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Philosophy and Realistic Reflection

https://ojs.bilpub.com/index.php/prr

ARTICLE

Thought-Shaping, Reflection and the Refractive Element

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ABSTRACT

Is it possible to think beyond the structuring and directing influences of thought-shaping? Or, phrased differently, how can thought-shaping be genuinely free and creative? My response in this essay is that we must move beyond the idea of thought-shaping as mere awareness or critical reflection. As I show, the notion of reflection itself has raised some philosophical issues of its own. Notably issues surrounding the limits of reason, the effective presence of biases, and overreliance on the notion of historical experience as they were transmitted from Kant to Hegel are critically discussed, with the aim of identifying a new direction to think about reflection. The development of reflection is examined via the thought of Gadamer, mainly through his hermeneutic conception of experience. After discussing these issues, I develop the notion of refraction, expanding on the concept as it was developed by Bergson. I explain how refraction relies on the appreciation of difference, thereby reorienting the entire field of thinking and overcoming the limitations inherent in the notion of reflection. This differentiating feature turns refraction into a creative and generative process. Concluding, I discuss how refraction supports free thinking by appealing to the notion of creative piety and the embrace as well as usage of limitations in thinking.

Keywords: Thought-Shaping; Reflection; Post-Kantian Philosophy; Relativism; Cognition; Philosophical Hermeneutics; Refraction

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ARTICLE INFO
Received: 12 November 2024 | Revised: 7 December 2024 | Accepted: 12 December 2024 | Published Online: 16 December 2024
DOI: https://doi.org/10.55121/prr.v1i1.278

CITATION
Paans, O., 2024. Thought-Shaping, Reflection and the Refractive Element. Philosophy and Realistic Reflection. 1(1): 39–54. DOI: https://doi.org/10.55121/prr.v1i1.278

1. Introduction

To reflect is a capacity that many individuals possess. Curiously, while philosophy is often taken to be largely synonymous with reflection, the well-known online *Stanford Encyclopedia of Philosophy* (SEP) features no entry on this topic [1]. One would at least expect a voluminous literature, yet there is none to be found. Even while artworks like Rembrandt's 1632 *Philosopher in Meditation* or Rodin's 1904 *Le Penseur* reinforce the image of thinking as individual, introspective reflection, the notion itself has received scant systematic treatment by many Western philosophers. This absence is possibly symbolized by the obvious gap in the SEP.

If reflection in the everyday sense is mentioned in philosophical discourse, it is often under the heading of critical thinking (i.e., to reflect on a certain topic) or else under the rubric of meditation (i.e., introspective thinking). In turn, this notion was inherited from the Christian theological tradition. Theologians like St. Augustine in the *Confessions*, St. Anselm in the *Proslogion* and a veritable tradition of Christian mysticism treated reflection as an inward-oriented state, framed as a moment of insight or silent communion with the divine.

Not all reflection is philosophy, just as all philosophy is not necessarily reflection. Apart from whether reflection and philosophy are synonymous or not, we might raise a question about the *effectiveness of reflective thought* itself. While the necessity of reflection seems undisputable, there are certainly grounds to question its efficacy as an instrument for thinking.

Elsewhere, I have worked out the theory of thought-shaping (TTS). The *theory of thought-shapers* about human thinking says that "our embodied human thinking processes are either, (a) shaped negatively by mechanical, constrictive thought-shapers, or (b) shaped positively by organic, generative thought-shapers" [2]. As has been recognized by a respectable pedigree of philosophers, our thoughts do not emerge from a primal substrate as purely rational assessments about real-world affairs. Instead, they emerge from a thoroughly embodied and embedded locus in the manifestly real world. Whether we invoke biochemical, immunological, mental or cultural factors that shape our thoughts, we can in the end only conclude that such factors are bodily and mentally mediated. They give rise to image-like entities that have a topological and processual nature, called *thought-shapers.*

Thought-shapers are mental representations that include analogies, images, perceptual schemata, stereotypes and symbols, and which shape embodied human thinking processes. Thought-shapers operate pre-consciously by structurally and schematically combining non-conceptual and conceptual contents. This pre-conscious (and therefore almost invisible) feature makes it hard to catch them "at work", as they actively shape conscious thought and disposition, while we are often only intermittently (or not at all) aware of them being active. As thought-shapers are mental representations with both topological and processual properties, we access them primarily through our conative and cognitive attitudes of imagination.

Thought-shaping is a continuous process, and that can be utilized in ways that are either advantageous and conducive to our well-being, or that can turn out to be constrictive and disadvantageous.

Before contemporary psychological research on biases and TTS, philosophical poststructuralism also analyzed the influence of cognitive mechanisms that determine how the world is categorized, and its order is construed. While volumes could be written about the methodology of poststructuralist thinkers like Jean-François Lyotard, Jean Baudrillard, Jacques Derrida and Gilles Deleuze, it suffices to note that they share a common interest with TTS, namely, to uncover and map formative influences on thinking. Yet, far from being just a poststructuralist or psychological critique of deforming influences on one's identity, TTS provides simultaneously a conceptual framework for philosophy as a *creative endeavor*.

Whereas the poststructuralist line of thinking led into paralyzing postmodern relativism and the "politics of fragmentation", TTS sought to avoid these nihilist and debilitating consequences by providing a constructive account of thought-shaping [3].

Thought-shapers can be analyzed as embedded entities themselves. Through reciprocal determination, they are defined by the environment they shape, forming an inextricable unity with it [4]. Thought-shaping creates a new cognitive item, *the shaped thought*, simultaneously expressing and modifying various features of the think-

ing subject's internal and external context. So, thought-shapers are causal, irreducibly normative and necessarily *external context-sensitive or indexical* (i.e., "embedded"). Therefore, they cannot be adequately or fully characterized apart from the external circumstances in which they arise, although they are not in any way reducible to or wholly determined by them.

Surveying this situation, we can identify three questions:

1. If TTS and poststructuralist thought are both interested in mapping and analyzing formative influences on thinking, do they not run the risk of falling prey to unconstrained relativism? If both strands of thought conclude that we cannot reflect beyond our preconceptions or biases, then how is free thinking even possible?

2. If reflection is "thinking about thinking", or at least the causally efficacious effect of higher-order thoughts on lower-order thoughts, do we not run the risk of setting up a mental "mirror palace" in which the same thoughts inflect and reinforce one another? Put differently: is reflection in that case not just conformation-bias-in-action since the same thoughts and notions are utilized repeatedly throughout successive reflective processes?

3. Given questions (1) and (2), how can thought-shapers be generative? Or, how can thinking be creative? If our preconceptions and biases undermine critical thinking, how are we able to think truly creatively to advance beyond the constraints they impose? Is an "escape from thinking by thinking" possible? Or, is changing your mind possible?

Thought-shaping and reflective thought are joined at the root: the very pathways that are either constricted or widened by thought-shaping are utilized in reflection. To some degree, this question has puzzled philosophers across the ages. Although the trappings of language are often held up as the culprit, I believe that trying to isolate a single factor responsible for trapping thinking in repetitious patterns is not the road to pursue.

1.1. Structure of the argument

What if we inverted the question and investigated what makes reflective thinking creative? If we succeed in doing so, we make some headway in understanding how we can break through cemented habits of thought. Could we glimpse the cognitive and affective mechanisms that widen our thinking? I suppose so, although I cannot lay claim to a comprehensive theory, merely to a few fundamental outlines.

To provide these outlines, I synoptically outline how the notion of reflection was conceived from Kant via Hegel to H.-G. Gadamer. This examination allows us to draw several methodological parallels between Hegelian dialectics and hermeneutic thought, demonstrating several problems with philosophy predicated on a naïve notion of reflection. My aim is not to provide a comprehensive history, but to show that "the philosophy of reflection" has been regarded as problematic in several important respects.

Subsequently, this discussion segues into Henri Bergson's notion of *refraction*, continuing into what I call "the refractive element", or an exploration of the *instance* where reflective thought and thought-shaping become properly creative. The notion of refraction is of more recent origin, yet if we recast the concept of reflection against its background, we can extend and improve our commonsense notion of what it means to reflect.

In the concluding section, I draw these lines together, arguing that TTS and the refractive element provide the conceptual framework to respond to the questions (1)–(3) introduced earlier.

2. Reflection and its Limits: A Historical Sketch

As an exception in the Western canon, one of the most sustained and multifaceted treatments of reflection is provided by Immanuel Kant [5]. Uncharacteristically, the concept is treated in a sprawling, protean manner. Scattered throughout his writings on anthropology, Kant provides multiple definitions, some of which bear directly on (artistic) creativity.①

First, reflection is posited as an *evaluating* state of mind in which we investigate the conditions under which we arrive at concepts [6]. This evaluation is introspective: it

① I cite Kant's works in parentheses. The citations include an abbreviation of the English title and the corresponding volume and page numbers in the standard "Akademie" edition of Kant's works: *Kants gesammelte Schriften*, edited by the Königliche Preussischen (now Deutschen) Akademie der Wissenschaften (Berlin: G. Reimer [now de Gruyter], 1902—). The English translations included here are cited from the Cambridge University edition of Kant's works.

consists in taking stock of the circumstances under which a concept was defined, tracing out the influences that were operative during its definition. If I were to perceive X under circumstance Y and form a corresponding concept Z of it, we might reasonably conjecture that the perceptual circumstances Y under which concept Z was formed played some efficacious role in its constitution. So, reflection is cast as a genealogical activity, tracing out the gestation of a concept.

Kant noted that reflective processes are gradual when he stated that "[w]e must explain and trace judgments which arise from obscure representations" [7]. Representations that are initially half-formed (and thus obscure) give rise to preliminary judgments and speculations. The primary philosophical task is not only to obtain "clear and distinct ideas", but equally to evaluate of the process through which they develop. This includes forms of self-awareness and critical vigilance towards constrictive thought-shaping, biases or fallacious reasoning.

This suggestion somewhat pre-empts the developmental theory of cognition and cultural self-awareness that Hegel attempted in the *Phenomenology* and his *Logic.* The idea of conceptual development already played a role during Kant's own life in the establishment of taxonomic systems in the life sciences [8]. The core thought is that a concept (*Begriff*) has a clear genealogical history, so that we can examine its validity by analysing its gestation. Reflection develops the contents of a concept by situating it in a broader genealogy of experience.

Reflection as a process of gestation acquires additional depth when Kant positions reflection as a *preconscious feedback loop* coordinating physical and mental dispositions with a given intention in real-time [9]. An example would be playing a musical instrument, where "mind and matter" must coordinate. As discussed, reflection involves a conscious and deliberative evaluation of the developmental history of arriving at concepts and thoughts. Simultaneously, reflection works in the opposite direction. This aspect is ingrained, embodied and preconscious. Or, it is automated to such a degree that it can be performed (almost) without conscious deliberation.

To render this process effective, we require a class of judgments that is pre-objective, open-ended and liable to further development. Indeed, Kant provides a description:

> *[P]reliminary judgments also belong to the obscure representations. Before an individual passes a judgment, which is determinate, he already passes in advance a preliminary judgment in obscurity. This leads him to search for something. For example, who searches for unknown lands, will not simply go to the sea, rather he judges beforehand. Each determinate judgment thus has a preliminary judgment* [10].

The term "preliminary judgment" (*Vorurteil*) may be somewhat misleading and might be more accurately rendered as "proto-judgment". Kant reserves the term "judgment" usually for statements that are logically well-formed, assertoric or determinate. Proto-judgments do not satisfy these conditions. Given Kant's emphasis on the gradual nature of reflection, there is no need for fully formed judgments early in the cognitive process.

Throughout the third *Critique*, the notion of the "reflecting judgment" echoes this commitment: it dynamically creates a frame of reference to deal with a singular object that does not fit into a rigid taxonomy. It oscillates between sense-making and creation, between description and speculation. Concepts are made possible by this oscillating movement between what is known or established and what is apparent or open-ended [11].

The reflecting judgement is a somewhat strange element in Kant's philosophy: in a philosophical system focused on the boundaries of sense and reason, it represents a possibility that the Kantian architecture of the mind is not closed after all.

In Hegel, the term philosophy of reflection (*Reflexionsphilosophie*) is mostly treated negatively [12,13]. Hegel was critical of Kant's attempt to provide a critique of human reason by means of reason. If Kant postulates a horizon dividing things-in-themselves and appearances, is this demarcation not itself a product of reason? By postulating a region beyond the horizon, reason limits itself, erecting an arbitrary structure of what it can and cannot know [14]. For Hegel, the notion of reflection represented the myth of the distanced observer surveying the possibilities of reason, while the idea of a horizon represented an untenable *Jenseitsphilosophie* or philosophy-of-the-beyond [15].

But if reason surveys its own workings, can we say that we achieved a deeper understanding of it – or are we caught in the mirror palace of the mind, as our questions above suggest? Hegel's solution was to postulate a process of moments in which reason becomes gradually acquainted with itself, dialectically working out its inner structure [16]. In the final instance, Absolute Spirit regards itself and grasps its own situatedness in the world

Hegel only partially escaped the predicament that he diagnosed. One of the most insidious features of Hegel's philosophy is that it integrates every objection levelled against it. It can easily accommodate the fact that it is in fact a "philosophy of reflection on reflection" by invoking reflection or self-consciousness (and even recognition) as one of the necessary moments of its fulfilment. From inside the Hegelian framework of thinking, its premises cannot be refuted. Its integrative character ceaselessly envelops and subdues all objections. We find ourselves in a similar predicament – as the three questions above indicate [17].

Yet, Hegel succeeded in effectuating a shift in thinking about reflective agency: instead of conceiving philosophy as mapping out the boundary conditions of human cognition, Hegel invokes the importance of experience in thought. Thinking is essentially an experiential process, with understanding as a result. Continuously, the mind posits its concepts (*Begriffe*) to deal with reality and with itself. The entire idea of science (*Wissenschaft*) is to investigate the unavoidable gap between reality and what concepts grasp and circumscribe. While concepts are "probes" to explore inner and outer reality, they necessarily fall short of what they describe. In the tension between the world and the description, experience unfolds [18].

Like Gadamer did after Hegel, invoking the notion of experience to escape the prison of reflection is in equal measure innovative and dubious. For Gadamer, the historical experience of understanding can be used to avoid the emphasis on reflective and indeed discursive thought. What he calls the "hard edge of positivity", driving a wedge between mind and world can be overcome not by situating the reflecting agent outside reality (as Kant had done), but by more deeply immersing oneself in it [19].

Gadamer draws on Husserlian phenomenology to show how experience is composed of the new and the recognized. A person who is experienced recognizes how to do things, how to act etc. But gaining experience is an essentially negative phenomenon: it consists in pushing and pulling the frontiers of what is correct or not; what works or not; it is thoroughly practical. Inherent in experience is its historical character: it integrates the past in a more-or-less continuous tapestry through which consciousness moves.

This historical movement is not only directed towards the past: not only do we integrate past experiences. As apprehension, they influence our thinking and orientation towards the future as well. Marcus Aurelius' acute observation that thoughts become "dyed" by thinking in the same patterns is one of the crucial cognitive mechanisms that makes experience (and thought-shaping) possible [20]. The apprentice who executes an action over and over again ingrains it in his body, so much so that it becomes an inextricable part of his self-experience. So, we can no longer think of experience as something that is "pasted onto" a receiving subject. Instead, the subject is constituted through experience. The experienced bricklayer cannot leave his experience home one day while bringing it to his job the day after.

From this embodied perspective, reflection is no longer a kind of distanced consideration. Instead, one is entangled and immersed in experience. As Hegel recognized, at a given point, experience *experiences* itself. In an ultimate reflexive loop, "substance becomes subject", whether an individual or historical subject. For Gadamer, this moment indicates the presence of "historically effectuated consciousness" (*wirkungsgeschichtliches Bewusstsein*) [21]. Only when our horizon of understanding fuses with the past, do we properly situate ourselves in a tradition or contexture of understanding. Only then do we fully glimpse our historical (or genealogical) situation as an object for investigation. Unfortunately, this is where Gadamer's argument falls exactly into the same trap as Hegel's: by singling out a given situation as an object, we cannot help but circumscribe it and once more assume the distanced, Archimedean viewpoint of reflection. Doing so, we slide back into the "philosophy of reflection". Once this happens, the specter of relativism rears its head again: are we not condemned to map out partial positions forever, wandering the labyrinth of possibilities in the reflective mirror palace?

Crucial is that Kant's transcendental subject, Hegel's dialectical understanding and Gadamer's historically situated subject all assume the "ideal viewer" surveying his or her own thinking from an external position – the position that *cannot* be assumed as it is itself a postulate of reason. Yet, if we deny this, and state that one *can* fully immerse oneself in experience, we get stuck in the endlessly reflective mirror palace. Either way, we end up with *reflexio ad infinitum*. Every time we attempt to break through its confines, we repeat the mistakes we sought to avoid.

We must observe that the manner of posing the question already leads into error: if reflection is defined as external observation of human reason, the totality of one's experience, or the properties of an individual experience, we set ourselves up for failure. We expect to gain access to a new domain of discursive understanding by means of reason itself. Reflection, as discussed, is often equated with conceptualization. As Kant and Hegel both realized, there is a generative moment in reflection that opens a broader field of insight – and that is not limited to either familiar notions or conceptual contents alone. The mistake was to absolutize this insight, as if one could move one rung up the "ontological ladder" and finally behold the entire field below.

This assumption was inherited from the reflective philosophy of the Greeks, transmitted via the "God's eye" viewpoint in Christian theology, and which was secularized in the Marquis de Laplace's *Mécanique Céleste* and 20th-century positivism alike. The entire thrust of Enlightenment objectivity was to put the sensible, immersed aspect of human cognition out of play. The eye of the omnipresent God fused with Cartesian doubt about the trustworthiness of the senses, as they were embodied, fluctuating and thus perspectival. Kant repeated the Cartesian gesture of attempting to secure the conditions of knowledge – largely ignoring the reflexive loop that it was reason itself setting its own limits.

That cognition has a reflexive aspect need not be denied. Gadamer's account of experience illustrates how mental and bodily events lead to a historically informed and situated understanding, assuming reflexivity throughout. We must, however, be realistic about our expectations of reflection. What it cannot deliver is an absolute insight into our own cognition, our thinking processes, or our experience, for reasons spelled out above. It can, however, open a new view of the world that is *neither* total *nor* relativistic. The distance of reflection is not absolute, but relative; not enduring, but instant-based. This brings us to Henri Bergson's treatment of *refraction*, as he noted this temporal aspect inherent in reflective thinking and opened up a way to foreground its refractive element.

3. The Refractive Element

Adopting analogical language is momentarily necessary to rethink reflection. The underlying movement of physical reflection requires a doubling, a mirroring of content appearing within a surface. The light reflected from a mirror results in a framed mirror image – in all visual and spatial aspects similar, yet appearing mirrored. It creates a distance, allowing for viewing it as a totality that is inaccessible to the natural gaze. Looking at the mirror, one can, for instance, see one's face in its entirety. The reflected image appears in opposition to the viewing subject, allowing for a viewpoint that natural vision cannot attain. Note that this image conforms easily to the idea of the ontological ladder: the thought is that once we climb one rung up, we acquire an overview that from within the "natural state" is not attainable. Naturally, this thought introduces the notion of distancing.

Philosophical reflection implies a similar distancing. Through reflection, a given idea or notion is deliberately positioned at a distance, thereby simultaneously situating, decontextualizing and circumscribing it as an object-for-reflection. It appears as a unity, a relatively well-demarcated entity among other items in the real world. When we reflect on an artwork, an upcoming meeting or a difficult decision, we frame the object or event as an individualized entity so that it becomes the object of sustained attention. We might, for instance, reflect on the meanings of an artwork; on how a complex discussion might unfold; or we might weigh the pros and cons of opposite courses of action. In these three examples, to reflect means to single out a portion of reality, to set it apart from the natural vision, in the hope of escaping its confines.

As discussed, the idea of natural vision overlooks the hidden potential of thought-shaping. We might take ourselves to be critically reflecting on an everyday situation, only to find that we fall victim to deeply ingrained, there-

fore almost invisible, biases and thought-shaping prejudices. Philosophical reflection frames objects and events, positioning them in ways that appear as distanced and amenable to critical – and assumed objective – scrutiny. Yet, the way in which we position objects or events already betrays thought-shaped habits and deeply ingrained mental patterns. In a deeply Hegelian fashion, the way of posing a question is integral to its solution.

Henri Bergson obliquely dealt with this topic in his 1910 work *Time and Free Will,* while discussing the nature of perception. According to Bergson, perception has a dual-aspect nature:

> *[O]ur perceptions, sensations, emotions and ideas occur under two aspects: the one clear and precise, but impersonal; the other confused, ever changing, and inexpressible, because language cannot get hold of it without arresting its mobility or fit it into its common-place forms without making it into public property* [22].

This distinction functions as the core of Bergson's argument for two types of duration. But it does significantly more work than that: already, we see that reflection taken as impersonal viewpoint is utterly reductionist. It imposes a static, impersonal, yet clear and precise order on the dynamic richness of experience. This thought bears striking parallels to contemporary physicalist reductionism and classical positivism alike. The underlying project is to derive a neutral description of the world, unencumbered by the whimsical nature of the senses.

Language, according to Bergson, immobilizes the dynamic and probing nature of thinking. It stops it, turning its contents into objects, circumscribing them and cataloguing them. It is not difficult to observe the parallels with Kant's determining judgements and reflecting judgements here. Whereas the former subsumes particulars under universals, the latter uses the particular to define new universals. The determining judgement stops the movement of thinking in favor of categorization. Hegel realized that thinking is inherently processual and introduced the notion of dialectical progress. In this process, however, concepts (and therefore, language) play the role of cognitive probes to grasp reality, or at least to explore it. The way in which we categorize or describe objects is of fundamental importance:

> *[I]f to-day's impression were absolutely identical with that of yesterday, what difference would there be between perceiving and recognizing, between learning and remembering? Yet this difference escapes the attention of most of us; we shall hardly perceive it, unless we are warned of it and then carefully look into ourselves. The reason is that our outer and, so to speak, social life is more practically important to us than our inner and individual existence* [23].

We do not have the same experience over and over; we have *similar, not identical* experiences. Yet, our brain groups them, subsuming them under objects, or ordering them in categories to facilitate cognitive processing. Thought-shaping exacerbates this process sometimes in a negative sense: someone who sees a Gypsy woman and immediately thinks: "outsider; "unreliable"; "dangerous" applies a simplistic categorical structure, engendered by prior images, treating persons, events or objects as representative of those biases. Yet, we are bedeviled by our innate tendency to impose a static order on reality by means of language:

> *We instinctively tend to solidify our impressions in order to express them in language. Hence we confuse the feeling itself, which is in a perpetual state of becoming, with its permanent external object, and especially with the word which expresses this object* [24].

Bergson expresses once more what Hegel worked out in the context of his logic: between the concept (or language) and reality exists a gap. Once we use identical words and labels to categorize similar experiences, we assume that percepts a_1, a_2, a_3 all belong to series a_x. We flatten them out to fit in a discursive structure, underestimating or denying the fluid and expansive nature of experience itself. The differential ontologies of poststructural-

ism recognized this feature of cognition and emphasized alterity and differentiation. For Gilles Deleuze, difference was primary over identity; for Jacques Derrida, *différance* opened up texts to multiple meanings. As discussed previously, this approach led to an uncontrolled proliferation of meanings, veering even into universal relativism.

Bergson provides an alternative approach based on *refraction*, avoiding relativism altogether. Refraction as a natural phenomenon occurs when light waves travel through a medium of a different density, changing the direction in which they move. Due to differences in wavelength, it can be used to split white light in the rainbow colors. As such, refraction itself represents a double feature: it appears as an illusion but is objectively true. The oar that appears bent while sticking in the water is physically straight as an object, yet perceptually bent. Refraction creates a rupture within the perceptual field, destabilizing its usual structure. The Dutch term for refraction – *breking* – captures it quite nicely: reality itself "breaks" or "ruptures", providing an unavoidable perceptual reality overlaid on physical reality that differs from it. Yet, refraction as a phenomenon is thoroughly natural. Thought itself is refractive in the sense that it is endlessly differentiating out of sense impressions. It overlays perceptual structures on reality which are real, yet not identical to the reality over which they operate.

The refractive element does not ascend the ontological ladder but restructures the field of cognition so that a *Gestalt*-shift occurs: its contents appear as stable but nevertheless open up. The differentiating characteristic of the refractive element was correctly observed by poststructuralism, but its potential was massively overextended, leading to the hasty conclusion of relativism. As a feature of refractive thinking, the *refractive element* itself (one could even frame it as the Hegelian "moment of novelty" in a dialectical process) is the mode of thought that breaks through cemented courses of thinking and understanding. While it may appear as a moment of non-rationality or unfamiliarity, it is often retrospectively thoroughly explainable. In the field of design thinking, this feature has been described as the "expected unexpected" [25]. That is, the creative mindset, which is trained to explore possibilities, is on the lookout for opportunities that shift and transform prior frames of reasoning. Instead of viewing the unexpected as the refutation of a prior conviction or expectation, it regards it as an opportunity to revise fundamental aspects of its reasoning against a new background. What is more, a trained designer has a "knack" or skill to recognize such clues and features, whether in an idea, drawing or sketch. Their mind is as it were poised to apprehend possibilities that invert or refract the entire frame of reference. What appears as a "eureka moment" is often not a singular instance, but a thoroughly explainable "epistemic break" that overcomes prior conceptions, but which is embedded in a larger process of thinking. While such moments are not reducible to the field of thinking from which they emerge, they still form a part of it. Just like thought-shapers cannot be dislodged from the context in which they operate, so too is the refractive element part of the context it transforms.

In his fine study on craftsmanship, Richard Sennett argues in detail how working with a material or within the rules of a certain craft (say, furniture making, bricklaying or architectural design) the practitioner's mind inhabits a *prehensive* mode, dimly but continuously anticipating possibilities that are not even conceptualized or "clear and distinct" [26]. They appear as hunches or "firm intuitions". But effective practitioners know how to recognize the clues their materials provide. The refractive element in their thinking allows them to perceive possibilities that from within a fixed frame of reference appear as unnecessary or unfeasible. Yet, refractive thinking already recognizes that the boundaries of its own thought are flexible, and so does not continuously appeal to their supposed rationality or unchangeable fixity. It regards the field of thinking as much a product of its own activity as its "playing field". This is indeed a – sometimes infuriating – feature of creative thinkers: they are adept at keeping options open as long as possible, keeping the entire field of thinking in a state of charged generativity. To understand that the field of thinking is shaped by thought-shapers and refractive thinking while it shapes them in turn is to grasp the essence of refraction. In architectural design, this feature is on full display: new solutions continuously shape the boundaries of the design problem itself. This feature led sociologist Donald Schön to remark that designers speak about "the problem" alongside speaking about "designing as such": the conversation takes place on two levels simultaneously, refracting the frames of reference [27,28]. Designing a solu-

tion involves not only accepting the playing field in which the problem is situated, but shaping its outlines in such a way that a new range of solutions becomes possible – or even visible for the first time. The entire field of thinking is subject to transformation as much as the problems that arise within it.

To appreciate the generative nature of the refractive element, we must turn to both Bergson and Gadamer who—not unlike Hegel's conception of the dialectic—expound on two different aspects of refraction.

First, for Gadamer, the essence of hermeneutic understanding lies in the structure of the question [29]. As the Socratic dialogues show, an innocuous question can destabilize an entire edifice of thought. Prompted about definitions, Socrates' interlocutors are forced to concede that the foundation they use for reasoning is not infallible. The traumatic moment occurs when the question is posed. Its presence probes and pushes, and not unlike the tension in Hegel's dialectical understanding, makes the gap between concept and reality manifest. In German, to *pose a question* is *die Frage stellen.* Yet, the verb *stellen* can also mean "to situate", "to position" or "to put" something firmly in place. The question appears as an obstacle, an insurmountable barrier that forces the movement of thinking to open, to differentiate out in new directions. Through refraction, that which is assumed as common knowledge or *sensus communis* is pried open and analyzed again. Not coincidentally, we witness in the Socratic dialogues how distinctions become finer and finer, until eventually their sense is almost lost. Each refracted definition leads into new avenues of thought. Simultaneously, it restructures the entire field of investigation around new pathways. Refraction animates the environment in which thinking operates. Like a magnet among iron filings, the object of attention refracts the field of inquiry around it. Whether it appears as an obstacle, enigma or new insight, the thinking that surrounds it is transformed.

In the example of the bent oar, we witness a transformative gap emerging: the oar is physically straight, but perceptually bent. The physical oar has certain properties that one might be familiar with. Yet, its impossible, bent variation exists perceptually, although not physically. Refraction's efficacy in transforming perception gives rise to a tension between what is perceived (a bent object) and what is present (a straight object). In a reflexive loop that is not closable, the perception is also present, albeit as a function of how the laws of physics function. Like the Hegelian gap between concept and reality, refraction renders an interpretive gap visible, without cancelling either of the two overlapping realities out. Their simultaneity means that they in turn refract each other, establishing a new set of perceptible relations between them.

Literally, *breking* introduces a break in the relations between perception and physical reality. What ensues, however, is not a mere illusion or optical trick without value. One could approach refraction as mere trickery or forgery, but that would do no justice to its generative potential. Refraction also causes the dissolution of white light in its constituent colors. Through differentiation, it renders an inherent order tangible. That is, by its very presence, we witness something that is not grasped by natural vision. White light must, as it were, be forced open to show its true colors. Likewise, the oar must stick in the water to show some properties of the medium in which it moves.

As artists and designers have long recognized, the difference between perceptual presence and physical reality is of immense value. To sketch, for example, is to overlay and superimpose drawings in such a way that multiple possible realities are visually present. Drawing exploits simultaneity, resulting in a veritable panopticon of possibilities. The sketch is diaphanous—in overlapping layers, various aspects make themselves perceptible [30]. Or put differently: the ensuing gap creates the conditions for perceiving differently. Likewise, the poem is a structure of words that exploits the openness and suggestiveness of language. Despite being precise, conceptual understanding and reflection cannot grasp the meaning of the poem. It freely utilizes symbols, suggestion, complexes of meaning and transmitted associations. But what emerges out of such artistic activities is not falseness. Rather, it is an image of what *could* be—a layer of reality that opens itself up to us. Gadamer has drawn attention to this peculiar characteristic of the illusion in his detailed analysis of Hegel's "inverted world" (*verkehrte Welt*) [31]. In Hegel's dialectics, the world appears as the play of opposites, a sense of productive contradiction shimmering through. But, just like satire is a mirror image of the world, there is more at stake than just doubling. The satire inverts the world, but by that very act,

it makes the inherent tensions and possibilities of the real world manifest. To take the classical plot trope of the beggar becoming the king literally misses the point: the message is that such a reversal is impossible, underlining the inequalities of manifest reality. But it takes a distortion of sorts, a refraction of the real world imposed on it from the outside to make it tangible. Like the sketch and the poem show, refraction opens up the present.

Put in poststructuralist language: it differentiates reality itself into multiple overlapping and even conflicting notions. Socratic questioning solicits a similar effect: through it, we witness a satire of sorts, with Socrates in the role of an impossibly curious character and his interlocutor as the hapless victim of his analysis. In many cases, Socrates refracts what is said, showing its ambiguities and possibilities. While this process yields no answers (many dialogues remain undecided), it sets off a movement of thinking and recasting reality.

The second point is worked out by Bergson. For him, refraction itself is structured like a fourfold typology, as it is inherently *transformative* [32]. Starting from a natural refraction, it proceeds to a differential stage, followed by an integrative phase, only to arrive at a reconfigured natural state again [33]. In the context of Bergson's metaphysics, this thought process is continuous, as reality is a heterogeneous continuum that is forever moving. We can literally never have the same experience twice.

An example of the refractive process can be found in conceptions of religion: we may start with an animistic conception of the world, in which people regard themselves as part of a living nature consisting of forces and phenomena, conceptualized by the thought that the world is imbued with spirits. Once more, this conception is refracted into polytheism and monotheism. In the concluding stage, theism is refracted as deism and ultimately as pantheism—a conception that shares many structural similarities with the original animistic conception of nature yet developed through successive stages and as such richer by assimilating core ideas of previous stages. Like the Hegelian phenomenology of successive stages of Spirit or self-understanding, Bergsonian refraction allows for the emergence of new and more complex conceptions of an idea. Unlike the classical reading of Hegelian dialectics, this process is not teleological or goal-oriented. Instead, refraction is characterized by open-endedness, branching out in multiple directions from a conception that is deemed unacceptable. In the case of religion, the monotheistic conception, might for instance, respond effectively to perceived shortcomings of polytheism. Through its effectiveness, it presents itself as a feasible alternative All this does not imply that there is all of a sudden a fixed definition of monotheism. Through a refractive process, the notion of monotheism itself differentiates as various conceptions compete for acceptance. We also see here how refraction avoids relativism: the new conceptions are always read against a certain conceptual background: the new monotheism is interpreted against the background of polytheism and its purported shortcomings; but likewise, certain new versions of monotheism might be read against the background of earlier versions, rendering a fruitful comparison possible.

Similarly, we see this generative feature in theories that took differential ontology in an alternative direction. For instance, Hans-Jörg Rheinberger's philosophy of science hinges entirely on the notion of differential repetition [34]. As in Bergson, running the same scientific experiment twice is not repeating an identical set of experiences. In the act of repetition lies a difference that opens up the field of inquiry again. Put in terms of refraction: experience is refractive as it overlays disjunctive perceptions on a repeated physical reality, doubling not its contents, but highlighting points of difference. As in Hegel, the gap between concept and perception proves to be productive: it allows for questioning long-held and thought-shaped assumptions. In Rheinberger's philosophy, this feature underlies discovery as such: the small differences between experimental findings, or the ensuing refractions push thinking in new directions, showing the cracks in our understanding. By repeating experiments, one creates a temporary frame of references (or even a cloud of references) against which new or remarkable results are interpreted. In such contexts, there are few undisputed "gold standards". Instead, what appears as the standard for reasoning co-evolves with new discoveries and emerging differences. The fact that experiences are similar but not identical can in this case be usefully applied to scientific discovery, introducing an element of refraction without ending up in unconstrained relativism.

As Mullarkey notes, the Bergsonian typology of refraction appears quite similar to Hegel's dialectical process [35]. Here, I disagree with Mullarkey's point that Hegelian dialectics is merely teleological, dissociative and negative. Like Bergson's refraction, dialectical thought is as much genealogical, refractive, associative and differential—that is, it can lay claim to genuine creativity. And through this capacity it can confront the pitfalls of reflection. Kant already realized that reflection surveys the genealogy of a concept. In Hegel, we witness how this developmental process becomes the driver of dialectical thought and ultimately reflexive self-understanding. The negative plays an enormous role here, but the associative and the differential as well. Without the refractive element of the new, dialectical thinking cannot proceed.

Importantly, the refractive element cuts right across cemented habits of thought and the constrictive effect of thought-shapers. Through refractive thought, the embodied mind is forced to revisit and confront its limits of thinking. We discuss some consequences of refractive thought in the next section.

4. Conclusion

Let's now return to the three questions posed earlier:

1. If TTS and poststructuralist thought conclude that we cannot reflect beyond our preconceptions or biases, then how is free thinking possible?

2. Is reflection in that case not just confirmation bias in action since the same thoughts and notions are utilized repeatedly throughout successive reflective processes?

3. If we consider points (1) and (2), then how can thought-shapers be generative? Or, how can philosophy be creative? Is an "escape from thinking by thinking" possible? Or, put more succinctly: is changing your mind possible?

To reflect is to gradually transform the contents of a mental process through evaluation and comparison, if we follow Kant's account. As TTS and an established body of cognitive science demonstrate, our pathways of thinking run largely through the same rivulets. This feature provides cognitive stability but has a constrictive drawback: it traps thinking in repetitive patterns—the reflective mirror palace. We would underestimate thought-shaping if we clung to the theory that perception results in a veridical "image in the head". While reflection has an important transformative potential, it also runs the risk of staying trapped within a frame of reference that is invisibly erected around and underneath it:

> *[R]eflective intellect is intrinsically narrow. And so reflection is, in truth, a special instance of refraction. It sees otherness only by impoverishing it through the medium of itself, which is to say, by a species of refraction. As a 'mirror of nature' it conceals the transformations it performs behind the mask of its one (unconscious) achievement: the true representation of the intellect* [36].

Refraction, however, represents the moment that the customary frame of thought splits and unfurls, breaking the horizons of the field of thinking. It is through an "epistemic break" (once more: *breking*) that one re-orients one's thinking, thereby changing the entire field of perception [37]. In familiar language: refraction is found in breakthroughs, the appreciation of nature, self-discovery, eureka moments, existential crises, religious or spiritual experiences, and in the everyday appreciation of sunsets, the first snow falling, or fern leaves unfolding; in being transported by art; in moments of deep grief and rejoicing ecstasy. In these moments, what is known or what is experienced is not forgotten—it is transfigured and appears against a different background.

Here lies the answer to what we may realistically expect from reflective thought: it cannot be used to ascend an ontological ladder—that thought is itself a thought-shaper, albeit a useful one. We require refraction not to escape, but to re-orient the entire field of thinking. Compare this idea with the postmodern notion that we are forever condemned to map out different positions without ever arriving at a unitary perspective or Truth. Wouldn't it be better to refract and open our thinking rather than to fragment it? If we do so, we should also reconsider our customary view of what it means to know:

> *Knowledge is not given to us in a sudden illumination of the mind; to know is to strive, to work. We learn that this chipped stone can*

> *serve to cut and to chop; that stone, blunted, can serve to grind. […] Once we see what we can do with a broken branch, a chipped stone, a bone or steel knife, we figure out what falling rocks, streaming water, and the roots of trees do by themselves* [38].

Knowledge and practice (as Gadamer also noted) are intimately correlated. To acquire knowledge is to probe the world, as Hegel implied when he invoked the gap between concept and reality. Reality is worked out and probed by concepts—it is not just intellectually received. Through usage, chipped stones become rudimentary knives; and in turn, one learns to see which stone makes a suitable knife. Like in the example of the bent oar, perception overlays itself on reality, transfiguring the latter in a field of action and thought alike. But this implies practice—the capacity to willingly work on changing one's mind, assuming an authorial relationship to it and engaging in "seeing-as" [39].

We need not deny that thought-shapers, biases, rigidity and prejudices influence our thinking. We require an attitudinal change towards them so that we can effectively operate in their presence—we must assume their pre-structuring as an integral part of thinking [40]. That means that we must get used to refractively reorienting our thinking. Familiar objects, notions and ideas (like oars or chipped stones) acquire new hues or affects when viewed from a different angle—we see them as something different from what they are presently. The mirror palace of reflection only becomes dangerous when it forces our thinking in identical pathways, flattening out and freezing the richness and unfolding novelty of experience, or obfuscating the presence of novelty in favor of sameness.

To productively refract one's thought, one requires no confirmation of what one already knows or has experienced. The only requirement is to view the familiar in a different light—any light at all. The first step in changing one's mind is to situate oneself and the object of attention within a broader perceptual field or genealogy of thinking. At this stage, there is no need to let go of opinions or convictions. What is needed is a resituating of them. In Bergson's terms: we never have the same experience, but we usually fail to notice this. For instance, the daily walk from our house to the office appears identical to us. Once we pay attention to each event as a singular instance, instead of being an identical copy of a former experience, we expose the familiar to new interpretations. Just as the Socratic question refracts what was commonly assumed, so too does refraction cause the opening of the past, the present and the future.

In turn, this allows for different engagements. As we do not lose our previous experiences while doing so, the new overlays on the familiar as a refractive layer. In turn, this changes how we perceive the present, future, and past. When Bergson speaks of experience as *becoming*, he meant to indicate that this process is continuous, but most of the time we are unaware of it. The classical theological notion of the *nunc instantis* represents the moment of exception: through an intense experience, it transforms the boundaries of appearance [41]. In such apprehensive events, experience experiences itself in such a way that it creates a rift within itself – its relativity becomes fully apparent to itself. But instead of being terrifying, this experience is actually liberating.

Experience is continuous, as is interpretation. In Hegelian terms: the concepts we use to interpret reality are always different from that reality, resulting in a gap that is constitutive of our cognition. Once we apply that insight to perceptual experiences instead of concepts, we see that even perception is liable to reformation. Indeed, Gadamer's entire hermeneutical project would not be possible without this option. Hermeneutics assumes a continuity between past and present in such a way that one can engage with it on productive terms, by shaping one's identity or one's relation to the world. This requires a change in perception, effectuated by interpreting and engaging the past. The rift in experience is needed to properly situate oneself, but also to escape the mirror palace. The experience that becomes an object to itself does not become an object in the same way that everyday items are. Liberated in the *nunc instantis*, it appears as freedom, yet not as unconstrained.

To be free means to change the conditions for thinking once one experiences their limitations. The limitations themselves never disappear completely but are relativized and seen for what they are through a perspectival shift. To "move" through the field of thinking is not to attain access to a new Platonic ideal of knowledge, disembodied from our embeddedness in the biosphere. Instead, while we

should not aim to grasp reality as a totality, the possibility to deepen and enrich our understanding, to weave a "web of meaning" and to uncover new relationships between the elements of our perception through a process of refractive shifts and transfigurations is fully within our grasp. There is no need for relativist nihilism here – only for epistemic humility and the embrace of freedom.

All this does not imply that there are no biases anymore, or that thought-shaping is not effective anymore. Instead, the task is to once more deepen our experience. In a different context, we have called this the practice of *creative piety* [42].

Practicing creative piety involves taking *a critical, refractive standpoint on a determinate domain of content*, characterized by four features:

1. It is *higher-dimensional* or *higher-order*—for example, generating a "transcendental" third-dimensional point of view out of an array or spreadsheet of that content that's otherwise merely "flat" or two-dimensional. So, it does not ascend an ontological ladder, but makes tangible what was already immanent in a given domain.

2. It is *synoptic* with respect to that entire determinate domain of content—for example, seeing a landscape as an integral, dynamic three-dimensional contour map from the vantage point of an airplane flying over it, allowing one to creatively work out relationships within it.

3. It is fully critical cognizant of the inherent *boundaries* or *limits* of that determinate domain of content, integrating the awareness of limits (and therefore of a local relativism) within the reasoning and exploration of a given domain of content.

4. It provides direct cognitive access to *a new, inexhaustible, and essentially richer—in structural and informational terms alike—domain of content* over and above the "old" content available in the "flat" or two-dimensional determinate domain of content.

Point (4) merits some explanation in the light of what has been said above. Refraction renders perceptibly tangible what inheres in reality. Through perception, it overlays a new cognitive order on an existing one, establishing new relationships between them. This relationship is anti-reductionist. The relation between molecules and atoms is one of reduction or a compound structure in terms of basic building blocks. Refraction, on the other hand enriches and expands both cognitive orders by establishing new relationships between them that were nevertheless inherent in them. That this process never results in full closure is an advantage: as Burke already recognized, imagination requires openness as its prime driver [43]. Like Hegel realized and Bergson worked out, perception is becoming, thriving on difference. Yet, conceptualization thrives on categorization. In the gap between concept and reality, refraction operates. Through this process, the entire field of thinking is deepened and reconstituted. If constrictive thought-shaping is involved, such refraction is undermined. The refractive element implies fluidity, cognitive flexibility and a certain navigational skill, as well as the willingness to immerse oneself in the process. Constrictive thought-shaping demands that thinking remains mono-perspectival, setting up an impenetrable mirror palace of the mind. Hegel's and Bergson's point has been more recently taken up by Lingis, showing how such mono-perspectivism may be prevented:

> *Yet when we set out to grasp things in rigorous and lucid concepts, we find those very concepts engendering images that are not images of their referents. Allusions, equivocations, evocations, evasions, insinuations refract off their crystal shapes and bewitch the very mind that cut those shapes* [44].

That each refraction leads to a partial viewpoint is a given – the very images engendered by the concept do not match reality. Like in the case of the bent oar, an oblique viewpoint inserts itself, merging disparate realms of perception. But it does not warrant a relapse into fatalistic relativism. Such (poststructuralist) relativism is the consequence of fragmentation in thinking. Contrariwise, refraction leads to the creative reconstruction and shaping of thought in increasingly complex, adaptive, and rich constellations. It opens up and destabilizes the familiar in favor of enriching it. The "bewitching" feature is the constant eruption of differences that drive experience, which is continuously confronted with novelty. As defined in element (3), creative piety inherently recognizes boundaries or limits, and therefore it can move well beyond what any individual well-constructed logico-mathematical system

can describe, define, or refer to. Any form of perspective-taking implies a boundary or limit. Each individual perspective itself is valuable only insofar as the person taking it is self-consciously aware of the limits that essentially circumscribe and constrain it. It's characteristic of creative piety to embrace and work constructively with these boundaries or limits, and to regularly 'switch perspectives' whenever one encounters them, as opposed to falling into logical or non-logical vicious circles, vicious feedback loops, and vicious regresses.

Just as a photographer might adopt various positions towards the object she attempts to photograph, or the architect might walk around a building in his imagination, so too can the mind posit and (genealogically) situate the objects which it explores. It poses them, not as obstacles, but as essentially rich and layered structures or manifolds. There is no need to ascend or descend an ontological ladder – merely to work out, deepen, enrich and survey what appears right before one's senses. Once this skill is diligently practiced, a degree of genuine free thinking is obtained, not unconstrained, but able to refractively engage with what it encounters in the world.

Regarding thought-shaping, this possibility represents a tremendous freedom. Not only can one acquire a deepened understanding of the subject matter (in this example, the object to be photographed or the building), but likewise the possibility to create new thought-shapers that cement new ways of understanding or comprehending. Indeed, what we see in the education of many craft practitioners is exactly this: they are trained to view the world differently, and often through the lens of their craft. The specialized bricklayer can appreciate intricate brickwork; the engineer might be inspired by nature to try out new building constructions. In such cases, the perception that regards the world is shaped to perform a specific task. But no one says that this process cannot be ingrained in one's way of dealing with a variety of experiences. Indeed, to merely reflect is to accept the playing field of one's thinking as given; but through refraction, one can break through this habit, forcing an opening where there wasn't one.

By performing many overlayered perspectival shifts, one creates a "thick" representation. Such representations are structurally complex and semantically rich, and that—due to their "layering"—refractively generate new perspectives and ideas. This explains also why we can perceive a metaphysically profound, sublime, existential-mystical quality in the everyday: our representations of it can become suffused with structural complexity, semantic richness, and inherent boundaries and limits that are organically fused with a higher-dimensional, transcendental standpoint. Very often, we perform such meta-cognitive perspectival refractions pre-reflectively and unself-consciously. Feelings like awe, wonder, and respect also originate in these refractive performances, vividly expressing an attitude of creative piety through freedom.

In a philosophical landscape that is (at least in the West) torn between the uncomfortable relativism inherited from poststructuralism and the equally uncomfortable scientism inherited from post-analytic philosophy, as well as "culture wars" and "fake news" alongside the rise of AI, a new skill set for thinking is required. Partially, the examination of such a skill set falls within the purview of cognitive science, but it falls also to philosophy to invent new modes of thinking. Is it possible to develop the opposite of biases? That is, can we invent practices that open our minds, instead of just examining ways in which our thinking slides back into comfortable reflective thought? Are there practices that stimulate, support and develop the refractive element in thinking? Can we invent and validate modes of thought that are expansive and integrative, avoiding the "reflective mirror palace" in favor of venturing out into a new experiential territory?

One cannot deal with the complexities of the present without engaging the past. Likewise, one cannot assume the infallibility of the past once the context of application changes. What is required is the skill to actively refract – instead of fragmenting – the field of thinking. Doing so, one creates new and overlapping frames of reference as well as non-conceptual and conceptual connections, all of which are umbilically linked to a full acceptance of our limitations without sliding back into universal relativism, narrow scientism or dogmatic historicism. This means that one must practice traversing the field of thought, creatively transforming it while exploring what it has to offer. To instill this skill is a near-future task of philosophy, and one that brings with it the promise inherent in refraction – genuine liberation in thinking.

Funding

This work received no external funding.

Institutional Review Board Statement

Not applicable.

Informed Consent Statement

Not applicable.

Data Availability Statement

Not applicable.

Acknowledgments

I would like to express my sincere gratitude to Dr. Robert Hanna for his collaboration on the theory of thought-shapers, and to Dr. Chris Blommaert for her invaluable insights around the topics of this essay.

Conflicts of Interest

The author declares no conflict of interest.

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