



Visual Literacy as a tool to explore what lays behind and beyond our anticipations

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ABSTRACT

Visual Literacy enriches the field of anticipatory assumptions and Futures Literacy by taking into account basic biological premises of our brains and minds related to images. It explores why our individual and public spheres act as sources of authority conditioning assumed realities and ‘staging’ a limited world in our consciousness. The study unravels where our perceptions originate from, their ramifications with our cultural frameworks, memory mechanisms and ensuing identities, and their direct effect on how we assume and anticipate. Visual Literacy workshops broaden the alternative storytelling Futures Literacy Labs apply. They provide the tools for user-friendly iconological analysis that make explicit and ‘visible’ the role of culturally mediated visuals in the construction of thought patterns. The experiential process of the workshops make tangible the ‘subtexts’ behind the visuals, and answers, as well, why and how they shape perceptions and regulate deriving assumptions and anticipations.

1. Introduction

This publication describes the research project of the UNESCO Chair “Visual Anticipation and Futures Literacy towards Visual Literacy” and explains the concept of Visual Literacy in the context of its relation to the brain function of anticipation and the Futures Literacy theory and methodology. The analysis unravels where our perceptions originate from, their ramifications with our cultural frameworks, memory mechanisms and ensuing identities, and their direct effect on how we assume and anticipate. It sets visuals in the core of this quest and makes intelligible how and why they dictate, shape and cement our perceptions, which lay behind our anticipatory assumptions. It describes why visuals are the most important element to shape our awareness, what mechanisms situate them behind our assumptions and anticipations and in what modes the latter colonize our future(s) by limiting our worldviews. It explains why our repetitive exposure to images and their resulting narratives matters. It describes how we end up carrying our assumptions in layers in our minds without even being aware of their existence, much less that they do not consist fixed truths. It discusses how they determine our anticipations and choices, as well as why are we convinced that ‘truth’ cannot exist in plural form and that our ‘reality’ and worldviews are the only rightfully valid.

Visual Literacy explores the past-future relation and more precisely the futures-of-the-past potential. Assuming and assumptions derive from our past knowledge, are subjective, and manifest in the present, while anticipation is an expectation based on assumptions and involves the future. The term ‘anticipatory assumptions’, a core concept in this analysis, underlines the intertwined connection between the two and, therefore, the constant projection of the past into the future. Visual Literacy addresses a duofold purpose: First,

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sheds light on how our interpretative filters affect our thinking, feeling, acting patterns and our anticipations that determine our choices. Visual conditioning anchors in the past and confines us in limiting patterns that directly affect our future. Secondly, indicates the possibility to re-evaluate, re-define and re-frame the symbolic power and authority dominant narratives exercise via images, individually and collectively, taking a step beyond their limitations. Awareness of where our mental forms come from and how we built them shifts perception, allows ‘what if’ questions to emerge, and discharges the automatisms of anticipation from the spell of long lasting verbal and visual conditionings. Awareness and conscious observation of our interpretative filters appreciates the past for the vast knowledge it provides and enriches the present with the potential that lays in the future.

With a view to answer the aforementioned research questions and respond to their duofold purpose, this study explains what ‘visual anticipation’ means within this Chair project and why assumptions, based on which we anticipate, turn into burdens instead of tools for creative imagination and expansion. We touch upon core functions of our brains related to images, such as the “picture-superiority effect” (Weldon & Bellinger, 1997, 1162) and the consequent “seeing-is-believing” (Hausmann et al., 2008), with the scope to understand why our automatisms are so solidly built in our identity and hard to locate, as well, unless we consciously and willingly explore them. We explain the role of our cultural frameworks in relation to visual anticipation and focus on the impact persisting visual repetitions and narratives have on the shaping of our perceptions. Extensive references to social and psychology theories, and related findings in neuroscience explain how biological mechanisms of our brains and minds determine social structures, and how our memory and identity awareness reflect on our anticipatory assumptions and orchestrate our actions and, eventually, the paths we take in our lives. We shed light on the implications punitive and rewarding social practices have on our perceptions and ensuing actions, and we explore how Visual Literacy enriches the field of Futures Literacy and supports us go beyond our self-imposed burdens.

The section dedicated to Futures Literacy describes its conceptual framework and how its practice aims to deconstruct our thought patterns via a metacognition process. Futures Literacy became an official UNESCO project in 2012 under the lead of Riel Miller (2007, 2011, 2015). It was a novel approach in the field of foresight and, currently, the broader foresight community uses it as a capacity building tool. The innovative approach Futures Literacy brings is that it sheds light on how future is imbedded in our automatisms and how it interacts unknowingly with our daily actions. It makes apparently clear how our way of thinking and acting in the present largely predetermines how our future will look like and, vice versa, how our assumptions and anticipations for the future reflect on how we think, feel and act in the present. The Futures Literacy Labs developed in the context of the UNESCO Chair on Futures Literacy at the Hanze University of Applied Sciences, are one of the methods used to enhance futures literacy capacity. They provide the participants with the tools to become aware of their narratives and step beyond their limitations, hence enrich their present as they plan their future (Damhof, 2020). Although Futures Literacy does not stem from the field of humanities, hence Foucault’s (1994) or Wittgenstein’s (1922) theories on language do not lay within the spectrum of its interest, its actual practice questions and utilizes, at the same time, the power of language and brain’s mechanism to translate words into images and affect. Its quest to imagine the future through different spectrums and narratives acknowledges the power and the limitations of our memory stores; the conditionings of our thinking patterns; and the moulding role affect holds. This point is the connecting link to Visual Literacy: it points to our memory stores and the origins of our thinking patterns. The conceptual framework and the Visual Literacy workshops put the culturally infused images that flood our daily lives in the core of the process, deconstruct their narratives and critically examines the limiting ‘certainties’ of our ‘realities’.

2. A different approach of visual anticipation

We intuitively grasp the concept of anticipation since our infancy (Atance & Hanson, 2011). Although consciousness of the future changes and evolves with age, referring to our experiences and memory stores for information to serve our needs and presumed needs, remains a consistent automation (Eichenbum & Fortin, 2011; Taylor, 2011). We make decisions, we take action, or we just think about the future by running constant mental simulations of scenarios and tend to, instinctively or cognitively, choose those we consider as more probable and possible to occur (Kahneman & Tversky, 1982). Salient factors that determine the ‘probable’ and ‘possible’ and lead our choices are what already feels familiar and natural, thus, expected (Chun & Jiang, 1998). In a vicious circle, our experiences inform our biases, and the latter, in their turn, feed our fears, hopes, understandings, needs, and intentions. Indeed, Buckner and Carroll (2007) sustain that our brain activates the same areas for both remembering, i.e. addressing the past, and prospection, the action of thinking about the future. In other words, we constantly infuse our future “possible selves” (Markus & Nurius, 1986) with conscious or unconscious, tacit or explicit material, and we end up experiencing in a very tangible manner the future we have chosen as an everlasting present.

Visual anticipation is a primary sensory process that generates assumptions and expectations that feed needs, create narratives, cement structures, and build our perception(s) of reality (Coco et al., 2015). So far, visual anticipation triggered research mainly in the sector of sports. As vision-for-perception and vision-for-action (Schenk et al., 2011) lay in the core of athletes’ behavior, studying this brain mechanism was essential in order to explain and meliorate the athletes’ scores. Some few and indicative examples involve studies on football players (Van Biemen et al., 2022), basketball (Jin et al., 2023), soccer goalkeepers (Savelsbergh et al., 2005), cricketers (Hopwood et al., 2011), striking sports (Morris-Binelli & Müller, 2017; Palma et al., 2003) and sports in general (Brenton & Müller, 2018; Hüttermann et al., 2018; Omar et al., 2017). Other studies, examine car drivers’ behaviors (Underwood, 2007), driving simulators (Mars et al., 2011), or even handwriting predictions (Orliaguette et al., 1997).

The term ‘visual anticipation’ within the context of this publication and the aforementioned UNESCO Chair project refers to the role and impact of culturally infused images, such as structures of urban spaces, iconic artworks, monuments and heritage places, cinema, photography, advertisements, social and mass media, bequeathed social behaviors and rituals of all kinds, on our reactions and behaviors. That is, their impact on our thinking, feeling, acting patterns. In this case, ‘we’, as members of our societies, are the players in

the field of our individual and collective lives. What we share with the athletes are our automations: we all perceive, assume and expect by creating narratives based on our experiences. What differentiates us, in our role as members of a collective, from them is that the athletes consciously and cognitively process the cues in their environment and use anticipation, what they assume as expected to happen, for their own merit: to make the difference, to better and distinguish themselves as individuals. By contrast, we, in our role as members of our societies, do not analyze or critically assess the nature of the signs that imbue our everyday life. Unlike athletes, we react and perform mostly by aligning our thoughts, feelings and actions with the collective. This vast difference begs the question: why is this happening?

The automation of reacting and performing by aligning serves two core intertwined needs: one individually oriented and a second, focused on the collective. Individually we respond to a biological need: we ensure our “familiar” and “safe” conditions of existing that include our membership in the collective (Zajonc, 2001, 226). The second, the collective core need, is social stability. A constructed collective ‘us’ requires “persistence of cultural patterns, norms and traditions” (Karaiskou, 2019, 97) to last. When asked Steven Lukes ‘what holds societies together’, he mentioned the shared acting in concert; the conformity to the norms; the consensus that allows structural features of the society to persist of over time; and the continued participation of the members in collective institutions and practices (1975). In other words, while athletes focus on the continuous challenge and altering of their individual ‘becoming’, we, as members of our societies, focus on the familiar and definitive nature and structure of ‘having’ that anchors in the past, entails the fear of lose, resists critical analysis and change, and imposes the obligation to preserve. Anticipating in the former case uses the past but focuses on the future, when, in the latter, finds it difficult to release the conditioning of the past. Thus, an automation, a primary sensory process becomes at the same time and under different conditions a tool for excellence and expansion, and a means of limitation and scarcity.

3. Theoretical frame I: The role of culture in perceiving and anticipating

We make sense and we build memory and identity only within a cultural context (Bruner, 1991). This context involves a “whole complex of beliefs, assumptions, habits, representations, and practices” (Billig, 1995, 6) that constitute semantic codes and serve as “figures of memory” (Assmann & Czaplicka, 1995, 129) building the past into the present (Brockmeier, 2002, 33) and creating our “imagined communities” (Anderson, 1991). What brings validity, authority and the resulting symbolic power to our cultural environments and communities are precisely their reference in the past, what we call ‘tradition’ or ‘heritage’: The further the roots in time, the more valid their ‘origin’ Eliade (1992). It is out of the scope of this publication to discuss the ramifications of the origin-quest, but it is necessary to point out that it holds pivotal role in cementing group cohesion and in legitimizing actions at an individual as well as at a collective level (Karaiskou, 2015, 2022).

The authority of tradition builds figurative and literal ‘places of memory’, “lieux de memoire” as Nora (1989) names them, where the ‘imagined communities’ refer to reconnect with the past in a tangible manner. Tradition constructs narratives that define ‘us’ and forges our identity (Alexander & Breese, 2011). Furthermore, it legitimizes the shared acting in concert, the conformity to the norms, the consensus and the participation Lukas mentioned as structural elements of the societies. It fabricates explicit and implicit rituals “as [a] cognitive means of representing the social world” (Durkheim in Lukes, 1975, 292) and as points of reference that “draw[s] the attention of its participants to objects of thought and feeling which they hold to be of special significance” (Lukes, 1975, 291). To reverse that phrase, rituals draw attention to objects of thought and feeling that participants *are taught and trained to perceive as of special significance* and do so beyond questioning. Weber regards this formative power as a primary authority within a society (Kieran, 2004), while Kohn (1950) takes a step further and indicates the element of sacred that comes with the bequeathed culture.

The innate need to ensure our membership in a collective; the safeness of belonging; the comfort of social cohesion; and the demand for social stability go with a high price: They entail the limiting and punitive – in case it is scorned – demand of ‘sameness’. The bequeathed culture, especially the ‘shame cultures’ (Karaiskou, 2022) have a fundamental tenet, as Lyotard, 22) (1984): The “do not forget” obligation, which entails the preclusion of doubt from the consigned patrimony. Gilligan (2003) associates the breach of social pacts with shame and discusses at length the meaning and the consequences of “disrespect”. Especially within societies where “betrayal is culturally sanctioned” (Gilligan, 2014, 92), safeguarding “what’s right” proves of paramount value, while ‘betrayal’ and the deriving shattering of trust bring considerable implications. In both cases, the “operant conditioning” (Zajonc, 2001, 224) social groups exercise, that is the employment of rewards or punishments that follow our preferences, our choices and behaviors, make explicit the limits and consequences of our actions.

What is of paramount importance here is that the ‘operant conditioning’ feels like a normal condition serving and supporting the familiar, the ‘safe’ and the rightfully correct. The dominant narratives that result from the “homogeneous array[s] of reactions” (Zajonc, 2001, 227) and the shared “emotional attitudes” (De Cillia et al., 1999, 153) become the vast pool that tricks our brain into certainties (Bruner, 1991; Hutton, 1987) and feed, much more than we are conscious of, our assumptions and anticipations. Foucault, 789) (1982) defines this alignment as “normalization” implying its rigid rules. He points out that the lurking power behind it “does not act directly and immediately on others [but] it acts upon their actions”. Precisely this implicit mechanism that ‘acts upon our actions’ condenses the formative power and impact ‘imagined communities’ and culturally infused images exert on visual anticipation through their concepts and resulting narratives. The unnoticed ‘normalization’ towards the “correct way” (Calhoun, 1993, 231) to be member of any community reflects what Gillis, 5) (1994) aptly observes: that “identities and memories are not things we think about, but things we think with”. Lack of awareness and understanding of our own thought processes, of where the stories we tell come from, have multiple consequences, all related to limiting our potential and authenticity as humans. In the meantime, “social contagion” (Brown et al., 2009, 119; Cuc, 2006, 753), the ripple effect dominant narratives have on communities, exploits our illusive conviction on the nature and validity of our ‘common’ understandings, experiences, memories, and, predominantly, emotions; deforms and nourishes

our ‘certainties’; and extrapolates in (our) future limiting forms of the past.

4. Theoretical frame II: Images and their relations to assumptions and anticipations

Visual narratives, their repetition and visually – our interpretative filters – make core parts in the formation of societal structures. At the same time, affect, our emotional response to our sensory inputs, serves as their major leverage in the process of shaping perceptions, assumptions and anticipations (Amodio, 2013; Karaiskou, 2019; Kristjánsson & Campana, 2010; PP. 72). However, before discussing their intertwined nature and broad ramifications, it is important to bring into attention two overarching conditions that lay at the basis of our question on how images matter: First, the nature of our memory is visual and emotional (Chun & Jiang, 1998; Damasio, 1994; Zajonc, 1980). Secondly, and consequently, the basic mechanism of our brains for memory formation and make-sense is the so-called “picture-superiority effect” (Weldon & Bellinger, 1997, 1162). This mechanism refers to the prevailing encoding potential of images over words in making tangible complicated concepts and ideas, and in having a profound emotional impact. According to neuroscientists and psychologists, “the imagery system [of our brains] is activated more directly by perceptual objects or pictures than by linguistic stimuli” and our reactions seem to be “faster for pictures than for words” (Paivio, 1975, 635). Zajonc, 168 (1980) adds: “all sorts of judgments are faster and more efficient for pictures” because they are “able to evoke an affective reaction more directly and faster than words”. These basic automatic, biological mechanisms, along with memory’s feature to create meaning and perform associations *without* our intention and conscious recollection (Schacter et al., 1993) are key factors in the shaping of perceptions, assumptions, dispositions and, ultimately, behaviours that rally social groups behind beliefs and ideals (Hutton, 1987).

The reason why what we think and what we say matters, and why images determine the ‘grammar’ and the ‘ethics of seeing’ (Sontag, 1990) are precisely the sub-conscious sub-narratives and the mental structures that lay behind their tangible forms and story-telling (LeDoux, 1996). What resides in our subconscious memory, in our implicit memory, is richer and much more impactful than what we explicitly know because we tend to prioritize what feels natural and ‘right’ (Zajonc, 2001). Consequently, what derives from our implicit memory holds the primal role in visual processing as well, regulating our behaviour (Chun & Jiang, 1998; Damasio, 1994): Our attention shifts easier and faster towards what we already feel safe and familiar with, or what makes part of our experience and our interests (Kristjánsson & Campana, PP. 72, 2010, 8). Our resulting visuality, “how we see; how we are able, allowed, or made to see; and how we see this seeing or the unseen therein” (Foster, 1988, ix), holds such a powerful grip on our thoughts, feelings and actions precisely because it lays in that part of our brain where cognitive skills have no access. The reason why images and visual symbols related to political or social concepts, religious doctrines, commercials or rituals, and urban structures appear in almost stereotypical iconographic elements and in clear compositions, is to secure the effectiveness of their communication channels and the comprehension of their statements. Their visual elements carry the same “meaning potential” (Abousnougga & Machin, 2013, 22) among the members of the ‘imagined’ – but very real in experience – communities. These elements are, indeed, carefully selected amidst the available items based on their “meaningful relations” (Maxfield, 1997, 206) with the cultural context and confirm their validity through repetition.

Discussing the process that formulates national identity, Michael Billig (1995) coined the term ‘banal nationalism’ referring to the erosive sub-conscious effect of the relentless appearance and repetition in the public sphere of all kinds of symbols and images related, explicitly and implicitly, to the national identity. However, this phenomenon is not limited to national identity. The persistence of a behaviour, notes Roland Barthes (1991), reveals its intentions. Observation of the images and visual symbols that flood our public spaces renders apparent the repetition of certain concepts that lure the recipients into embracing any kind of ‘realities’ (Kansteiner, 2002) and cement the “seeing-is-believing” effect (Hausmann et al., 2008). This is exactly the reason why narratives are the “instrument(s) of mind in the construction of reality” (Burner, 1991, 6) and hold such a central role within our societies. Their repetitions compose collective myths that “form the basis for social organization and cohesion—basic sources of psychological and social stability” (Zajonc, 2001, 227).

Since infancy, dominant narrators (Cuc et al., 2006) – parents, close relatives, teachers, institutions, religion, figures of any type of authority – surround and train us to recognize and perform conceptual associations and absorb, as unquestionable and granted truths, the perceptions and ‘realities’ they endorse (Karaiskou, 2022a). Important to note that these narrators make part of the same chain: they have been the receivers before assuming their ‘narrator’ role. While they seem to address the explicit parts of our memory that operate at a conscious and rational level, in reality, they sow the seeds; they feed, and gradually reassure the myths that flourish in our tacit, implicit part of our brains. By ‘myth’ here, I refer to any deep convictions, values and ideas that govern societies, rather abstract in their forms and general in their concepts, and, certainly, out of the reach of cognitive analysis. The notions of good or bad, of divine, of freedom, of death, of eternity, to mention but very few, acquire very different forms in different cultures and times, however they persist as overarching concepts among all cultures. The power of the myths our narrators cement in us lay completely on the fact that they are the outcome of long lasting verbal and visual conditioning and are governed by affect rather by critical thinking (Heath & Nairn, 2005). We grow feeling subconsciously familiar to these myths; we surrender to the authorities that perpetuate them; and become susceptible to diverse kinds of ‘social contagions’ that align with and re-establish them.

As mentioned at the beginning of this section, images carry affect and is literally this parameter, the emotional, what holds societies together because we think and act affectively, consciously or not. Damasio broadly analyses this mind and body, thought and emotion connection in his seminal work *Descartes’ Error* (2006) and Thrift (2008: 187) aptly encapsulates the embodied memory as experience in the term “corporeal thinking”. Within the context of this analysis, affect is the reason why we are so reluctant to question or let go of our perceptions, dispositions and habitual reactions. Given the nature of our memory as visual and emotional, our affect has “primacy over thoughts” (Dillon et al., 2007; Heath & Nairn, 2005, 269). In his iconic work *The Emotional Brain*, LeDoux argues that visual stimuli – and representations in particular because of the narratives they bear – activate emotional reactions that take place and evolve

mainly subconsciously, with “only the outcome of cognitive or emotional processing entering awareness” (1996, 21). In the same vein, [Heath & Nairn, 2005](#), 269) underscore the fact that “emotional responses can be created even when we have no awareness of the stimulus that causes them”. To make things more complicated, emotional responses are more susceptible “when we are not aware that the influence is occurring” ([LeDoux, 1996](#), 59; [Heath & Nairn, 2005](#), 274). We feel attached to our memories because of their “relatively indelible” ([Amodio, 2013](#), 175) affective imprint, as the first element to surface from memory when we recall ([Zajonc, 1980](#)). In other words, our affective associations regulate the quality and content of our memories ([Heath & Nairn, 2005](#); [LeDoux, 1996](#); [Zajonc, 1980](#)), that is what we remember or what we forget, how we perceive the world around us, our anticipatory assumptions and what we ‘choose’ to make part of our identity. The image of an iceberg would be a very accurate analogy in an attempt to explain how affect relates to our learned modes, hence to our memory and identity: the bulk of what lays there exists beyond the visible, below the threshold of our awareness.

In this section, we framed layer upon layer the different and intertwined parameters by which our brains operate. The visual and the emotional nature of our memory; the consequences of their explicit and implicit workings; and the complicated puzzle narratives, repetitions and myths generate. Any attempt to comprehend where our perceptions, i.e. the roots of our assumptions, originate from and how they ended up being what they are; any attempt to explore the limitations of our anticipations, thoughts and actions; and any attempt to open towards more fulfilling choices, presupposes a confrontation with the tacit bulk of this iceberg.

5. Anticipatory assumptions within the context of futures literacy practice

The methodology and conceptual framework of Futures Literacy evolved under the broader theory of anticipation ([Miller, 2018](#); [Miller & Sandford, 2019](#); [Poli, 2010, 2019](#)). Futures Literacy emanates from the premise that any attempt to plan, to contemplate or, simply, talk about the future involves tacit anticipatory assumptions as part of the answers and, practically, describes our own ‘mental box’. The ground-breaking element in this proposal is precisely that it sheds light on how future is imbedded in our automatisms, interacting, unknowingly, with our daily actions. As Miller puts it, “[t]he form the future takes in the present is anticipation” ([Bednarczyk et al., 2018](#), 8).

Futures Literacy Labs put theory into practice and explore our assumptions that lay behind our anticipations by rendering them from tacit and invisible, explicit and visible. The whole process focuses specifically on unpacking and acknowledging anticipatory assumptions, and on reframing concepts. Part of the tools Futures Literacy methodology and Labs use to unpack probable and desirable futures ([Kazemier et al., 2021](#)) is the outline of an iceberg and the application of the Casual Layered Analysis’ (CLA) research method that Sohail Inayatullah introduced in 1998 in the field of foresight. Inayatullah’s aim was to explore “how an issue has been constructed as an event or trend in the first place as well as the ‘cost’ of that particular social construction” ([Inayatullah, 1998](#), 817). ‘Cost’ refers here to the consequences any perception has at an individual and a collective level, due to its, inevitable, limitations and falsifications. The shade cultural environments cast on worldviews and the major power of language to shape the conditions of life in the present and the future add to this ‘cost’. Aim of the CLA method is to “disturb present power relations” ([Inayatullah, 1998](#), 817); to deconstruct the multifaceted nature of social phenomena and, thus, provide the means to approach the world from a “deeper level” ([Inayatullah, 1990](#), 118); and create space for diverse approaches to emerge opening to new possibilities.

Future Literacy Labs build skills with which participants can better make sense of the world, hence understand current events more thoroughly and, indeed, from a ‘deeper level’. The process allows participants to comprehend how the way they anticipate changes the way they think and act in the present, and, vice versa, how their thinking, feeling and acting in the present reflects on how they anticipate. As [Popper \(1990\)](#) puts it, our own aspirations, preferences, motivations, beliefs and understandings of the world – that is, the constituent elements of our choices – cast their shadow on our changing world and “change the conditions of change” ([Miller, 2007](#), 343; 2011, 26). Engaging in alternative storytelling about the future, a core practice of the Labs, eventually innovates the present, abolishes dualisms and limiting predictabilities, and broadens the space for possibilities to emerge in the future, as well ([Miller, 2015](#); [Kazemier et al., 2021](#); [De Boer et al., 2018](#)). This point is precisely what links Futures Literacy to Visual Literacy: Visual Literacy points to the role of culturally mediated visuals in the construction of thought patterns, and makes tangible why their narratives hold the power to create ‘certainties’ and ‘realities’ that ‘stage’ a limited world in our consciousness.

6. Visual literacy and the spectrum of our identity

Core purpose of Visual Literacy within the framework of the UNESCO Chair on “Visual Anticipation and Futures Literacy towards Visual Literacy” is to unravel where our perceptions originate from; to recognize their relevance to the conditions our cultural frameworks and their limitations impose; and to explore their interactions with the ensuing assumptions and anticipation patterns. Acknowledging our brain’s power to redefine and reframe them all and, eventually, step beyond them and their burdens with an aim to enrich our present, is the second, consequent, pursuit. Likewise, core purpose of the Visual Literacy workshops is to deconstruct the shared and, by default, mediated representations that constitute the building blocks and the spearhead of the ‘fitting-in’ conditions culture provides. With an aim to make explicit, thus visible, the tacit and invisible origins of the perceptions and the ensuing limiting thought patterns, the workshops support participants to define and dismantle the visuals that correspond to collective notions and concepts, and comprehend how they build their anticipatory assumptions. The theories from sociology, psychology and neuroscience described in the previous sections of this publication, constitute the conceptual frame of Visual Literacy. They support the understanding of the multiplex interactions among our perception, memory, identity, visibility and affect that define us as individuals and members of our collectives, and directly involve how we assume and anticipate. Therefore, exploring why and how our individual and public spheres act as sources of authority, conditioning assumed ‘regimes of truth’, ‘certainties’ and ‘realities’, takes into account basic

biological premises.

In his book, *Studies in Iconology*, originally published in 1939, art historian Erwin Panofsky presented his method of three levels of art analysis (Panofsky, 1939). His focus was on Renaissance Art and his interest was to investigate the meaning of artworks, stepping beyond their aesthetic forms and featuring their form-content relation. His contribution to the field of art history was profound and his theories were disputed and re-evaluated many times ever since (Elsner & Lorenz, 2012; Fornacciari, 2014; Moxey, 1986; Sauer, 2020). It is far beyond the intention of this publication to examine and evaluate his theories and approaches. However, the concept of his three levels of knowledge, although serving completely different needs, stems from the principal that all representations have a symbolic value and carry tacit meaning. Visual Literacy takes Panofsky's quest for the hidden, symbolic meanings of images a step further: It deconstructs the symbolic power and authority images exercise individually and collectively and questions what is understood as natural, expected and, ultimately, safe. With this aim, a simplified three layers version of the Casual Layer Analysis (CLA) method applied on the outline of an iceberg, provides a user-friendly tool for tangible iconological analysis during the Visual Literacy workshops.

Panofsky's three layers are the pre-iconographic description that defines the depicted visual items; the iconographic analysis – the description and identification of the stories these images carry; and the iconological analysis – the interpretation and explanation of their intrinsic meaning. In the Visual Literacy conceptual framework and workshops, these layers become the explicit, visible level of events and conditions; the middle tacit of cultural and social structures and institutions; and the deep of grassroots ideologies and cultural myths. For example: If a western, with no knowledge of the Southeast Asian cultures, comes across a relief or a sculpture of an apsara, they will see only a curvy female figure in sensual attire and in a dancing position. This is Panofsky's pre-iconographic level, the visible and explicit items and events on the iceberg. The ignorant viewer cannot imagine their celestial nature – Panofsky's iconographic level, the stories these images carry, relevant to the iceberg middle part of cultural and social structures and institutions. Certainly, the viewer cannot explain their intrinsic meaning – Panofsky's iconological analysis, the deep values and the cultural myths they carry. On the iceberg outline, the images of an eye, a brain and a heart corresponds to these three layers as indication of the broad nature and function of each one. As already noted, Visual Literacy does not focus exclusively on artworks but involves all kinds of visuals that populate our collective spaces, such as monuments, heritage places, advertisements, photography, cinema, mass and social media, bequeathed social behaviors, rituals of all kinds, and urban spaces charged with value systems. It considers the public domain as an active stage, literary and figuratively, that addresses its narratives to its inhabitants-audience, while, at the same time, uses them as leading actors and carriers of those very same narratives.

Visual Literacy workshops and Futures Literacy labs share affinities in their purpose, methodologies and tools, however they have different focal points. They both support participants to better make sense of the world, to enrich their present, and comprehend how the way they anticipate changes the way they think and act in the present, and vice versa. They both critically examine and deconstruct 'certainties' and 'realities'. However, having emerged from the field of foresight Futures Literacy Labs 'harness the power of images of the future' (Larsen et al., 2020). They explore the participants' assumptions and encourage them to comprehend *how* they think and *what* their anticipatory assumptions are. Visual Literacy workshops take a step back and focus on the impact culturally infused images exercise on the present and the future. They support participants to understand *why* they came to think the way they do; *how* the 'subtexts' behind visuals shape their perceptions and regulate deriving assumptions and anticipations. The process makes very much concrete, actually literary visible, that "it is the real which makes itself possible, and not the possible which becomes real" (Bergson, 1946, 123). In other words, during the workshops, while unpacking where our perceptions originate from, our visibility and the conceptual perceptive constructs and automations that build our 'realities' and our anticipatory assumptions, it becomes tangible that "an 'event' does not exist independently of an observer" (Inayatullah, 1990, 117).

Alicia Eggert, in her neon installation "All the light you see is from the past" (2017–2019) does not only imply the basic law of physics we are rather unaware of, that light takes time to travel from its source to reach us. She figuratively and literally states that our interpretative frameworks exist in the past (Karaiskou, 2022a). Comprehension of where our narratives come from and of the processes that take place below the threshold of our consciousness; recognition of the interpretive filters we inevitably carry; and deconstruction of the 'subtexts' behind visuals, bring awareness of how our filters affect our thinking, feeling, acting patterns and our anticipations. That is, how our filters affect our motivations behind any actions taken. Recognition creates space for 'what if' questions and unveils the illusive nature of our certainties and reality. It unpacks and potentially aborts the hidden conceptual patterns dominant narratives carry. It encompasses shift of perceptions that redefines what is 'expected', 'possible', 'natural', 'right', 'wrong' or 'necessary'. It allows engagement with the many different interpretations, options and available solutions and, at the same time, raises awareness on the power of language we use. It challenges the deadlocks of identity narratives and cultural stereotypes, making apparent the "limits of [our] world" as Wittgenstein (1922) aptly notes. Ultimately, while exploring, discussing, challenging, reframing our perceptions, certainties and realities, we demystify and disengage from the conditioning of dominant narratives and give permission to break free from the mental frames we subconsciously endorse, individually and collectively.

7. Conclusions

In the Cave's allegory, Plato underlines the power of impression, the imprisoning nature of our certainties, and the consequent mental stiffness: The prisoners perceive as real the reflection of objects on the wall they stare. Fast-forward some centuries, the Greek poet, Constantinos Cavafy, in his poem *Walls* (1896) he describes mental imprisonment with a powerful visual:

With no consideration, no pity, no caring, they've built walls around me, thick and high. And now I sit here feeling hopeless. I can't think of anything else: this fate gnaws my mind— because I had so much to do outside. When they were building the walls, how could I not have noticed! But I never heard the builders, not a sound. Imperceptibly they've closed me off from the outside world (Harrison,

2006).

Efforts to change and meliorate our daily living standards and the structures that govern all aspects of our lives usually end up in reforming instead of trans-forming. To reform is to change the behaviour of a system without changing its structure or functions. To transform is to change the structure and the functions. Reforming colonizes the future with past forms because it carries the seeds of that past; it obeys the aspiration of continuity; it solidifies the ‘having’ instead of the ‘becoming’; and serves the need to plan ahead based on what we already know as realistic, doable, hence predictable. Reforming continues controlling – stemming from hopes, fears, needs and past experiences – according to anticipatory assumptions and ends up in narrowing and impoverishing the available potential of the everlasting present.

We need to understand what gets in the way and what is involved. Becoming familiar with the roots, nature and function of our anticipatory assumptions gives access to conscious awareness that questions and challenges the ways we think, feel and act. We become aware of the fact that social structures are just mediated constructs, outcomes of a random sequence of events that can change when their actors, all of us, accept the possibility to challenge conventional or familiar ways of thinking. Transforming our thinking engages intersections and ruptures with the past. It sheds light on our perceived identities; encourages reflection, self-awareness and moving toward a self-generated identity; supports the ‘becoming’ process and allows active choice and agency.

Culture has an unlimited capacity to contribute to individual and social well-being. Being the source of all myths that nourish us, it provides the necessary transformative dynamic that could encourage individual growth and a collective unity over and above dividing lines and labels. A critical approach of the way we engage with our past can create the conditions to nurture inclusive values and ways of thinking. Both constitute the necessary background for social solidarity and harmonious coexistence. Appreciation of the past can take different forms, far beyond what we are trained to accept as appropriate. The choice is not just available out there. It is not just our right. Under the light of current challenges that rock our societies, it is our obligation. What we have or what we are cannot be the excuse for what we hesitate to become. The ultimate question is “whether we want to play the role of host to the past in its quest to populate the future” (Karaiskou, 2022a, 23), or if we will “actively create a new ‘stage’ for the present and future” Karaiskou, 2022, 236).

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References

- Aboounouga, G., & Machin, D. (2013). *The language of war monuments*. Bloomsbury Academic.
- Alexander, J. C., & Breese, E. B. (2011). On social suffering and its cultural construction. In R. Eyerman, J. C. Alexander, & E. B. Breese (Eds.), *Narrating trauma. On the impact of collective suffering* (pp. xi–xxxv). Paradigm Publishers.
- Amodio, D. M. (2013). Implicit prejudice and the regulation of intergroup responses. Theoretical contributions of the social neuroscience approach. In B. Derks, D. Scheepers, & N. Ellemers (Eds.), *Neuroscience of prejudice and intergroup relations* (pp. 165–189). Psychology Press.
- Anderson, B. (1991). *Imagined communities: Reflections on the origins and spread of nationalism*. Verso.
- Assmann, J., & Czaplicka, J. (1995). Collective memory and cultural identity. *New German Critique*, 65, 125–133. <https://doi.org/10.2307/488538>
- Atance, C. M., & Hanson, L. K. (2011). Making predictions: A developmental perspective. In M. Bar (Ed.), *Predictions in the brain. Using our past to generate a future* (pp. 311–324). Oxford University Press.
- Barthes, R. (1991). In A. Lavers (Trans.) (Ed.), *Mythologies* (25th ed...). The Noonday Press.
- Bednarczyk, Z., Damhof, L., & Noszarzewski, K. (2018). Surfing the Future of Education. What Skills, Attitudes and Knowledge should the Educational System Aim to Develop to Address Future Needs. *Polskie Towarzystwo Studiów nad Przyszłością*.
- Bergson, H. (1946). In M. L. Andison (Trans.) (Ed.), *The creative mind*. Philosophical Library.
- Billig, M. (1995). *Banal nationalism*. Sage Publications.
- Brenton, J., & Müller, S. (2018). Is visual-perceptual or motor expertise critical for expert anticipation in sport? *Applied Cognitive Psychology*, 32(3), 1–8. <https://doi.org/10.1002/acp.3453>
- Brockmeier, J. (2002). Remembering and forgetting: Narrative as cultural memory. *Culture and Psychology*, 8(1), 15–43. <https://doi.org/10.1177/1354067x0281002>
- Brown, A., Coman, A., & Hirst, W. (2009). The role of narratorship and expertise in social remembering. *Social Psychology*, 40(3), 119–129. <https://doi.org/10.1027/1864-9335.40.3.119>
- Bruner, J. (1991). The narrative construction of reality. *Critical Inquiry*, 18(1), 1–21. (<http://www.jstor.org/stable/1343711>).
- Buckner, R. L., & Carroll, D. C. (2007). Self-projection and the brain. *Cognitive Sciences*, 11(2), 49–57. <https://doi.org/10.1016/j.tics.2006.11.004>
- Calhoun, C. (1993). Nationalism and ethnicity. *Annual Review of Sociology*, 19, 211–239. (<http://www.jstor.org/stable/2083387>).

- Chun, M. M., & Jiang, Y. (1998). Contextual cueing: Implicit learning and memory of visual context guides spatial attention. *Cognitive Psychology*, 36, 28–71. <https://doi.org/10.1006/cogp.1998.0681>
- Coco, M. I., Keller, F., & Malcolm, G. L. (2015). Anticipation in real-world scenes: The role of visual context and visual memory. *Cognitive Science*, 40, 1995–2024. <https://doi.org/10.1111/cogs.12313>
- Cuc, A., Ozuru, Y., Manier, D., & Hirst, W. (2006). On the formation of collective memories: The role of a dominant narrator. *Memory and Cognition*, 34(4), 752–762.
- Damasio, A. R. (1994). [2006]. *Descartes' error. Emotion, reason, and the human brain*. Vintage.
- Damhof, L. (2020). Can we teach futures like we teach history? In N. Larsen (Ed.), *Using the future: Embracing uncertainty, improving decision-making and democratising tomorrow* (pp. 40–55). SCENARIO reports, 3. Copenhagen Institute for Futures Studies.
- De Boer, A., Wiekens, C., & Damhof, L. (2018, June). 6th International Conference on Future-Oriented Technology Analysis (FTA) – Future in the Making (pp. 1–15). How Futures Literate are you? Exploratory Research on how to Operationalize and Measure Futures Literacy. Brussels, Belgium.
- De Cillia, R., Reisl, M., & Wodak, R. (1999). The discursive construction of national identities. *Discourse Society*, 10(2), 149–173. <https://doi.org/10.1177/0957926599010002002>
- Dillon, D. G., Ritchey, M., Johnson, B. D., & LaBar, K. (2007). Dissociable effects of conscious emotion regulation strategies on explicit and implicit memory. *Emotion*, 7(2), 354–365. <https://doi.org/10.1037/1528-3542.7.2.354>
- Eichenbaum, H., & Fortin, N. J. (2011). The neurobiology of memory-based predictions. In M. Bar (Ed.), *Predictions in the brain. Using our past to generate a future* (pp. 271–282). Oxford University Press.
- Eliade, M. (1992). In D. Apostolos-Cappadona (Ed.), *Symbolism, the sacred & the arts*. Continuum.
- Elsner, J., & Lorenz, K. (2012). The genesis of iconology. *Critical Inquiry*, 38, 483–512. <https://doi.org/10.1086/664548>
- Fornacciari, I. (2014). The complexity and stark of pictorial knowledge: About Foucault Reading Panofsky. *Images – Journal for Visual Studies*, 2, 1–12.
- Foster, H. (1988). *Vision and visibility* (Ed.). Bay Press.
- Foucault, M. (1982). The subject and power. *Critical Inquiry*, 8(4), 777–795. (<http://www.jstor.org/stable/1343197>).
- Foucault, M. (1994). *The order of things: An archaeology of the human sciences*. Vintage.
- Gilligan, C. (2014). Moral injury and the ethic of care: Reframing the conversation about differences. *Journal of Social Philosophy*, 45(1), 89–106. <https://doi.org/10.1111/josp.12050>
- Gilligan, J. (2003). Shame, guilt and violence. *Social Research*, 70(4), 1149–1180. (<http://www.jstor.org/stable/40971965>).
- Gillis, J. R. (1994). Memory and identity: The history of a relationship. In J. R. Gillis (Ed.), *Commemorations: The politics of national identity* (pp. 3–24). Princeton University Press.
- Harrison, J. (2006). Thinking walls: Reflections on a Theme by C.P. Cavafy. Culture & Memory. *Special Issue of Modern Greek Studies (Australia and New Zealand)*, 202–211.
- Hausmann, L. R. M., Levine, J. M., & Higgins, E. T. (2008). Communication and group perception: Extending the 'saying is believing' effect. *Group Process Intergroup Relations*, 11(4), 539–554. <https://doi.org/10.1177/1368430208095405>
- Heath, R. G., & Nairn, A. C. (2005). Measuring affective advertising – implications of low attention processing on recall. *Journal of Advertising Research*, 45(2), 269–281. <https://doi.org/10.1017/S0021849905050282>
- Hopwood, M. J., Mann, D. L., Farrow, D., & Nielsen, T. (2011). Does visual-perceptual training augment the fielding performance of skilled cricketers? *International Journal of Sports Science & Coaching*, 6(4), 523–536. <https://doi.org/10.1260/1747-9541.6.4>
- Hütterman, S., Noël, B., & Memmert, D. (2018). Eye tracking in high-performance sports: Evaluation of its application in expert athletes. *International Journal of Computer Science in Sport*, 17(2), 182–203. <https://doi.org/10.2478/ijcss-2018-0011>
- Hutton, P. H. (1987). The art of memory reconceived: From rhetoric to psychoanalysis. *Journal of the History of Ideas*, 48(3), 371–392. <https://doi.org/10.2307/2709758>
- Inayatullah, S. (1998). Causal layered analysis. *Futures*, 30(8), 815–829. [https://doi.org/10.1016/S0016-3287\(98\)00086-X](https://doi.org/10.1016/S0016-3287(98)00086-X)
- Inayatullah, S. (1990). Deconstructing and Reconstructing the Future. Predictive, cultural and critical epistemologies. *Futures*, 22(2), 115–141. [https://doi.org/10.1016/0016-3287\(90\)90077-U](https://doi.org/10.1016/0016-3287(90)90077-U)
- Jin, P., Ge, Z., & Fan, T. (2023). Research on visual search behaviors of basketball players at different levels of sports expertise. *Scientific Reports*, 13, 1406. <https://doi.org/10.1038/s41598-023-28754-2>
- Kahneman, D., & Tversky, A. (1982). The simulation heuristic. In D. Kahneman, & A. Tversky (Eds.), *Judgment under uncertainty: Heuristics and biases* (pp. 201–208). Cambridge University Press.
- Kansteiner, W. (2002). Finding meaning in memory: A methodological critique of collective memory studies. *History and Theory*, 41(2), 179–197. (<https://www.jstor.org/stable/3590762>).
- Karaiskou, V. (2015). Uses and abuses of culture. *Greece* (pp. 1974–2010). Cambridge Scholars Publishing. ISBN 978-1-4438-8068-8.
- Karaiskou, V. (2019). Visuality and emotional governance in the public sphere. In A. Benedek, & K. Nyíri (Eds.), *Perspectives of Visual Learning, vol. I: Vision Fulfilled: The Victory of the Pictorial Turn* (pp. 93–102). Series. Hungarian Academy of Sciences / Budapest University of Technology and Economics. ISBN: 978-963-313-304-0.
- Karaiskou, V. (2022). Memory landscapes and stories of shame: The coexistence of Greece, Cyprus and Turkey as an affective 'mission impossible'. In R. Gerodimos (Ed.), *Shame: Theory, Practice, Methods, Applications* (pp. 223–241). Palgrave Macmillan. https://doi.org/10.1007/978-3-031-05570-6_12.
- Karaiskou, V. (2022a). Facing the future through the light of the past. In K. Nyíri (Ed.), *Facing the Future, Facing the Screen. Perspectives on Visual Learning*, vol. 5, P. Aczél, A. Benedek & K. Nyíri (Eds.), pp. 21–23. Hungarian Academy of Sciences.
- Kazemier, E. M., Damhof, L., Gulmans, J., & Cremers, P. H. M. (2021). Mastering futures literacy in higher education: An evaluation of learning outcomes and instructional design of a faculty development program. Article 102814 *Futures*, 132. <https://doi.org/10.1016/j.futures.2021.102814>.
- Kieran, A. (2004). *Max Weber. A Critical Introduction*. Pluto Press.
- Kohn, H. (1950). Romanticism and the Rise of German Nationalism. *The Review of Politics*, 12(4), 443–472. (<https://www.jstor.org/stable/i261222>).
- Kristjánsson, A., & Campana, G. (2010). Where perception meets memory: A review of repetition priming in visual search tasks. *Attention, Perception & Psychophysics*, 72(1), 5–18. <https://doi.org/10.3758/A.1.5>
- Larsen, N., Mortensen, J. K., & Miller, R. (2020). What is 'Futures Literacy' and why is it important?. February 11 *Farsight*. February 11 (<https://medium.com/copenhagen-institute-for-futures-studies/what-is-futures-literacy-and-why-is-it-important-a27f24b983d8>).
- LeDoux, J. (1996). *The emotional brain: The mysterious underpinnings of emotional life*. Simon and Schuster.
- Lukes, S. (1975). Political ritual and social integration. *Sociology*, 9(2), 289–308. <https://doi.org/10.1177/003803857500900205>
- Lyotard, J. F. (1984). The postmodern condition: A report on knowledge. In G. Bennington, & B. Massumi (Trans.) (Eds.), *Theory and History of Literature*, 10. Manchester University Press.
- Markus, H., & Nurius, P. (1986). Possible selves. *American Psychologist*, 41(9), 954–969. <https://doi.org/10.1037/0003-066X.41.9.954>
- Mars, F., Saleh, L., Chevrel, Ph, Claveau, F., & Lafay, J.-F. (2011). Modelling the visual and motor control of steering with an eye to shared control automation. *Proceedings of the Human Factors and Ergonomics Society 55th Annual Meeting*, 1422–1426. <https://doi.org/10.1177/1071181311551296>
- Maxfield, L. (1997). Attention and semantic priming: A review of prime task effects. *Consciousness and Cognition*, 6, 204–218. <https://doi.org/10.1006/ccog.1997.0311>
- Miller, R. (2007). Futures literacy: A hybrid strategic scenario method. *Futures*, 39, 341–362. <https://doi.org/10.1016/j.futures.2006.12.001>
- Miller, R. (2011). Futures literacy – embracing complexity and using the future. *Ethos*, 10, 23–28. (<https://www.researchgate.net/publication/272739756>).
- Miller, R. (2015). Learning, the future, and complexity: An essay on the emergence of futures literacy. *European Journal of Education*, 50(4), 513–523. <https://doi.org/10.1111/ejed.12157>
- Miller, R. (2018). *Transforming the future* (Ed.). *Anticipation in the 21st Century*. Routledge.

- Miller, R., & Sandford, R. (2019). Futures literacy: The capacity to diversify conscious human anticipation. In R. Poli (Ed.), *Handbook of Anticipation. Theoretical and Applied Aspects of the Use of Future in Decision Making*. Cham: Springer. https://doi.org/10.1007/978-3-319-91554-8_77.
- Morris-Binelli, K., & Müller, S. (2017). Advancements to the understanding of expert visual anticipation skill in striking sports. *Canadian Journal of Behavioural Science*, 49(4), 262–268. <https://doi.org/10.1037/cbs0000079>
- Moxey, K. P. (1986). Panofsky's concept of "iconology" and the problem of interpretation in the history of art. *New Literary History*, 17, 265–274.
- Nora, P. (1989). Between memory and history: Les Lieux de Mémoire. *Representations*, 26, 7–24. <https://doi.org/10.2307/2928520>
- Omar, R., Kuan, Y. M., Knight, V. F., Manan, F. A., & Padri, M. N. A. (2017). Visual anticipation time differences between athletes in open and closed skills sports. *Movement, Health & Exercise*, 6(1), 13–19. <https://doi.org/10.15282/mohe.v6i1.80>
- Orliaguet, J.-P., Kandel, S., & Boë, L.-J. (1997). Visual perception of motor anticipation in cursive handwriting: Influence of spatial and movement information on the prediction of forthcoming letters. *Perception*, 26(7), 905–912. <https://doi.org/10.1068/p260905>
- Paivio, A. (1975). Perceptual comparisons through the mind's eye. *Memory & Cognition*, 3(6), 635–647. <https://doi.org/10.3758/BF03198229>
- Palma, C. E., del Campo, V. L., & Marin, D. M. (2003). Visual behaviours of expert padel athletes when playing on court: An in situ approach with a portable eye tracker. Article 1438 *Sensors*, 23. <https://doi.org/10.3390/s23031438>.
- Panofsky, E. (1939). *Studies in iconology*. New York: Oxford University Press.
- Poli, R. (2010). The many aspects of anticipation. *Foresight*, 12(3), 7–17. <https://doi.org/10.1108/14636681011049839>
- Poli, R. (2019). *Handbook of anticipation. Theoretical and applied aspects of the use of future in decision making*. Springer International Publishing.
- Popper, K. (1990). A world of propensities - two new views on causality. In *A World of Propensities* (pp. 24–329). Thoemmes Press.
- Savelsbergh, G. J. P., van der Kamp, J., Williams, A. M., & Ward, P. (2005). Anticipation and visual search behaviour in expert soccer goalkeepers. *Ergonomics*, 48(11–14), 1686–1697. <https://doi.org/10.1080/00140130500101346>
- Sauer, M. (2020). Panofsky – Warburg – Cassirer. From Iconology to Image Science. In J. Bracker (Ed.), *Homo Pictor. Image Studies and Archeology in Dialogue* (pp. 159–171). Freiburger Studien zur Archäologie & Visuellen Kultur 2. Heidelberg: Propylacum. (<https://doi.org/10.11588/propylacum.709>).
- Schacter, D. L., Chiu, C.-Y. P., & Ochsner, K. N. (1993). Implicit memory: A selective review. *Annual Reviews of Neuroscience*, 16(1), 159–182. <https://doi.org/10.1146/annurev.ne.16.030193.001111>
- Schenk, T., Franz, V., & Bruno, N. (2011). Vision-for-perception and vision-for-action: Which model is compatible with the available psychophysical and neuropsychological data? *Vision Research*, 51(8), 812–818. <https://doi.org/10.1016/j.visres.2011.02.003>
- Sontag, S. (1990). *On Photography*. Anchor.
- Taylor, E. S. (2011). Envisioning the future and self-regulation. In M. Bar (Ed.), *Predictions in the brain. Using our past to generate a future* (pp. 134–143). Oxford University Press.
- Thrift, N. (2008). *Non-representational theory: Space, politic, affect*. Routledge.
- Underwood, G. (2007). Visual attention and the transition from novice to advanced driver. *Ergonomics*, 50(8), 1235–1249. <https://doi.org/10.1080/00140130701318707>
- Van Biemen, T., van Zanten, T. F., Savelsbergh, G. J. P., & Mann, D. L. (2022). "What needs to be seen": An exploration into the visual anticipation behaviour of different skill-level football referees while observing long passes on-field. Article 102980 *Human Movement Science*, 85. <https://doi.org/10.1016/j.humov.2022.102980>.
- Weldon, M. S., & Bellinger, K. D. (1997). Collective memory: Collaborative and individual processes in remembering. *Journal of Experimental psychology: Learning, Memory, and cognition*, 23(5), 1160–1175. <https://doi.org/10.1037/0278-7393.23.5.1160>
- Wittgenstein, L. (1922 [2010]). *Tractatus Logico-Philosophicus*. Edinburgh Press.
- Zajonc, R. B. (1980). Feeling and thinking. Preferences need no inferences. *American Psychology*, 35(2), 151–175. <https://doi.org/10.1037/0003-066X.35.2.151>
- Zajonc, R. B. (2001). Mere exposure: A gateway to the subliminal. *Current Directions in Psychological Science*, 10(6), 224–228. <https://doi.org/10.1111/1467-8721.00154>