognize certain bodily, perceptual, and mental imagery cues as indicative of that event presently occurring (e.g., making it possible to discern a vision from a dream on the one hand, and from talking with a normal person on the other). It will, however, also connect these cues

39 For the role of event models and event schemata in understanding “religious” experiences, see Taves and Asprey, ‘Experience as Event’.

and images to a broader structure of beliefs about “angels”, which, in turn, might elicit actions such as testing that the angel was not a demon in disguise, and taking appropriate actions based on the result.

In addition to these conceptual aspects involved with learning and using event schemata, there is an indispensable *practical* component to the establishment of event models. We should expect to find patterned practices that draw attention to internal imagery and sensory cues, manipulate imagery through visualization, mental rotation, or the simulation of situations, and link these mental representations to the event schemata that categorise and explain what is happening. Such practices would, effectively, use the conceptually learned expectations about certain experiential categories to try and predict the stream of internal sensations. Top-down perceptual models are rerouted in order to make sense of “noisy” signals arising inside the nervous system itself—leading to perception-like experiences when they, through an effortful shift in attention, succeed. Moreover, we would expect that such tasks take place in environments that impede the normal error monitoring process and upregulate top-down processing. Examples of impeded error monitoring include the removal of noisy stimuli, not only through the use of secluded, quiet, and dimly lit locations, but also by the introduction of stimuli that support specific imagery. Examples of inciting top-down processing may also include hypnotic inductions (e.g., through the presence of charismatic teachers or even “charismatic objects”),⁴⁰ or the use of drugs and sensory deprivation as aides to the exercise.⁴¹ More importantly, though, since mental imagery ability correlates positively with motor-action skills,⁴² we should expect that kataphatic practices not merely encourage practitioners to sit in silence, but embed the representational content (i.e., specific imagery that is to be visualized and generated internally) in embodied action sequences that provides sensory-motor engagement with it. In other words, we should expect to find a *ritualization* of imagery running parallel to focused visualization exercises.

Related to special locations and practices, we should also expect kataphatic practices to create a whole material culture for themselves, an inventory of objects, (physical) images, symbols, and architectural designs that support the practice. It is not hard to think of examples in the context of religious

40 For the effect of charisma on top-down processing, see Schjoedt, Stødkilde-Jørgensen, Geertz, and Roepstorff, ‘The Power of Charisma’. On charismatic objects, see Taves, ‘Non-Ordinary Powers’.

41 For an example of this recommendation in a contemporary primary source, see Carroll, *Psychonaut*, 147–150.

42 See Isaac and Marks, ‘Individual Differences in Mental Imagery Experience’, 486–493.

TABLE 2 *Four components of kataphatic practices*

| Generic aspects | Individual abilities | Conceptual frame | Attention regulation | Designer environments |
|--|--|--|---|--|
| Specific features of kataphatic practice | Absorption, positive schizotypy, hypnotisability, athletic ability | Event schemata of spiritual experiences related to internal sensory cues | Shift of attention to sensations, shift to top-down processing, impeding error monitoring from sensory stream | Designer stimuli supporting desired representations, material anchors of concepts, architectural designs favouring contemplation |

practices, which are usually rich in pageantry that stimulates the practitioner's sensorium. Examples include individual objects that might work as "material anchors" for conceptual blends relevant to the practice⁴³—such as when a crucifix suggests the entire range of emotional imagery associated with the passion of the Christ, or a specific incense is associated with a particular event, concept, or emotion.⁴⁴ Moreover, entire architectural designs can be produced that minimize noisy stimuli and encourage top-down processing. Monasteries are excellent examples of this, typically providing space for isolation, absence of distractions, and a specialized décor that systematically directs attention to specific representational concerns.

Finally, since imagery ability is unevenly distributed in the population, we might also hypothesize that kataphatic practices tend to recruit certain types of individuals, or that people with certain personality dispositions are more likely to remain once they have taken up the practice. Based on what we know from previous studies, absorption, hypnotisability, fantasy proneness, and positive schizotypy may all be expected predictors of successful involvement with these practices.⁴⁵ The literature also suggests a connection between body con-

43 On conceptual blends and material anchors, see especially Fauconnier and Turner, *The Way We Think*, 195–214; Hutchins, 'Material Anchors for Conceptual Blends'; Malafouris, *How Things Shape the Mind*, 103–106. See also Timalisina, *Tantric Visual Culture*.

44 For examples of the latter, see e.g. Ashbrook Harvey, *Scenting Salvation*.

45 Interestingly, there is some psychological evidence of a correlation between schizotypy, absorption, and related personality factors (like thin boundaries and magical thinking) and involvement in new age beliefs and practices. See e.g. Farias and Granqvist, 'The Psychology of the New Age'; Farias, Underwood, and Claridge, 'Unusual but Sound Minds'.

trol and imagery ability (athletes are good visualizers while the clumsy are not), which may put further constraints on whom we expect to excel in a kataphatic environment, and what physical activities they might be doing when not meditating. For example, mastery of complex sensory-motoric scripts such as a dance or a martial art may be particularly advantageous to enhanced mental imagery.

5 Historical Evidence of Inner Sense Cultivation: A Magician Learns to Fly

How may all of this help advance our understanding of esoteric uses of the imagination? In this final section I will illustrate the usefulness of the predictive coding framework for the study of kataphatic religious practice by applying it to astral travel in the context of Golden Dawn-style ritual magic. I choose this case, because astral travel is a particularly well-documented form of kataphatic practice that allows us to base the analysis on instruction material as well as first-person accounts and contextual data. While my main focus is on how the predictive coding-based theory of kataphatic practice sketched above is helpful for historical research on esotericism, I will also suggest ways to integrate experimental approaches into the esotericism scholar's toolbox.

Astral travel is one of the most influential experiential categories that emerged from the late nineteenth-century "occult revival".⁴⁶ The basic notion is that we possess a number of subtle bodies in addition to the physical body, and that some of these can be temporarily separated from the material body and travel to other locations and realms.⁴⁷ Organizations such as the early Theosophical Society and the Hermetic Brotherhood of Luxor developed practices for astral travel, while the Society for Psychical Research got interested in studying it as a paranormal phenomenon. It also became central to the ritual magical tradition emerging from the Hermetic Order of the Golden Dawn in the 1890s,⁴⁸ and astral travel remains essential to Western magical groups today.⁴⁹ Modern magicians have produced a considerable amount of training manuals as well as assessment criteria for determining when "genuine" astral experience has been

46 For the historical development of the concept, see Deveney, 'Astral Projection or Liberation of the Double and the Work of the Early Theosophical Society'.

47 On the development of "subtle body" doctrines in the occultist context, see Asprem, 'Pondering Imponderables'.

48 See especially Owen, *The Place of Enchantment*.

49 See Asprem, 'Contemporary Ritual Magic'.

achieved. This instruction material is essential for reconstructing the learning process involved with cultivating “astral skill”. Before assessing this evidence, however, it may be useful to look at how an already trained magician would induce such experiences.

5.1 *Inducing Astral Experience: Example from a G.D. Instruction*

The following instruction was written by Elaine Simpson and Florence Farr (the famous actress) in 1892. Aimed at initiates who had already gone through the order’s elaborate training programme, it exemplifies a method for inducing “astral visions”. In brackets I have placed tags that indicate how relevant factors of the prediction model are woven into the procedure:

Secure for an hour or for longer absolute freedom from interruption [*reduce error signals*]. Then alone, or with one or two Adepts, enter the vault, or a private chamber [*designer environment*]. Remain in silence and contemplation for several minutes [*attention regulation, shift to top-down processing*]. Rise, and perform the Qabalistic Cross and prayer [*expectations/priors activated in motoric action-schema*]. Then proceed to contemplation of some object, say a Tarot Trump [*material anchor, designed stimulus*]: either by placing it before you and gazing at it, until you seem to see into it; or by placing it against your forehead or elsewhere, and then keeping the eyes closed; in this case you should have given previous study to the Card, as to its symbolism, colouring, analogies, etc. [*activate internal models of esoteric imagery*]. In either case you should then deeply sink into the abstract ideal of the card [*top-down processing*]; being in entire indifference to your surroundings [*error signals down-regulated*]. If the mind wanders to anything disconnected with the card, no beginner will succeed in seeing anything spiritually [*attention to imagery, executive control*]. Consider all the symbolism of the Tarot Card, then all that is implied by its letters, number, and situation, and paths connected therewith ... and then the vision may pass over you.⁵⁰

The instruction requires the environment to be controlled to minimize random noise that might induce error signals and turn the mind to bottom-up processing. Ideally, the Golden Dawn “vault” should be used—this refers to a purpose-built ritual chamber in the order’s Isis-Urania temple in London, in which the walls and ceiling were saturated with salient esoteric symbols,

50 Farr and Simpson, Flying Roll IV, in King, *Astral Projection*, 71.

shapes, and colours that initiates would have already internalized. Internalized representations (both conceptual and imagery based) are evoked from and stabilized by material anchors (like tarot trumps). Ritualized motor-schemata are performed in conjunction with the practice. Patterned practice, prior conceptual study, material objects, and architectural designs all come together in the process of induction.

The recommendation to induce visions by staring at a physical object deserves further attention as it gives clues to a special technique for deploying designer stimuli. Staring at an object for a prolonged period of time before closing one's eyes will generate an *afterimage*, a delayed sensory signal from the optic nerve caused by the fatiguing of photoreceptor cells in the retina.⁵¹ Even after eyes have been shut, the retina continues to produce a sensory signal that the visual cortex will attempt to explain by proposing various perceptual hypotheses. If the subject's internal models successfully make sense of the residual upstream signal, that should result in particularly realistic imagery that comes close to regular perception.

Evidence that the G.D. founders were deliberately using afterimage effects to trigger visionary experiences is provided by a closer look at the order's material culture, particularly their use of so-called "flash cards" drawn in "complementary" colours (e.g., a red symbol on a surface of light green).⁵² The eye's receptor cells for colours (cone cells) come in three types: red, green, and blue. Fatiguing these colour receptors by overexposing them to a figure in one of the three colours creates powerful afterimages of that figure in the colour *complementary* to the one used in the stimulus. For example, when the "red" cells are overstimulated by staring at a red triangle for 30 seconds, cone cells coding for red in the triangular area will be fatigued. The brain, however, will not interpret this simply as an absence of red, but as *presence of green and blue* (the two other, still "active" cone cell types) in the affected area, which, together, create cyan—

51 Gersztenkorn and Lee, 'Palinopsia Revamped', 2. But cf. Shimojo, Kamitani, and Nishida, 'Afterimage of Perceptually Filled-In Surface'.

52 See Regardie, *The Golden Dawn*, 479. "Complementarity" is, however, a theory-dependent term. The Golden Dawn usage is derived from the old "red-yellow-blue" (RYB) theory of the primary colours, which, at least from the scientific viewpoint, has long since been replaced by the "red-green-blue" (RGB) theory built from our knowledge of how colours are produced in the (human) eye. Interestingly, the effect of this is that the Golden Dawn symbols based on the modern primary colours (e.g., red and green) create a much stronger effect than the ones using "complementary" colours from the extended RYB colour wheel (e.g., blue and orange, yellow and violet).

the complementary colour of red.⁵³ While the red cells are fatigued, then, the eye will be producing a signal that the brain interprets as a cyan triangle.

Given the primary and complementary colours' power to produce particularly strong afterimage effects it is little surprise that the mastermind behind the G.D. system, Samuel Liddell MacGregor Mathers, advised his fellow initiates to start visualization practices not just with any kind of external symbol, but with 'Tablets and Telemas ... made in Flashing Colours'.⁵⁴ These "flashing" colours include certain combinations, such as green and red, which are primary colours with cone cells capable of being exhausted by stimulation. The combination of red and green, then, is particularly good at creating the intended "flashing" effect as they fatigue both red and green cones in adjacent areas of the eye, producing an intense combination of complementary afterimages of cyan and magenta. As for the practitioner's own interpretation of the effect: 'In such tablets', Mathers explained, 'do the elemental forces manifest most readily, and most students can perceive their flashes of radiance, which are, however, partly subjective and partly objective. They attract and reflect rays of light from the akashic plane enveloping them'.⁵⁵

5.2 *The Stepwise Progression of Astral Skill Cultivation*

While this tells us something about the techniques used to evoke visualisations, practitioners were supposed to have already undergone a crucial step-wise training process that would have tweaked "prior probabilities" in conceptual, perceptual, and body-representational domains. The institutional structure of the G.D. was organised around a progressive training ladder: its initiation system tied each degree to specific learning goals, progressing from the conceptual toward the practical and self-transformational. The programme can be divided into three steps: 1) Internalization of esoteric concepts, representations, and event schemata; 2) practice of meditative techniques focused on attention, bodily posture, concentration, and mental imagery; 3) development of new self-representations (self-models).

5.3 *Step One: Concepts, Representations, Schemata*

At the bottom of the training ladder, students were introduced to a large body of esoteric concepts, embedded in discrete symbolic systems and sensory

53 For an accessible demonstration, see Wolfe, 'Complementary Colours, After-Images, Retinal Fatigue, Colour Mixing and Contrast Sensitivity'.

54 Mathers, Flying Roll XI, King, *Astral Projection*, 77.

55 Ibid.

domains (colours, shapes, odours, etc.).⁵⁶ They were taught associative techniques that relate these concepts in a vast web of correspondences. This implies that *prior beliefs* were tweaked so that the student could not only produce internal models of the concepts, but also “match up” the concepts with a broad variety of sensory stimuli. For example, thinking of “victory” should activate the seventh sefirot *netzach*, “predict” the number seven, the colour green, emeralds, roses, and the planet Venus.⁵⁷ These expectancies would shape how the student interacted with the world in a patterned, associative, and self-reinforcing way, shifting their attention to specific stimuli in accordance with top-down expectations. It would also lay the foundation for mental imagery exercises of the type we saw above. Contemplation in an environment with reduced sensory input (e.g. meditation with eyes closed) would enable the trained mind to spontaneously generate the associated imagery. In a feedback between top-down internal models, environmental stimuli, and motor actions, the blend would allow one to deploy relevant external imagery, colour symbolism, incenses, or objects in order to create a cognitive niche appropriate for inducing astral experiences.

Importantly, students were also taught *event schemata* that would allow the initiate to set aside and identify specific events as being instances of “clairvoyance”, “astral vision”, or “astral travel”, and to distinguish these from “imagination” and “fancy”.⁵⁸ One instruction explicitly said that “clairvoyance” or “skrying” must begin in “imagination”, clarifying that ‘Imagination must be distinguished from Fancy—from mere roving thoughts, or empty visions.’⁵⁹ Practitioners were asked to pay attention to the *vividness* of internal sensory impressions in order to differentiate.⁶⁰ Another instruction explained that clairvoyance, astral travel, and ‘rising on the planes’ are three ‘stages passing one into the other’, instructing the student to ‘[b]egin with simple Clairvoyance, and then pass to the other states.’⁶¹ These instructions, detailed and often accompanied with examples, provide experiential categories (i.e., schemata) that allow

56 For the invention of this correspondence system, see Asprem, ‘Kabbalah Recreata’.

57 This example is based on the correspondences in Crowley’s elaborate tables in *Liber 777* (first published 1909). Exact correspondences differ somewhat between authors, but this is of no consequence to the present argument.

58 For an analysis of the concept of imagination in key G.D. sources and its relation to historical precursors, see Plaisance, ‘Magic Made Modern?’, 165–174.

59 W.W. Westcott, *Flying Roll v*; in King, *Astral Projection*, 51.

60 *Ibid.*, 87.

61 *Flying Roll xi*, issued on April 9, 1893. See King, *Astral Projection*, 75–83.

the student to parse their experience into discrete events, attribute value and significance to them, and predict how a specific event should unfold.

5.4 *Step Two: Attention to Bodily Processes and Mental Imagery*

The second stage in the cultivation process involves psycho-physiological techniques for altering one's attention to mental imagery and somatic sensory signals. The best illustration of this training process is found in Aleister Crowley's instructions. In an innovation on the original G.D. system, Crowley advised his students to obtain 'a fair mastery' of three yogic techniques before venturing on to the astral plane: posture (*asana*), control of breath (*pranayama*), and discipline of thought (*dharana*).⁶² Mastering postures and regulating one's breath in slow and extended cycles involve the modulation of what cognitive scientists call *interoception*, i.e., the perception of the body's physiological states, including its autonomic functions (e.g. pulse, digestion, breath).⁶³ Research suggests that predictive coding of interoceptive processes (i.e., the brain's automatic modelling of the body's states) plays a big role in our phenomenal feeling of selfhood: Interfering with these processes (e.g., manipulating interoception of heartbeat and breath) has been shown to trigger profound alterations to the experience of self, including the sense of presence and out-of-body experiences.⁶⁴ Indeed, Crowley notes with regard to *pranayama* that '[v]arious remarkable phenomena will very probably occur during these practices', insisting that these 'must be carefully analysed and recorded'.⁶⁵ Such experiences may be important for creating new *self-models*, which I will say more about later.

Meanwhile, the practice of *dharana* (thought control) is directly related to the cultivation of mental imagery. Crowley's instruction in *dharana* clearly shows how the student must progress from a focus on simple mental images, which are to be expanded on and manipulated as the task advances. Here is an example that starts with the "tattvas"⁶⁶ introduced by the G.D.:

62 The emphasis on yoga is a crucial innovation on Crowley's part and would not have been part of Golden Dawn training in the 1890s. It does, however, follow a natural progression from the original program. On Crowley's yoga, see Djurdjevic, *India and the Occult*, 35–59.

63 Craig, 'Interoception'.

64 Seth, Suzuki, and Critchley, 'An Interoceptive Predictive Coding Model of Conscious Presence'; Seth, 'Interoceptive Inference, Emotion, and the Embodied Self'.

65 Crowley, 'Liber O vel Manus et Sagittae', 28.

66 The founders of the G.D. appear to have taken this concept from a series of essays by Rama Prasad, first published in *The Theosophist* and reissued as the book *Nature's Finer Forces*:

1. Constrain the mind to concentrate itself upon a single simple object imagined. The five *tatwas* are useful for this purpose; they are: a black oval; a blue disk; a silver crescent; a yellow square; a red triangle.
2. Proceed to combinations of simple objects; *e.g.*, a black oval within a yellow square, and so on.
3. Proceed to simple moving objects, such as a pendulum swinging, a wheel revolving, etc. ...
4. Proceed to combinations of moving objects, *e.g.*, a piston rising and falling while a pendulum is swinging. The relation between the two movements should be varied in different experiments.⁶⁷

In what follows, the student is asked to extend the inner sensorium to other modalities, such as ‘the taste of chocolate, the smell of roses, the feeling of velvet, the sound of a waterfall, or the ticking of a watch’, and finally to generate entire internal landscapes, populated with living beings capable of independent actions.⁶⁸ The student is ensured that diligent exercise will lead to more vivid and lifelike experiences.⁶⁹ The successful student would not only need to generate ever more specific top-down predictions of sensory content, but would also have to modulate the error monitoring process in such a way that the predictions override the information coming from the senses, essentially creating “false positives” further down the hierarchy. The more vivid the mental imagery, the closer to the sensory periphery these models will have succeeded in predicting activity.

These remarks emphasize the predictive coding model’s ability to take us beyond the interpretive drift theory and provide empirically testable hypotheses about *physiological mechanisms* that undergird the process of inner sense cultivation. For example, vivid visual imagery should be accompanied by measurable activity in the eye, on a par with the oculomotoric activity we see during REM sleep.⁷⁰ Similarly, an internally confirmed tactile hypothesis, such as seeming to feel that the temperature is falling while it is in fact stable, would be associated with measurable changes in electrodermal activity, and should be accompanied by appropriate autonomic responses such as shivering

The Science of Breath in 1889. In the G.D. version, these are symbolic representations of the four elements plus the element of spirit, frequently employed for the purpose of visualisation.

67 Crowley, ‘Liber E vel Exercitiorum’, 29.

68 Ibid., 29–30.

69 Ibid.

70 See *e.g.* Hobson and Friston, ‘Waking and Dreaming Consciousness’.

or goose bumps. Specifying such physiological proxies means that we can, to some degree, design objective measurements of the practitioners' own criteria for success or failure in cultivation practices such as Crowley's.⁷¹

5.5 *Step Three: Rewiring the Self*

Practice manuals and ethnographic data⁷² both suggest that the multimodal "visions" we have considered so far can be developed further to produce an immersive experience of "astral travel". Here, the practitioner seems to be moving around in a subjectively realistic, internally generated virtual reality. The key to this third step in the cultivation process is, I suggest, tinkering with top-down predictions associated with the experience of selfhood and body-ownership.⁷³ The concepts of "body-image" and "body-schema",⁷⁴ along with what Thomas Metzinger calls "self models",⁷⁵ are helpful here. All can be understood in predictive coding terms,⁷⁶ and I suggest that we see evidence of direct manipulations of self-models in the cultivation of astral skill.

Following Metzinger, there is no "substantial self", only a complex process by which the brain creates models that seek to map its situation and regulate its activities. Self-modelling happens on a number of interlaced levels, from the basic modelling of motoric, feedback oriented interaction with an environment (which humans share with primitive organisms and advanced robots), to the conscious, "phenomenal self-model" that simulates global properties of the body (including social relationships, biography, identity, and available future scenarios) and makes them available for conscious resource allocation.⁷⁷ I am suggesting that astral travel in the G.D. tradition involves manipulation of the phenomenal self-modelling process by working on the more basic body-image and body-schemas.

71 This is, however, not to deny the serious experimental difficulties posed by these practices. See especially Andersen, Nielbo, and Schjoedt, 'Old Problems Die Hard'.

72 See especially Rinde, 'Swooping Around in Outer Space'.

73 For a critical discussion of the extremely slippery concept of "the self", see Shaun Gallagher's 'Introduction: A Diversity of Selves' in the *Oxford Handbook of the Self* (edited by idem).

74 I rely on the conceptual distinction between these terms stipulated by Gallagher and Coles, 'Body Image and Body Schema in a Deafferented Subject', 371–372. For a discussion, see Gallagher, *How the Body Shapes the Mind*, 17–39.

75 Metzinger, *Being No One*; cf. idem, 'Self Models'.

76 For a particularly promising step in this direction, see Seth, 'Interoceptive Inference, Emotion, and the Embodied Self'.

77 Metzinger, 'Self Models'.

The instruction manuals provide several different descriptions of how the transition from clairvoyance to astral travel is brought about: the order chief MacGregor Mathers spoke of “projecting” one’s subjectivity like a “ray” into the “mirror-like” imaginary world of clairvoyance;⁷⁸ another instruction talked of finding a “copy” of one’s own body in the astral world and taking possession of it;⁷⁹ while Crowley emphasized the need to build a “body of light” in the imagination, which the practitioner then had to animate and discipline.⁸⁰

In all accounts, the astral travel experience is differentiated from clairvoyance by a transposition of the first-person perspective into the visualised scene, creating the immersive experience of moving around in an environment. Actions should involve the simulation of motoric movement from a first-person perspective. This includes representations of moving body parts (reaching, gesturing, walking), along with appropriate tactile, proprioceptive, and vestibular sensations of moving, falling, or flying. In short, this is about manipulating body and motor imagery.

Both the body-image (our mental representation of, and attitudes towards, our own body) and the mostly unconscious procedural knowledge of motor capacities, postures, and abilities that comprise the body-schemas are moulded in the feedback loop between top-down predictions, motivated actions, and bottom-up sensory feedback. They can therefore be manipulated and refashioned in the same way as other perceptual models.⁸¹ The practice of creating a “body of light” in imagination builds on the body-image system, potentially working with alterations across all of its three modalities (perceptual, conceptual, and affective): an idealized body is produced (body-image model), new conceptual structures are attached to it (e.g., the doctrine of multiple, separable bodies), while emotional attachments of awe, dignity, and fear responses are cultivated through the performance of astral rituals and protections from “astral dangers” through the simulation of symbols and magical weapons. The emphasis on *doing things* in the body of light emphasize that establishing specific body schemata through embodied action is a necessary prerequisite for learning astral travel. One must first learn to practice actions such as “the lesser banishing ritual of the pentagram” in the real world, before one can attempt to simulate the procedural schema in the *imagined* body.

78 Mathers in King, *Astral Projection*, 78–80.

79 Brodie-Innes in King, *Astral Projection*, 88–89.

80 Crowley, *Magick*, 243.

81 Gallagher and Coles, ‘Body Image and Body Schema in a Deafferented Subject’, 371–372.

5.6 *Learning to Fly: Accounting for the Disobedient Nature of the Astral Body*

All of this may, however, be easier said than done—as interviews with contemporary practitioners seem to demonstrate. In a recent MA thesis, Adrian Rinde spoke with Thelemic astral travellers who reportedly knew that they are supposed to “see” their limbs in high definition, but explained that in practice, it is usually a case of vaguely “feeling” or “knowing” that they are there.⁸² One practitioner explained that sometimes only part of the body is formulated: ‘I hadn’t been able to form the entire body, so it was a bit like, it was a condition of weightlessness, and ... it was me, my arms and my consciousness.’⁸³ The body-representation may also be difficult to control, as the same informant explained:

I’ve stood up, and I’ve walked across the floor. I feel that my body gets dragged in different directions, it is very hard to control, I fall through the floor, I swoop up through the roof. That kind of stuff. Then I feel that kind of my whole body ... the legs are there, the back, the torso is there, the arms are there, and the head and everything, in a way. But when I swoop out into outer space then it gets more metaphysical, floating around like a consciousness type of thing.⁸⁴

These difficulties in making the astral body do what it’s supposed to offer an interesting puzzle for our explanatory framework. We all possess relatively stable mental representations of our own bodies and behavioural repertoires, which play essential functions in everyday cognition. Under certain unusual circumstances, these self models may present as bizarre phenomena, such as heautoscopy⁸⁵ and autoscopic hallucinations.⁸⁶ Successful astral travel likely depends on mimicking some of these body- and self-hallucinations in a manner that retains a degree of executive control. The variable successes that prac-

82 E.g. Rinde, *Swooping*, Appendix, 33–34.

83 Ibid., Appendix, 23.

84 Ibid., Appendix, 60.

85 Seeing one’s own body in the perceptual field.

86 Viewing the environment from some place outside of the body. For research on, and experimental induction of, these phenomena, see e.g. Blanke and Mohr, ‘Out-of-Body Experience, Heautoscopy, and Autoscopic Hallucinations of Neurological Origin’; Metzinger, ‘Why Are Out-of-Body Experiences Interesting for Philosophers?’; Cheyne and Girard, ‘The Body Unbound’; Braithwaite et al., ‘Cognitive Correlates of the Spontaneous Out-of-Body Experience (OBE) in the Psychologically Normal Population’.

titioners of astral travel report are easily accounted for when we view self-modelling in light of the predictive coding view of imagination. Having a realistic experience of an altered self hinges not only on learning top-down models of body-imagery and action schemas, but also on the successful *matching up* of these models with a driving, bottom-up sensory stream. Phenomenal descriptions of “knowing” that one’s hands are there but not really “seeing” them suggests a failure to subdue error signals from the sensory periphery. The more successfully they are suppressed at lower levels, the more vivid, clear, and real an experience feels.

6 Concluding Remarks for Future Research

I have argued that a predictive coding theory that sees mental imagery as part of the brain’s strategy for perceiving and navigating in the world provides us with useful insights about how kataphatic practices work, and why such practices are organized the way they are. By suggesting specific neurocognitive mechanisms for such practices, these insights add a properly explanatory dimension to the interpretive drift theory, and ultimately take us beyond it. In concluding, I provide a list of what I take to be the most promising implications for future work on kataphatic practice. Most importantly, the model suggested here provides an overarching framework that binds together historical and experimental approaches in a fruitful way, by connecting historically observable features with physiological models of how the brain processes sensory information. By doing this, it also provides a basis for cross-historical and cross-cultural comparisons of imagery-based, kataphatic practice.⁸⁷

Summarized, there are three main takeaways:

1. Historians have much better access to cognitive processes than they usually assume, due to the central role of patterned practice and material culture in the cultivation of mental imagery. It is, however, necessary to think differently about the selection and use of source material:
 - *Patterned practices* can be traced through a combination of first- and third-person descriptions in diaries or field notes, but it is crucial to correlate these with second person instruction material used by practitioners. Careful analysis of instruction material yields some of the

⁸⁷ Following the call for analogical comparisons in Asprem, ‘Beyond the West’.

- most interesting insights, and can be triangulated with ethnographic and semi-experimental studies of contemporary practitioners.
- *Material culture* is an intrinsic part of the cognitive process. The study of physical imagery, objects, architecture, colour use, smell, etc., are sources of evidence that historians can access to reconstruct practitioners' patterned engagements with designer stimuli.
2. The *generic aspects* of kataphatic practice provide us with a useful construct for doing comparative research between traditions, cultures, and historical periods. Such comparisons could help us refine the relationship between the postulated causal factors of effective kataphatic practice, namely: recruitment of talented individuals, presence and extent of conceptual training, attentional practice focused on internal imagery and sensory cues, and (extent of) deployment of designer environments. Correlating these factors with how successful a practice is (measured, for example, in number of practitioners, membership retention, or group longevity) could help us establish some optimality principles for kataphatic practice.⁸⁸
 3. Predictive coding specifies a number of empirically available proxies or markers of successful (according to practitioner criteria) inner sense cultivation that can be exploited by controlled experimental studies.⁸⁹ While it must be acknowledged that experimentalists will face great challenges when applying measures designed for the study of sensory pathways to internally generated imagery,⁹⁰ I suggest that existing research on hallucinations during hypnosis may provide a promising basis for experimental approaches to kataphatic practices.⁹¹ Possibilities include:
 - Employing skin conduction response (SCR) during kataphatic practice in order to measure correlations of self-reported internal sen-

88 In analogy with the notion of cognitive optimality in religious representations and rituals. On this, see e.g. Boyer, *Religion Explained*; Whitehouse, *Modes of Religiosity*; and Hammer, 'Cognitively Optimal Religiosity' for application to an esoteric context.

89 For an inspiring recent attempt, see Andersen et al., 'Mystical Experience in the Lab'.

90 For discussions of experimental challenges, see especially Andersen et al., "Old Problems Die Hard"; Nielbo et al., "Segmentation and Cultural Modulation in Perception of Internal Events are Not Trivial Matters"; Aspren and Taves, "Connecting Events", 41–43.

91 E.g. Barber and Coules, 'Electrical Skin Conductance and Galvanic Skin Response during "Hypnosis"'; Spiegel et al., 'Hypnotic Hallucination Alters Evoked Potentials'; Kallio et al., 'The MMN Amplitude Increases in Hypnosis'; Jamieson et al., 'Changes in Mismatch Negativity across Pre-Hypnosis, Hypnosis and Post-Hypnosis Conditions'. For attempts to integrate hypnosis/suggestion research in the study of "mystical" experience, see Andersen et al., 'Mystical Experience in the Lab'.

sory vividness with altered electrodermal conductivity (“arousal”).⁹² For example, SCR could be combined with “event model analysis” of self-reported narratives, with the expectation of finding correlations between, e.g., startle reflexes (measured by the SCR) and striking sub-event shifts (coded in the narratives) in experienced practitioners.⁹³ Results would be expected to mirror the physiological signatures observed in highly-hypnotizable subjects experiencing hypnotically induced hallucinations.

- There is evidence that hypnotic induction alters somatosensory evoked potentials (SEP) indicating a shift to top-down processing.⁹⁴ Studies of auditory mismatch negativity (MMN) during hypnosis has similarly found evidence of altered sensory processing at a peripheral and pre-attentive level.⁹⁵ One might predict that the skilled kataphatic practitioner would, much like highly-hypnotizable subjects in hypnotic conditions, suppress evoked somatosensory responses and show altered processing of deviant auditory stimuli.⁹⁶ More speculatively, one might also expect differential results between pairings of stimulus types (e.g., visual [such as beaming a light on closed eyelids], auditory, somatic) and different mental imagery conditions (e.g., focus on visual, auditory, or tactile imagery). In experiments of this type one might also want to use an “intervention design”, in which participants receive different types of kataphatic training (for example, with/without conceptual frameworks, with/without designer environments) and display different levels of “talent” (e.g., low/high hypnotisability, low/high absorption).

Each of these points has the potential of bringing our current understanding of the practical and experiential dimensions of esotericism, and of religion more broadly, many steps forward. Yet, in my opinion, the real promise lies in the creation of a unified theoretical framework that effectively allows us to transfer research questions from historical to experimental settings, and draw on evi-

92 See e.g. Barber and Coules, ‘Electrical Skin Conductance’.

93 For event model analysis, see Taves and Asprem, ‘Experience as Event’; Asprem and Taves, ‘Event Model Analysis’.

94 Spiegel et al., ‘Hypnotic Hallucination Alters Evoked Potentials’.

95 Kallio et al., ‘The MMN Amplitude Increases in Hypnosis’; Jamieson et al., ‘Changes in Mismatch Negativity across Pre-Hypnosis, Hypnosis and Post-Hypnosis Conditions’.

96 See also van Elk, ‘An EEG Study of the Effects of Induced Spiritual Experiences on Somatosensory Processing and Sensory Suppression’.

dence from cognitive neuroscience to ground our historical analysis of textual and material sources. Hopefully, the examples discussed in the present article give an indication of what could be gained if such an integrative approach were to develop on a broader scale.

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