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# Emotion, Perception, and Relativism in Vision

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## Precis

I defend a position in which affective and emotional reactions are incorporated into visual representations. Such incorporation allows affect, emotion and perception to operate together in a more efficient manner than other accounts. It is also consistent with developing thinking on brain structure and functionality. In this account, emotions are constructed by an individual based on cultural and societal factors: within these constraints, emotions emerge from affective reactions by a conceptualisation of those reactions — states of affairs and affective reactions are matched with existing emotion concepts. Emergent emotions form part of the information used at the earliest stages in building a visual representation (a specific neural pathway has been identified), so that emotion information is incorporated into the visual representation. This is relativism in vision.

I show that societies sharing very broadly a similar set of values will share a very broadly similar set of emotion concepts and emotional reactions, so that affect- and emotion-based variations in representations will be small enough to be either unnoticed or explained away. Concerns about relativism in vision generally are groundless: vision cannot be subject to whim and fancy, as societal factors constrain the degree to which variations in visual perception may occur.

This is not the case when two cultures with materially different cultural values and hence emotions meet, such as in Australia, where traditional Australian Aborigines rub shoulders with their Anglo-European counterparts. Here visual perception may be sufficiently different between the two groups that detailed, fine-grained communication will be hampered, which may be an additional factor contributing to the difficulty of effective cross-cultural provision of mental health services in Australia.

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## Introduction

Why do objects appear in one way in one circumstance, and in a completely different way in another? I have been walking in the country for hours in summer temperatures above 30°C, and I am tired and thirsty, and hot sweaty and dirty, when I encounter a lake. This lake looks a particular way to me — it looks inviting. Having walked the same path on a sunny Autumn day where temperatures have not risen above 9°C, I am none of tired, thirsty, hot or dirty, and when I encounter the lake it looks a different way to me — it is certainly not inviting. This is a common phenomenon, so common as to be unremarkable. But how do we account for it?

A conventional approach may be to deny that there is any visual difference: to claim that the mental representation of the lake is identical in both cases, and that the difference comes from how we think about each representation. On this approach, the representation is inviolate — the lake is, after all, the lake — and without adjusting it we attribute to it a property of 'inviting', which we come to feel is a visual property (for indeed we think the lake 'looks' inviting). Or perhaps we recognise affordances in the lake (relief from heat and thirst), and those affordances make us think differently about the lake, and again make us feel the lake looks different.

This conventional approach may be thought a 'common sense' role: after all, we see 'what is out there', and interact with what is out there as a substantial reality existing independently of how we think about it. It also preserves certain aspects we want to attribute to perception, particularly that perception provides warrant for belief. The example of the lake is a simple one, but in more complex situations, allowing attitude or other cognitive processes to change perceptual representations undermines to a greater or lesser extent any epistemic role we may demand of perception.

The conventional approach is a complicated approach physiologically, as it demands complete isolation of visual processes. This isolation seems increasingly improbable given current neuroscience, if not in complete conflict with current thinking

on brain anatomy and function. It is also an inefficient approach. The main purpose of perceiving states of affairs is to be able to react to those states, and it is more efficient to be able to react at the earliest possible moment, and not delay for even the shortest of periods. The conventional approach is also an unlikely evolutionary result, for it assumes as an evolutionary advantage a representation of the state of affairs in a manner completely independent of how we *need* to think about those states of affairs (or, how the organism *needs* to react to the state of affairs). The demand placed on perception is not to represent a mind-independent representation of states of affairs, but to represent the state of affairs in a manner that is relevant to the needs of the individual (or, organism).

The lake example is a simple one, and it is easy to recognise the difference between the lake viewed in 30° of heat and 9°, but the principle applies on even the smallest levels. Research has shown that we can have affective reactions to objects simply in virtue of their shape, even at the smallest scale: we seem to like curves more than angles, so the letter S may be more attractive than the letter A (thus written). Font makes a difference, too, so I may favour one form of the letter S above another. Given that we can have affective reactions at this level, it is conceivable that the letter S could for a time become aversive for me — perhaps I had a bad experience with a snake or worms, and the letter serves to remind me. The same letter S, in other words, can produce different affective reactions.

The less complicated, more efficient approach, and one that seems in line with current thinking on brain anatomy and function, is that affective reactions are incorporated into visual representations. This is how the lake and the letter S come to appear differently to me in different circumstances — the representation is different. Or, at least, this is the position I will defend.

On my account, affective processes are inseparably linked with perceptual processes, having developed jointly over evolutionary time to serve the interests of the organism: the need to survive and to thrive. Operating together, and together with all other aspects of the individual, they serve these two primary needs. Neural pathways

have been identified that link early visual regions with affective (and emotional) processes in a feed-forward and feedback process — this points to affective (and emotion) feedback forming part of the ultimate visual representation. On this view, we do not wait for the full representation of the panther to be presented to us by an isolated visual system operating independently, and then react to that: feedback in early vision from affective processes mean that the danger inherent in the panther is represented at the earliest possible moment, so reaction is swift and efficient.

In other words, affective (and emotion) processes are involved in the construction of the representation of the lake and the letter S: my affective state is indeed incorporated into the visual representation. That I feel tired and hot and thirsty are all represented in the image of the lake, and ensure that the lake is represented as a solution to the discomfort. By contrast, on the autumn day, the lake is represented as something that is likely to produce or increase affective discomfort — simply because there is nothing about my affective state that can be improved by any use of the lake. My horrible experience with a snake or with worms will be represented in my perception of the letter S, making it aversive — until I have forgotten the experience, when the representation loses its aversive character to that extent.

I have to this point been referring primarily to affective states, and leaving emotions bracketed. But, I will also defend a theory of emotions that dovetails neatly with my position on perception: emotions emerge out of affective states in virtue of a cognitive act, a matching of the affective state and the state of affairs with an emotion concept. Emotional states are affective states made richer with greater information, information relating to both the usage and content of emotion concepts. It is here that cultural variation is encountered, for different cultures use emotion concepts in different situations, and the content of those concepts also varies: shame, for instance, is used in different situations in various cultures, and the manner in which that shame is manifest, the rules on how it is displayed, also varies between cultures. This variation tracks variation in values, for emotional reactions are directly related to values: sadness is

associated with loss, but only the loss of something I value; anger is associated with goal inhibition, but only in respect of goals that are valued.

Cultural values, then, play a central role in my story: cultural values in part determine affective and emotional states, and affective and emotional states in part determine perceptions. To be quite clear about what I mean by this: these states determine that an object may be represented differently — the form of the object in the mental representation will be in part determined subjectively by these states. This is relativism in vision, but I will show that it is benign relativism, for not only are the emotion-based variations in representation relatively small, there are powerful practical societal forces at play that confine or even eliminate how that variation is used. Vision cannot be subject to whim or flights of fancy at the risk of chaos, and nor does the relativism I endorse allow it to be: we need to communicate, we need to interact in society, and we are trained from a very early age to communicate and to interact ignoring the slight variations that our emotions produce. When we do notice them, in ourselves or in others, we are able to explain them away: we hold faith in the notion that our vision presents us with an image that is somehow representative of the world independent of any mind influences.

The cognitive impenetrability theorist and the naive realist (and perhaps others) will object, will insist that vision presents a mind-independent reality (which we may subject to later processes). I think their position makes unnecessary demands on vision: vision, together with all other systems that make up the human individual, serves the goals of surviving and thriving. Presentation of a mind-independent reality is not necessary for these goals: what is necessary is swift and accurate representation of aspects of the state of affairs that are salient, that promote these goals, one that facilitates swift selection of an appropriate reaction. To demand more from vision in the form of mind-independent reality is to demand too much, for it does not serve the fundamental goals of surviving and thriving. Perception serves our practical day-to-day concerns.

It is fair to say that relativism in vision may undermine perceptual warrant for belief, but this is insufficient grounds to exclude it. It is important that this issue be correctly framed, without putting the cart before the horse: the point is that we may have perceptual warrant if there is no relativism in vision, it is not that we wish to have perceptual warrant therefore there can be no relativism in vision.

I have said that the relativism I am defending will not generally produce materially different forms of objects, that the differences will be sufficiently small that we can explain them away. This is the case, I think, because we have a broadly shared set of values, WEIRD values, being Western, Educated, Industrialised, Rich, and Democratic. Sharing WEIRD values to a greater or lesser extent means that to that extent our affective and emotional reactions, our affective and emotion states, are going to be broadly similar. Variations in how shame and anger are treated will produce differences in forms of objects in different cultures, but those differences can be ignored or explained away. We can communicate and interact.

This will not be the case when individuals from two completely different cultures meet, such as in the case of an Australian Aborigine brought up in a traditional manner meeting her Anglo-European counterpart. They will of course be able to communicate on a surface level, and to interact, but I think that in virtue of their vastly different values (which at this stage I stipulate, I will develop the theme in the body of the thesis), they are seeing different worlds, and their communication remains superficial. This superficiality will emerge when communication is demanded at a fine-grained level, such as in a discourse between a provider of mental health services and her client — communication breaks down, because here the detail and precision demanded in the communication expose the fact that the two are literally talking of two different worlds.

I think this is a contributing factor in the failure to provide effective mental health services cross-culturally in Australia.

To develop and defend this position, in the first three chapters I present a theory of emotions. In Chapter One, I present the theory, and then commence its defence with the

first aspect that I think is essential to a theory of emotion, appraisal. I examine the nature of appraisal, where there is an identifiable tension between the need for both speed and accuracy. I suggest a possible solution. I also examine a number of appraisal theories, concluding that formation of an emotion demands more than appraisal only. I conclude the chapter by detailing the connection between values and emotions.

In Chapter Two, I take some time to discuss basic emotions, both Ekman's Basic Emotion Theory<sup>1</sup> and other less strong versions, such as Griffiths'<sup>2</sup>: the notion of basic emotions is useful, I think, but emotions are not natural kinds.

In the balance of Chapter Two, and through to Chapter Four, I examine somatic and cognitive aspects of emotions, concluding that both are necessary — just as more than appraisal is needed to produce an emotional reaction, more than just bodily reactions or cognitive activity is needed. All are required. This discussion takes me into some detailed discussion of Prinz's theory of emotion<sup>3</sup>, which although essentially a somatic theory, provides insight into the cognitive aspect of emotions. There are parallels between Prinz's theory and the one I defend, but in the end I think restricting emotions to bodily reactions underdetermines the richness of emotional experience.

I examine pure cognitive theories, in the form of judgementalism, taking Solomon's theory as helpful for a number of reasons<sup>4</sup> — again, I find there is much common ground, but the denial of a bodily aspect falls short when weighed against evidence.

Discussion of cognitive aspects in Chapter Four brings me to a detailed discussion of how cultural values in part determine emotional reactions. I detail a significant amount of empirical evidence — and accept that the evidence may well be interpreted differently, in opposition to my position. This alternative interpretation relies on the existence of

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<sup>1</sup> For a summary, see Ekman, P. (1999). Basic emotions. In T. Dalgleish & M. J. Power (Eds.), *Handbook of cognition and emotion* (pp. 45–60). John Wiley & Sons Ltd.

<sup>2</sup> Griffiths, P. E. (2008). *What Emotions Really Are*. University of Chicago Press.

<sup>3</sup> Prinz, J. J. (2004). *Gut Reactions*. Oxford University Press.

<sup>4</sup> Solomon, R. C. (2006). *Not passion's slave : emotions and choice*. New York ; Oxford: Oxford University Press.

basic emotions as natural kinds (or, at least, as something more than abstractions), and I will have already found basic emotions to be abstractions. This leaves my interpretation preferred, and the evidence supportive of my view.

Chapters Five through Seven are concerned with perception, particularly how visual processes can be influenced by non-visual (top-down) factors — I develop this through to Chapter Seven, where I focus particularly on emotion as a top-down influence.

I commence Chapter Five by establishing my counterpoint, a distillation of the common points between defenders of the cognitive penetration thesis and naive realists that I label a 'Shape Only View'. The Shape Only View is not dissimilar to Brewer's Object View<sup>5</sup>. I go on to defend my position on relativism in vision against the Shape Only View, showing that the relativism I defend is advantageous. In Chapter Six I present empirical evidence of my position, showing how experiments show that emotional states do indeed change visual representations. I conclude Chapter Six by presenting evidence of neural pathways which facilitate top-down influences in early vision, something I continue into the opening of Chapter Seven, where I present evidence of specific emotion-based neural pathways facilitating emotion state influence in early vision.

I go on in Chapter Seven to demonstrate how emotion may be represented in an image by reference to works of art by emotionally troubled artists, particularly Edvard Munch. My position is that just as Munch's emotions informed his brush strokes in painting (*inter alia*) *The Scream* to produce an image replete with emotion, so our emotions inform the formation of an image that can be replete with emotion.

I conclude Chapter Seven and this thesis by detailing just how much the values of a traditional Australian Aboriginal culture differ from those of a WEIRD culture, and how that stands as an obstacle to cross-cultural provision of mental health services in Australia.

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<sup>5</sup> Brewer, B. (2011). *Perception and its Objects*. Oxford Oxford University Press.

## CHAPTER ONE: APPRAISALS AND THEIR VALUES

### 1.0 Introduction

My overall task in this thesis is to demonstrate how affective reactions and emotions affect perceptions, and to show how this may affect communication between peoples whose cultural backgrounds differ significantly. I suggest it as a contributing factor in problems in cross-cultural provision of mental health services in Australia. Naturally, I must commence by establishing what it is I mean by each of affective reactions and emotions, and the relation between them. I must present and defend a theory of emotions, demonstrate how I think we need to think about emotions.

What, then are affective reactions and emotions? They seem familiar terms, and may in some circumstances be treated as similar, if not identical — intuitively, they are both terms that cover broadly how we react to things around us. From the perspective I defend, they are related but different, and their differentiation is important in understanding the emotional experience.

Affective reactions are the immediate bodily reactions to how states of affairs affect the concerns of the individual — the racing heart, held breath, elevated blood pressure and the rest that may follow the appearance of a bear in my path are all affective reactions. It follows, then, that at any given time, the body is in a given affective state, seen generally as a product of valence and arousal: I am very frightened of the bear, I am vaguely pleased that I have been given an apple, I am content reading my book. Core affect refers to the affective state of the body at any given time — we are always in one or other state of affect, or core affect: I am almost always feeling vaguely or strongly positively or negatively about my situation, and even contentedness or neutrality will be reflected in my core affect.

Where affective reactions are immediate somatic reactions, emotions are significantly richer reactions, replete with complex behavioural content, and they emerge from core affect. To demonstrate the difference, consider Olivia, who feels an intense negative reaction to a particular public display of drunkenness by her husband — she is in a highly aroused state of negative core affect. But this is not her emotional state: her emotional state will emerge from that core affect. And that state is not predetermined by the valence or arousal of core affect: Olivia may be angry at her husband, or she may be embarrassed. She may equally be bitterly disappointed, or regretful that they had attended the function. On a different approach, she may be angry at those who had egged him on, or who had plied him with strong drink. And whether she is angry or embarrassed, disappointed or regretful, each of those emotions will carry with it behavioural responses — and these are not predetermined, either: Olivia is not required to scream or to pout or to refuse to speak to her husband, or to go home without him. Within parameters (culturally determined, something I will discuss in later sections), she is free to establish her own emotional reaction.

There, then, is the difference between the two states — but what they have in common is they are both intentional states, they are both about something: I have a strong negative reaction *to the bear*, and I am scared *of the bear*. But initial affective reactions and emergent emotions do not have to share the same intentionality: Olivia has a strong negative reaction *to her husband's behaviour*, but she may be angry *with those who egged him on*. And nor, as Olivia's example makes clear, need there be only one possible intentional object for the same feeling: Olivia may be angry *with her husband*, or she may be angry *with those who egged him on*.

Emotional reactions are thus rich and varied, complex and information-full, and they are formed, or so I will defend, through a process of construction: core affect emerges from a (more or less) rapid appraisal, and cognitive resources are applied to add meaning to that core affect, to make sense of the affective reaction — the result is the richness of emotional reaction. And the process is continuous and recursive: current

affective and emotional states may affect subsequent states, and information concerning both affective states and emotional states becomes available for further appraisals, further emotional states.

All of this provides the success conditions for a theory of emotions. First, affective states and emotions act as an alert: they are reactions to the state of affairs, to how that state of affairs impacts upon our concerns. They warn us of danger, of things that impact negatively on these concerns, and they alert us to things that impact positively on them. This primary function must be reflected in a theory of emotion. Second, we both feel this alert and interpret it: it is neither wholly a bodily state, nor wholly a mental state. Third, this alert function cannot be looked at in isolation, it must be linked to reactivity: the alert function must be integrated in an efficient manner into the ability to react to the alerts. Fourth, there must be an efficient updating system, reflecting the fact that the concerns of the individual will change from time to time, and sometimes rapidly. Alerts must relate to the then prevailing concerns of the individual. Finally, the theory must allow for a plausible evolutionary development of the system: the human affective/emotion system did not spring fully formed into being, but is the product of development with all other systems from much more primitive primitive systems within much simpler organisms. These systems all developed with the primary goal of survival and thriving of the organism.

With those success conditions in mind, the theory I will defend is depicted in Figure 1.1. Those alert to Barrett's constructionist theory will notice the striking similarity:

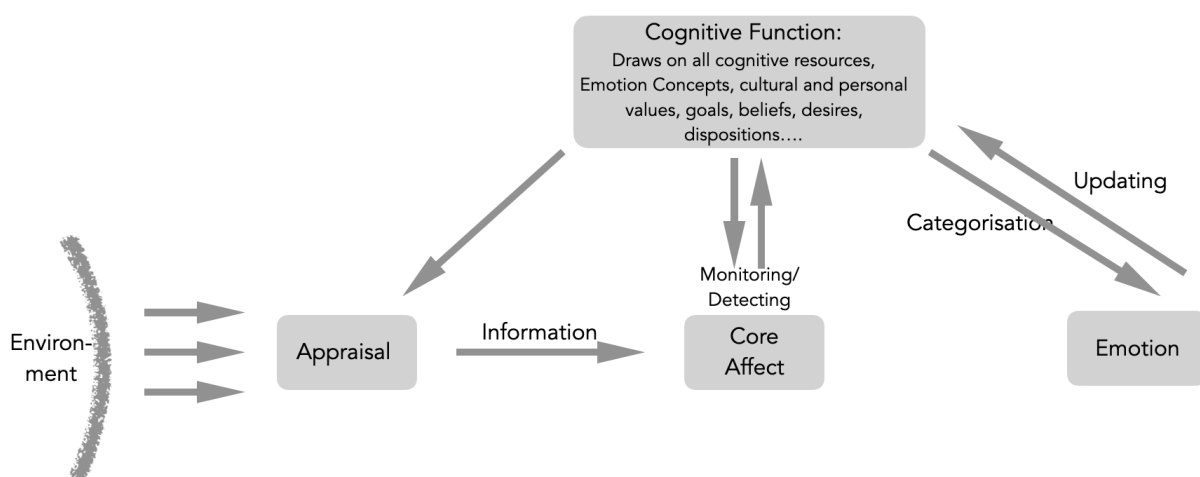


Figure 1.1: Simplified schematic diagram

my position emerged from close study of her theory, and save for two what I think are important modifications, it is essentially her theory (Lisa Feldman Barrett, 2020).

Essential aspects of the theory are:

- an evaluation of the state of affairs, an appraisal.
- a recognition of the role of bodily changes, a somatic aspect;
- intentional feeling states (what Goldie terms 'feeling towards'); and
- a 'making sense' of the feeling, in which the individual finds meaning in the experience, a cognitive aspect.

The process is started with **appraisal** (developed more fully in section 3.0): a change in the environment is detected, a stimulus, which is appraised for how it might affect the concerns of the individual, either in promotion or inhibition. Two aspects of this deserve close consideration, firstly, the nature of the appraisal. Here we find a tension, because the appraisal must be both fast and accurate — and one of these will usually come at the cost of the other. Theorists have taken various approaches to the resolution of this tension, of greater or lesser complexity. I will suggest this is analogous to two system thinking, and that theory in that area may assist here.

Secondly, there is the matter of what the stimulus is measured against: how are these standards set, and how are they updated to ensure appraisal is in keeping with currently prevailing concerns? I will show the role **values**, and particularly **cultural values** play in appraisal (developed more fully in section 4.0).

From appraisal emerges **core affect**, a somatic reaction, which I discuss in detail in section 6.0 of Chapter Three — core affect is a bodily representation of how the state of affairs relates to the concerns of the individual. A warning, an alert: things are not going well, there is something that needs attending to, but at the same time a preparation — increased heart rate, held breath, raised blood pressure, all preparations to react to danger. Or, equally, things are going well, there is something attractive to attend to: the infant sees her mother's face, smiles, reaches for it.

The information in core affect is sufficiently rich to inform simple or elementary reactions (run, reach), but insufficient to inform more sophisticated reactions, to place the stimulus in a complex and nuanced social environment. In such an environment core affect requires more to allow it to gain meaning: it needs to be located with a culture, within a sophisticated holistic network of social and emotional concepts, for it to achieve meaning. This is achieved through a **cognitive act** of categorisation, what Barrett terms a conceptual act, in which core affect in the context of the stimulus is matched with an emotion concept. The emotion concept is rich with information, providing both meaning and behavioural options: the full emotion follows. I discuss this cognitive act and its relationship with cognitive processes in other theories of emotion in detail in section 2.0 of Chapter Four.

If the process had an end, it would be with this emotion: the construction of that experience is complete. But it does not end: there may be a reappraisal, resulting in a different core affect and a different emotion. Or, a different concept may be applied (Olivia becomes embarrassed rather than angry). And all of the information used in the process becomes part of the cognitive resources available to inform the next appraisal.

Objections will come from a number of fronts. Appraisal theorists including Lazarus and Scherer will claim that the entire process can be encapsulated within an appraisal; Basic Emotion Theorists such as Ekman will claim that appraisal precipitates the deployment of affect programs, which themselves are responsible for the emotion; somatic theorists in the James-Lange tradition, most recently espoused by Prinz, will place the entirety of the emotion process in the body; and pure cognitive theorists will claim that emotion is solely a matter of cognition. There will be those who will question the involvement of values and/or cultural values in the formation of emotions.

In this and the following three chapters, I will present the aspects that I think are essential in the formation of emotions, and in so doing will both promote my position and defend it against objections. I will demonstrate how my position offers both the richness and the cultural diversity that we see in emotions around the world.

And I will be left with a base from which to incorporate perception into the mix, to demonstrate how affective reactions and emotions affect perception — and how that can impact on communication between people of significantly diverse cultural backgrounds.

But before I commence with the first aspect, appraisal, I must deal with a threshold matter, that of placing emotions into the overall context of the individual — it reflects a perspective that I will carry through to perception. Whilst it is helpful to study emotions separately, to develop a theory of emotions that will allow us to understand them, it is imperative that we maintain the perspective that the emotion system is one of many systems that make up the individual, and serve the individual as an undivided whole.

## **2.0 Emotions as Aspects of the Whole**

As it is the emotions theorist's task to study emotions, it is incumbent upon her to isolate her subject, to define the limits of her study — it is important for her to be able to say, 'these are the emotions.' This is not different from studying any other aspect of human functioning, but it tends to create a notion that we are creatures created in parts — the notion that we can lay out individual bits and say, 'Look, here are the bits we use to walk around, here are all our sensory sensory functions in a row, one to five, here's the bit we think with, here's the bit we emote with,' and so forth. Realising that our thinking processes are complex, we then seek to divide thinking into parts, so we try to identify the part we use to think quickly, and the part we use to think more deliberately. At the risk of parody, we end up saying, 'This is the bit we use when we see a bear.'

In a theme that will recur throughout the coming chapters and particularly Chapters Five through Seven, where I will address the issue in more detail, I think the 'sum of the parts' perspective is wrong in principle. Rather than viewing the individual as a sum of parts, even highly integrated parts, I think it important to view the individual as a single functioning organism with different aspects that demand study — for I think this reflects evolutionary reality. The organism developed as a single organism, and evolutionary pressures allowed it to grow increasingly sophisticated — and the forces behind that

development are the need to survive and to thrive. Survival and thriving are the sole determinants of the increasingly sophisticated development of the organism.

In this light, it becomes apparent that there was no specific task such as, 'I need to walk on two legs,' or to grow fingernails, or to develop a system so that I can see the world exactly as it is (whatever that may mean). Nor was there any specific task developed and specified and put into place to develop a signalling system, a type of alarm, something that will call attention to salient properties in the environment. Each system that we identify developed, rather, as part of the development of the organism as an undivided whole, in pursuit of survival and thriving. As much as we separate out each system for study, it remains an inseparable aspect of the whole organism.

On my account, emotions are a product of core affect. But core affect is not a dedicated part of an emotions system. Core affect is influenced by the environment, which is the usual trigger for an emotional reaction, but it is also influenced by internal factors. As a barometer of 'How are we doing?', it monitors internal bodily functions to maintain proper function as much as it monitors the environment for stimuli that may have an impact on how we are doing. Core affect is a signalling system, and it may equally signal the need to adjust something internally, from heart rate to the level of a particular hormone, as a danger in the environment. When we study emotions, we tease out of core affect those aspects which are of interest to us (and in some circumstances the adjustment of heart rate will be of interest, in others it will not), and we attach those aspects to other functions such as appraisal and cognition to form a picture of how emotions work. But we cannot isolate an emotion system as a part of the individual, only as a functional aspect.

The tendency to view individuals as parts carries through to the study of brain function: we identify a psychological property, and we seek to link that property directly to brain function, on the assumption that the brain developed (partly) to produce that function. This is the assumption behind the idea that basic emotions have neural correlates — fear is in part a psychological property, and the assumption is that it must relate to a part of the brain. Functional Network theorists have produced considerable

evidence to demonstrate that this approach is simply wrong, that the brain is not divided into such parts, each reflecting a psychological property we identify<sup>6</sup>. On this approach, the brain functions with a series of functional networks, from which emerge psychological properties we may study — but as emergent psychological properties, not as properties of the brain. Thus we can find no evidence of neural correlates for basic emotions.

I think the notion that we developed through evolutionary processes with the sole driving force being to survive and to thrive is an important one, for it allows us to view the organism as a whole. In later chapters on perception I will be showing how emotion affects perception, and it is helpful not to view the two systems as even highly integrated parts. Thinking of the two systems not as two highly integrated parts, but as different aspects that we choose to separate for legitimate reasons of study clears the way to see this how one system affects the other.

### **3.0 Evaluation or Appraisal**

#### **3.1 Generally**

Emotions are reactions to the environment, to the state of affairs, as that state of affairs affects the concerns of the individual. They may usefully be seen as signals, signalling something of significance in the state of affairs: Ben-Ze'ev (2001, p. 13) likens emotions to a burglar alarm, signalling that something in the environment requires attention. Pointing out how emotions draw attention to important features of the environment, Brady (2008) calls emotions 'alerts' to those features, which at the same time specifies them as positive or negative. We are made aware that there is something in the environment which requires our attention.

I agree with these two analogies, and add that the signal is rich in content. Each signal has its own content, inherently either positive or negative. A negative affective or emotional signal may be thought of as signalling something like, 'Less of this!', whilst a

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<sup>6</sup> I deal with network functioning in more detail with references in section 3.2 of Chapter Two.

positive affective reaction may signal something like, 'More of this!' — this is contentful signalling.

But where does this content come from? Even on a purely attentional approach, that emotions direct attention to something that bears consideration, there must be some kind of evaluation that leads to that directing. Something is recognised as either positive or negative, when measured against the individual's concerns, and this recognition requires an evaluation. Magda Arnold, a pioneer in appraisal theorising, offers an analogy to describe appraisal:

"If we see somebody stab at our eye with his finger, we avoid the threat instantly, even though we may know that he does not intend to hurt or even to touch us. Before we can make such an instant response, we must have estimated somehow that the stabbing finger could hurt. Since the movement is immediate, unwitting, or even contrary to our better knowledge, this appraisal of possible harm must be similarly immediate." (Arnold, M. B., 1960, p. 172)

Elsewhere, she offers a simple definition of appraisal:

'[Appraisal] is a mere acceptance or refusal of the expected effect of the situation on us; another dynamic, the impulse toward what is appraised as good, and away from anything appraised as bad. Accordingly, the emotion becomes a felt tendency toward anything appraised as good, and away from anything appraised as bad.' (Arnold, Magda B. 1970)

Solomon considers appraisal ubiquitous:

'There is no such thing as a totally naïve perception and no emotion that is not based on perspectival, evaluative construal of the world.' (p213)

We need to appraise every situation, then, and for that we need to measure it against a yardstick, against what concerns us — we need to measure it against at least some stored information. And we need to do that rapidly — sometimes extremely rapidly. It seems that we have a tension here, for speed does seem to come at the cost of accuracy, and accuracy at the cost of speed, and this tension is reflected in the various approaches taken to appraisal. In the next few sections, I will examine various approaches to this tension, before proposing the elements of a possible solution.

## **3.2 Tensions in Appraisal**

### **3.2.1 Automaticity Sacrifices too Much**

There appears, then, to be a tension inherent in the appraisal process, in that it needs to be both accurate and rapid. As the Magda Arnold quote demonstrates, there are times when we simply cannot delay reacting. On the other hand, we must take a certain amount of care to ensure that we are appraising the situation accurately: it may not take me long to appraise the situation when a bear appears suddenly in my path, but then such overwhelming single stimulus situations are relatively rare. In the normal course of events, we are confronted with more complex and more nuanced situations, and we need to ensure our appraisals are accurate.

The speed requirement tends to demand some sort of automaticity, in the sense of appraisals involving pre-ordained reactions to given sets of stimuli, with limited cognitive involvement. There are some who view appraisals in exactly this manner. Ekman and Zajonc, for example, both approach appraisals in a similar fashion: appraisals are rapid, do not involve high levels of cognitive processing, and they commence the process of

emotion production (for them, appraisals are not constitutive of emotions, as some would have it).

In Ekman's 'Automatic Appraisal Mechanism' (Ekman & Cordaro, 2011), appraisals are considered to be automatic, do not involve any high cognitive processes,<sup>7</sup> and are modular and encapsulated (Griffiths, 2008 p100). The sense in which automaticity is used here is not clear: it may be linked to inevitability, in the sense that an appraisal is inevitable, or to content, that automaticity entails the exclusion of high cognitive processes and wilful deliberation (although he does allow for slower onset of emotions through a more extended appraisal). Ekman does not make a specific claim of modularity, but importantly his appraisal mechanism seems to entail a limited set of cognitive resources, updated over time, which is dedicated to the appraisal process — effectively a dedicated cognitive resource. Speed is presumably ensured by the limited resources that need to be accessed in the appraisal process. Ekman does accept that some appraisals may not take this automatic route, and may be more deliberative, but he seems to count these as a different type of appraisal.

Zajonc's (1980) approach is similar: he claims that information required for appraisal is too thin to deserve the label 'cognitive'. This does seem right, at least in the simplest of situations: the appraisal information generated when confronted by a bear does not seem to merit the label 'cognitive'. But as I have said, appraisals are not confined to overwhelming and obvious situations, and in the usual course of events, more

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<sup>7</sup> In this context, Griffiths described 'high cognitive processes' as 'processes in which people use information of the sort they verbally assent to ... and the goals they can be brought to recognise ... to guide relatively long-term action and to solve theoretical problems.'

complex appraisals are necessary, and they will demand much more information. Zajonc addresses this situation with the claim that there are pre-programmed responses such as the escape reaction which are reactive to particular types of sensory stimuli, and that these mechanisms could be co-opted to react to an increasingly wider range of stimuli. This process, writ sufficiently large, could produce an appraisal mechanism based entirely on the sensory system, excluding any cognitive processes.

Both theorists seem to accept, then, that automaticity in this sense has difficulty accommodating more complex appraisals: Ekman admits that there are more deliberative appraisals, but is not specific. Zajonc thinks individual specific appraisals may be 'bundled' to accommodate the more complex. Lyons openly tries to accommodate both speed and accuracy, suggesting there may be two distinct appraisal processes. He distinguishes 'the more or less objective sort of evaluation which is characteristic of emotions such as fear from the much more subjective evaluation, or appraisal, which is characteristic of emotions such as love' (Lyons, W. 1980 Ch 4).

Barrett portrays her theory as being similar to William James': James claimed that a stimulus will produce a response in an automatic, pre-ordained manner, in the way a key opens a lock. Barrett claims this aspect is similar to her theory's portrayal of how stimulus produces affective reactions (Barrett, 2006). Like James, she uses the term 'automatic' to describe affective response. Whilst she may be using the word in the sense of some form of affective reaction being inevitable, her association with James and his lock and key

analogy may mean she thinks the reaction produced will be in the manner of a reflex, with little or no processing.<sup>8</sup>

Automaticity in this sense, then, without any cognitive involvement, does seem problematic. But there are problems with the other end of the spectrum as well, in theories that emphasise the cognitive aspect of the appraisal, providing for levels of cognitive activity that are highly specified and are so complete that the appraisal process is constitutive of the emotion.

### **3.2.2 Purely Cognitive Appraisal Theories**

Scherer defends a highly specified cognitive model of emotion, where the appraisal process consists in appraisal of the stimulus against various appraisal components, those components ultimately determining the nature of the emotion. His 'Component Processing Model' is divided over both components and levels, with each level and component producing output which becomes input not only into the next level or component, but back to the previous level and component. He provides a great deal of specification: four factors (relevance, implications, coping potential, and normative significance) form categories within which decisions will be made. Each has a number of sub-categories — the factor 'relevance', for example, is divided into separate 'novelty', 'goal relevance', 'action requirement' and 'intrinsic pleasantness' tests. Each factor, in its

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<sup>8</sup> Here I take 'reflex with little or no processing' to be an automatic process as defined by Shiffrin and Schneider: 'a sequence of nodes that nearly always becomes active in response to a particular input configuration.' (Shiffrin & Schneider, 1977, pp. 155-156). This is not a cognitive process. Pessoa suggests that automaticity is better viewed in terms of a process' 'performance-resource' ratio, so that some processes that appear automatic are simply efficient (Luiz Pessoa, 2013).

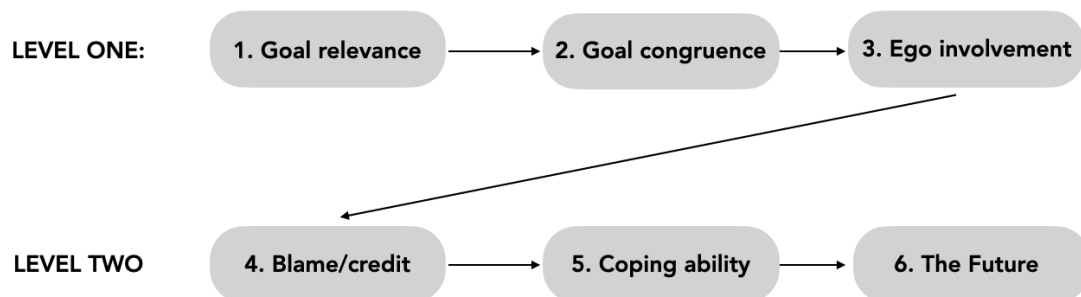
sub-categories, is determined cumulatively in a cascading series of decisions specified for each factor (Scherer, 2009a).

In a first taste of what will be an important part of my story (although I do not endorse component models themselves), because in component models, emotions reflect behavioural responses to a number of components, emotion categories exist as social and scientific constructs: anger, fear and so forth are convenient descriptive categories, none of them exist as a natural kind. Scherer presents emotions as a 'dynamic emergent process' (Scherer, 2009b).

Lazarus also offers an appraisal theory with a high level of cognitive activity — and again, the appraisal is constitutive of the emotion (Lazarus, R, 2001). His is a dimension appraisal theory, in which once again emotion categories are seen as descriptive categories — Lazarus also denies emotions exist as natural kinds. He relates emotional reactions to 'core relational themes', all of which can be associated with an emotion category. His core relational themes come up again in a later section, so a description of Lazarus' model will be useful.

Lazarus identifies two distinct stages in appraisal: first the individual makes a primary appraisal of how, if at all, a situation will affect her values and beliefs about self and world, and her goal commitments and intentions. If the situation has no impact on these (and similar) concerns, there is nothing that will cause stress, and no further appraisal occurs. If, however, there is a negative impact on any of these concerns or their like, the individual will enter into a secondary appraisal, appraising the potential harm or damage or loss, and seeking and appraising coping mechanisms for the resulting stress.

Within the first of the two levels, Lazarus identifies three dimensions of primary appraisal, which establish whether a situation or stimulus is emotionally significant, and three dimensions of secondary appraisal, which relate to emotional resources for reaction. Goal relevance is considered the fundamental aspect of primary appraisal — for Lazarus, if there is no goal involvement there can be no emotion.



**Diagram 1.2 Lazarus's two dimensions of appraisal**

Once goal relevance has been established, a situation will be appraised for goal congruence and incongruence, or, whether the situation tends to enhance or inhibit goal attainment. The former is likely to arouse what Lazarus terms a 'positively toned emotion', the latter a 'negatively toned emotion' (2001, p. 56). The final dimension is what Lazarus terms the 'type of ego-involvement', which determines what is at stake, such as self-identity and self-esteem, relational meaning, moral values, and wellbeing of others. Lazarus' fourth dimension of appraisal moves into the level of secondary appraisal, in which the individual appraises either blame or credit for the situation, a process Lazarus

insists is one of appraisal rather than attribution — in his language, this preserves its essential nature as being 'hot' or emotional, rather than 'cold' and rational as attribution is. Finally, we appraise the future, the possible outcome of our chosen coping methodology. Figure 1.1 offers an illustration of the structure Lazarus describes.

<b>Emotion</b>	<b>Core Relational Theme</b>
<b>Anger</b>	A demeaning offense against me and mine.
<b>Anxiety</b>	Facing uncertain, existential threat.
<b>Fright</b>	An immediate, concrete, and overwhelming physical danger.
<b>Guilt</b>	Having transgressed a moral imperative.
<b>Shame</b>	Failing to live up to an ego-ideal.
<b>Sadness</b>	Having experienced an irrevocable loss.
<b>Envy</b>	Wanting what someone else has.
<b>Jealousy</b>	Resenting a third party for loss or threat to another's affection or favor.
<b>Disgust</b>	Taking in or being too close to an indigestible object or idea.
<b>Happiness</b>	Making reasonable progress toward the realization of a goal.
<b>Pride</b>	Enhancement of one's ego-identity by taking credit for a valued object or achievement.
<b>Relief</b>	A distressing goal incongruent condition that has changed for the better or gone away.
<b>Hope</b>	Fearing the worst but yearning for better, and believing a favorable outcome is possible.
<b>Love</b>	Desiring or participating in affection, usually but not necessarily reciprocated.
<b>Gratitude</b>	Appreciation for an altruistic gift that provides personal benefit.
<b>Compassion</b>	Being moved by another's suffering and wanting to help.

**Table 1.3: Lazarus' 15 emotions and their core relational themes.**

These six individual 'molecular' appraisals when applied to any situation can be summarised in one or other 'molar appraisals' — an overall appraisal that Lazarus associates with 'core relational themes', each in turn associated with an emotion. Lazarus identifies fifteen core relational themes, reproduced together with their associated emotions, in Table 1.2.

To illustrate this process, Lazarus offers an example of the path towards anger. The following appraisals will be made in the production of anger:

- |                             |   |
|-----------------------------|---|
| 1. Goal relevance:          | relevant  |
| 2. Goal congruence:         | incongruent                                     |
| 3. Type of ego-involvement: | self-esteem, social-esteem, or identity         |
| 4. Blame or credit:         | someone is to blame                             |
| 5. Coping potential:        | attack is viable                                |
| 6. Future expectancy:       | goal congruence predicted to increase by attack |

Lazarus paints, then, a reasonably specified picture of the appraisal process — although he avoids rigidity. His core relational themes are simply idealised statements about fifteen emotions, so the fifteen emotion categories themselves are descriptive rather than prescriptive categories. Importantly, Lazarus claims emotions can change their fundamental character: emotions, he says, are even capable of being differently toned (valenced) — a positively toned emotion can become a negatively toned emotion — and such tone changes will alter their subjective experience dramatically. Further, an emotional experience could vary so much from its prototype that it raises the theoretical question of whether the label for the emotion is adequate, or whether a new label ought to be created for the variation.

His suggestion is that the labels we give to emotions, while helpful, should not be approached too rigidly. Emotions, he goes on, do not occur in isolation; they are mixed, to the extent that emotions should not be individually viewed or studied empirically, but in their context as 'dramatic stories that reflect an ongoing struggle to flourish'. His position is, then, that the content of each emotion, although falling within a range to allow of categorisation, is not fixed — he achieves this by asserting that the core relational themes are simply abstractions.

### 3.2.3 Comments on Appraisal Theories

On the basis that I identify four aspects that are essential to a theory of emotion, it is reasonably predictable that I am unconvinced by models that have appraisal doing all of the work — that will include Scherer and Lazarus. General reasons for rejecting this approach will emerge when I examine the other essential aspects, and demonstrate why I consider them essential, but it is worth making a few observations at this stage on having the appraisal doing all of the work. As Lazarus appears in some later sections, I will commence with comment specific to his theory.

Lazarus' theory, as I have said, has appraisal doing all of the work, and he achieves this essentially by defining emotion to be the end process of appraisal: the nature of the appraisal as a cognitive appraisal is dictated by his definition of emotion (Zajonc, 1984). In order for an appraisal to achieve all that Lazarus asks of it, it must involve a great deal of high cognitive processing (here once again I draw on Griffith's definition of high cognitive processes, see footnote 6), and a degree of specification of the content of those processes may be assumed. Zajonc criticises Lazarus' approach, saying that it is insufficient to claim the appraisal process is cognitive by defining emotion as that which emerges from a cognitive appraisal. Empirical evidence is needed, he says, to demonstrate that appraisal is cognitive — and he points to evidence that an affective reaction may be produced on significantly less information than is available from cognition (in his view making affect primary).

Save Zajonc's comments on definitional matters, these observations about high cognitive processes apply equally to Scherer's Component Processing Model, which explicitly involves high cognitive processes.

Although I disagree with his assertion that appraisal is *never* cognitive to any extent, I think Zajonc (with Ekman and Lyons in this respect) is in principle correct: affective appraisal can be achieved with much less information than Lazarus (and Scherer) portray (Zajonc offers examples, for instance, of affective reactions based on very limited sensory information). It may well be that Lazarus and Scherer would both agree on this point, but their two positions are distinct at the other end of the appraisal scale: Lazarus and Scherer may agree that some appraisals are made on very little information, but Zajonc will not agree that they are ever based on high cognitive processes.

The notion that appraisals never involve any degree of high cognitive processing seems to involve some form of modularity, as Griffiths suggests — and at least a separate set of cognitive resources to restrict the information over which the module may operate. This involves important questions as to the manner and speed of the update, and the selection of information which will be updated: this update must be made rapidly, and a system for the update must be specified. And it is imperative that it is updated with relevant information, and some basis must be established for selecting what is relevant (bearing in mind that there is no prior knowledge of what may need appraising next).

At the end of the day, neither automaticity nor full cognitive involvement seem to offer ideal solutions — they each represent a compromise, and too costly a compromise at that. And each involves specific cognitive structures. On the one hand, there is a demand for a dedicated set of cognitive resources to ensure speed, and on the other there are pre-ordained structured processes. An ideal solution would accommodate both speed and accuracy, without compromising either, and would not make any particular

structural demands. In the next section, I will suggest that a solution may offer itself from another area.

### **3.3 Appraisal and Dual Systems Thinking**

#### **3.3.1 Generally**

There is, as I have identified, a tension in the various demands made on appraisal. I have examined a broad spectrum of appraisal notions, Lazarus' and Scherer's specified appraisal process at one extreme, and the non-specified approaches of either Ekman's Automatic Appraisal Mechanism or Zajonc's notion of appraisal at the other. Lazarus' and Scherer's both envisage high level cognitive processes, and both Ekman and Zajonc exclude such processes from appraisal. Griffiths observes that such non-cognitive appraisals will involve a dedicated and encapsulated set of cognitive resources available to the appraisal, which resources would over time be updated.

Both Ekman and Zajonc talk of appraisals being automatic. 'Automatic' is a difficult word, with different meanings being attributed to it in different circumstances, and it is sometimes not entirely clear what the theorists mean. I suggest Ekman may mean either or both of 'inevitable' or automatic in the sense of 'reflex with pre-ordained processing'. By reflex with preordained processing I mean an automatic process as defined by Shiffrin and Schneider: 'a sequence of nodes that nearly always becomes active in response to a particular input configuration.' (Shiffrin & Schneider, 1977, pp. 155-156). This is to say that I think both Ekman and Zajonc consider appraisals both to be inevitable, they cannot be stopped or avoided, and that they generally will follow a pre-determined path so that a given type of stimulus will always produce the same appraisal. Here I have reserved with

the word 'generally', because Ekman does accept that there may be more extended appraisals — he is clear that in these cases, the individual is struggling against an appraisal that would otherwise happen, reinforcing my claim that his use of 'automatic' does cover reflex without processing. Zajonc makes no such reservation, but is clear that he considers appraisal to be akin to a reflex. That appraisals are automatic on both counts reinforces Griffiths' claim that they will involve a dedicated and encapsulated set of cognitive resources.

The tension in the demands of speed and accuracy, and the acknowledgement that some appraisals are so rapid as to appear reflex, while others appear more deliberative, points towards there being two distinct types of cognitive processing systems, with two distinct sets of cognitive resources. This is analogous to the notion that there are two systems of thinking, system one being fast and efficient, and system two being more deliberative. Carruthers (2015) suggests a more efficient approach to two systems thinking: rather than two functioning systems, there is a single functioning system that operates at two levels, the higher level being realised by repeated cycles of the lower level.

The two situations being analogous, this solution may present an efficient solution to the tension in appraisals: this would accommodate both Zajonc's thought that appraisals are not cognitive, and other's views that some appraisals are more sophisticated. A detailed solution to the tension in the appraisal system is not essential to the working of the theory I am defending (for the theory works whether appraisal is achieved in multiple systems or a single system), and investigation of the possibility

demands detailed research. I will however elaborate slightly on Carruthers' approach, and test whether it offers potential as a solution to the tension in appraisal.

### **3.3.2 Argument from Conscious Thinking**

The idea that we have a dual cognitive system is widely accepted: two modes of thinking — 'termed System One' and 'System Two' by Stanovich and West (2000) — one unconscious, automatic and efficient in its use of cognitive resources, the other slower and more deliberate. Current thinking on the matter is reviewed and discussed by Evans and Stanovich (2013). The thought is that System One and System Two may not be two separate cognitive or neurological systems — they are simply two sets of reasoning processes (Carruthers, 2006; Evans and Stanovich, 2013).

The literature on this matter does not specifically refer to emotions, and is focussed primarily on decisions: System One decisions are (amongst other things) subconscious and rapid, while System Two decisions are conscious and slower. Inasmuch as a decision entails a choice amongst alternatives, the appraisal process may be seen as a decision-making process. Zajonc's appraisals seem to be System One decisions, as do Ekman's — except that Ekman's extended appraisals, in which 'the person must struggle with forces within' (Ekman, P, 1992 p189), seem to fit System Two, inasmuch as a struggle with forces within is conscious. The extent to which such struggles may be conscious and how they play out presents complex questions (see for example Vierkant, 2015; Mudrik et al., 2022; Sripada, 2020), but it is safe to say that there are times when such struggles will take the form of a conscious internal dialogue of debate.

Frankish (2007) suggests there is a complete separation of resources between the two systems, and, further, that the two sets of resources may have different content. He thinks of System Two as a wholly independent second mind, the rational 'supermind' that is distinctively human. Importantly, processes in Frankish's second strand, the rational decision-making strand corresponding to System Two, are conscious, where decision-making in System One is unconscious. So far, this appears to fit with what Ekman and Zajonc suggest (and indeed because the resources may have different content, Frankish's approach may explain recalcitrant emotions. But Carruthers (2015) identifies problems here.

Carruthers' difficulty is illustrated in the decision-making process. Frankish (2007) identifies decisions as existing in the conscious recognition of the closing off of a reasoning process, recognised in inner speech. An individual when faced with a choice will go through a reasoning process, which will be closed off with an inner speech statement: a selection of fruit is offered to me, I consider my choice, and eventually take and eat the pear. The course of consideration, intention-forming, and action will take the form of an internal narration (a silent debate on the respective merits of the various fruits), culminating in the phrase 'I'll take and eat the pear', and thereafter in the action of taking and eating the pear. I recognise the statement as the closing off of the internal narration, and Frankish considers the recognition of this statement to be the decision.

Carruthers cannot see recognising the statement as the decision, for it is incomplete. What is required for completion is a further unconscious reasoning process relating to the practical: first there is the notion 'I'll take and eat the pear', but there must follow practical reasoning concerning the manner in which the pear may be obtained and

eaten (as distinct from the actual obtaining and eating, a subsequent process). According to Carruthers, the closing off of the overall reasoning process only occurs after the second stage. The first (conscious) event is merely the recognition of a stage in overall reasoning relation to the choice and taking of the pear. It will give rise to an episodic memory of that event — but that will simply be an episodic memory, and will not constitute a decision.

The implication is that Frankish's second strand or supermind (System Two) cannot constitute a complete and separate functioning mind: it operates consciously up to a point in the proceedings ('I'll take and eat the pear'), after which all functioning is passed to the first, unconscious, strand (System One). Carruthers' reasoning is appealing: there is something inchoate in a thought process 'I'll take and eat the pear' when viewed as a decision. It lacks content with causal efficacy. Such causal efficacy comes with implementation details, and a fully fledged decision is only reached when implementation is also considered: reasoning about action is necessary to complete the decision. This does not require that implementation take place immediately, merely that reasoning about the practicalities occurs. Where a decision is made to act now, it requires reasoning on how to act, and when a decision is made to act in the future involves reasoning that action is to be taken in the future.

Carruthers provides the example of someone reasoning 'I will stop at the ATM on the way to the metro' (which on a Frankish analysis would constitute a decision), giving rise to a memory of that event. This memory is subsequently activated when passing the ATM on the way to the metro, and will produce a decision to stop. It is only the latter that constitutes a closing off of the reasoning process concerning stopping at the ATM — it is the latter that is the decision. Until such time as this takes place, the thought process is

inchoate: it may be observed as a decision, but it lacks the causal role of a decision. The causal role is taken up on activation of the memory: the decision is then made, and the person stops. This is a subconscious, System One process. On this basis, then, System Two is not separate, operating independently from System One.

On this basis, too, the integration of decision-making between of System One and System Two demonstrates shared resources, System One would on this view appear to be completely resourced — applied to emotions, this excludes any encapsulated resources available to appraisal. Appraisal shares resources with other cognitive processes.

To what extent does this apply to emotions? Taking, as I think is reasonable, the actual matching of an affective state to an emotion, so that the emotion is thought, it seems Carruther's argument can succeed in the case of emotions — but only to the extent that the choice is conscious. I provide examples in later chapters in which the choice is certainly conscious, but it may not always be so. There are, however, further reasons to think there is only one type of processing, and one set of resources.

### **3.3.3 One Structure, One Process**

In the general analysis of two-systems thinking, it is accepted that System Two can override System One (Carruthers, 2006, Evans and Stanovich, 2013). I think this applies in the case of emotions: we can and do change our appraisals on subsequent deliberation. According to Carruthers, this cannot easily be produced by two distinct structurally discrete systems.

System Two is generally considered to consist of a collection of semi-independent modules that operate in parallel and heuristically (Evans and Stanovich, 2013). Re-thinking

an appraisal, then, would have to involve communication between the two systems (System Two becomes a resource for System One, notwithstanding their functional and structural differences.) This constitutes, in Carruthers' view, an unnecessary complication. He rejects any notion of structural independence — he suggests that System Two is realised by cycles of System One processes: that the former can be viewed as supervening on the latter. He illustrates this by describing the process that leads to inference to the best explanation solutions: System One outputs are taken up by System Two in the form of intuitive explanatory hypotheses, based on relatively simple but important information; these are selected and used as input into further System One processes, in cycles that ultimately produce an intuitive solution. Such a supervenience structure will inevitably point towards shared resources.

Does Carruthers' suggestion ring true in the case of emotions? I think it does, and it goes to one of the key aspects of emotions — attention. As Brady points out, emotions call upon us to attend to something, consider it and perhaps to take action. So the initial affective and emotional reaction is a product of initial System One thinking, which becomes input into System Two thinking — and this seems to follow inevitably: the emotion draws our attention to it, and ensures that we engage in further System Two processing. (This can then become input into further System One thinking, so that, on reflection, our affective and emotional reactions adjust.)

I think this potentially offers a realistic alternative to both Ekman's and Zajonc's accounts, which point towards distinct appraisal systems, with separate resources. The simpler account is Carruthers': there is a single set of cognitive resources, and the difference between processes that cause such things as flight reactions and more

sophisticated reaction that may employ high cognitive processes is simply the number of cycles of processing that are involved.

### **3.3.4 Conclusion**

Where does this leave us? To commence, it describes a simpler structure for the mind, without the need for different sets of cognitive resources, potentially with different content, with one needing some kind of top-up or refreshing. But, from an emotion perspective, it potentially provides a great deal more flexibility, and it may resolve some difficulties with approaches like Zajonc's and Ekman's. One of those difficulties relates to the degree of appraisal that is called for: the two approaches seem ideally suited to 'escape' scenarios, or to the appearance of bears on paths. But as I have said, bears and other overwhelming stimuli are rare occurrences. Much as they provide a good example for rapid appraisal, in the normal course of events the state of affairs that requires appraisal will be a great deal more complex, and Zajonc offers no account of how this complexity may be accommodated. Ekman does acknowledge there are occasionally more extended appraisals, but has no account of how they occur.

Secondly, it moves away from automaticity in the sense of 'reflex with pre-ordained processing'. As I have suggested, such automaticity sits uncomfortably with the fact that people do have different reactions and in different degrees. Even in the case of the bear, a forester may react differently from a city-dweller. The same person may well react differently to the same stimulus on different occasions: an individual who one day is in a state of fear or anxiety is likely to react differently to states of affairs than on another day when she is feeling confident. If I am alert to the likelihood of gunfire (for I am at a

shooting range), I am likely to react differently to the sound of a rifle shot than if I am not alert (for I am in the high street). Affective reactions vary from person to person, and, for the same person, from situation to situation.

Thinking of System One and Two processing simply in terms of cycles may well accommodate this type of variation. Appraisal of the bear stimulus may, for instance, require a limited number cycles of processing for the city-dweller, who simply sees 'bear' and concludes danger. Appraisal of the bear's appearance may take more cycles for the forester, for she is able incorporate other factors to determine the level of danger (drawing on her general cognitive resources, perhaps she recognises the bear, and knows it to be generally non-aggressive). This simplest of examples shows that variable processing is required for even the least complex appraisals.

The notion, too, of separate cognitive resources does not sit well with the notion of appraisal. The primary function of appraisal is the effective detection of certain properties in the prevailing state of affairs, to draw our attention to something salient to us. There is no advantage and significant disadvantage to our applying limited cognitive resources to this function. It makes a great deal more sense to apply the entirety of our resources, and then in the interest of efficiency to limit the amount of time applied to the function — not arbitrarily, but according to the amount of time that is necessary. Some appraisals will take a limited number of cycles, but others may require more cycles (and hence slightly more time).

I do not reject the notions of speed and efficiency incorporated into Zajonc's and Ekman's approaches to appraisal, nor do I reject the notion that some appraisals may be automatic in the sense of reflex with pre-ordained processing. But I think that in adopting

the shared-resource, multiple cycle Carruthers approach to dual systems thinking, the appraisal process may well become at once simpler and more comprehensible. This matter calls for research.

Finally, I note that adopting Carruthers' approach in this situation would be a significant step away from Barrett's constructionist theory. Her James-Lange 'lock and key' approach to appraisal specifically involves a separation of cognitive resources, with provision for diachronic learning.

### **3.4 Conclusion on Appraisal**

I opened this section by describing the need for appraisals — emotions are a reaction to the state of affairs as it concerns the individual, and the state of affairs needs, therefore, to be evaluated or appraised against the yardstick of the concerns of the individual. Having established the need for an appraisal, I outlined a number of theories, whose views on appraisal ranged from the strictly non-cognitive to the highly-specified and cognitive.

Having recognised the problems associated with each approach, I suggested that a solution may be found in Carruthers' approach to dual systems thinking. The solution accommodates the demands made on appraisal, speed and accuracy, without requiring any dedicated or specific cognitive structures. The solution is simple and effective.

Appraisal is, as I mentioned in the opening, an assessment of stimuli against the concerns of the individual. Having established the manner in which this takes place, it is now appropriate to examine one of bases of those concerns: individual values.

## 4.0 Values and the Personal Perspective

### 4.1 The Personal Perspective

Emotions are above all else a deeply personal experience: situations are appraised based on the concerns of the individual, and the emotions that follow are inevitably personal. In the next chapter, I will be examining basic emotion theories, theories that claim there exists a small number of evolutionarily acquired basic emotions that are common to all humanity. As I will show in that chapter, I do not think there is evidence of the strong version of this theory, that such basic emotions have neural correlates, are heritable and innate, but I will also show a place for some form of basic emotions, for recognising that there is a certain commonality to human reaction — fear and happiness seem to be universal reactions and seem to be recognisable. But, even within this commonality there are personal variations: some people seem inherently nervous and jumpy, and may tend to scream when frightened, others seem more laid back, and react more mildly. Reactions to complex social situations will always be personal — Olivia's reaction to her husband's behaviour was complex and variable, and another's reaction is likely to have been completely different. Writ large, personal variations become cultural variations.

To acknowledge this, I think it is important to understanding emotions that a personal perspective be adopted. With this perspective, we adopt the point of view of the individual, taking into account the individual in all of her thoughts, likes, dislikes, dispositions and so on — but importantly her values. It is the point at which individual reasons come into play, and individual understanding becomes possible, and it lays the ground for understanding why emotions vary between cultures. As Goldie points out, this

perspective does not stand in opposition to a third-party perspective, for it is possible to think about a third party while acknowledging her personal perspective; nor does it stand in opposition to an objective perspective, because it is possible to be more or less objective: objectivity admits of degrees, while a point of view does not (Goldie, 2009). For reasons I will give, adding the word 'value-oriented' adds a particularly personal weight.

Ben-Ze'Ev (2001) attributes the complexity of emotions partly to their 'great sensitivity to personal and contextual circumstances' — an appropriate way to take these personal and contextual circumstances into account is to adopt a personal perspective on emotions. Ben-Ze'Ev neatly encapsulates the personal point of view with the example of an artist's nude model, who suddenly becomes ashamed of her nudity because she perceives that the artist is no longer viewing her as a model, but as a woman. All that has changed in this situation is the model's personal perspective. Another example he gives arises from familiarity: a prostitute may be ashamed after her first few professional encounters, but may not have the same reaction after thousands of repetitions. It is only possible to understand these changes when a personal perspective is adopted: it is impossible, he claims, to look at a given possible situation and predict with accuracy the emotional reactions people will have to it.

Zajonc also discusses how affective reactions (and hence emotional reactions) necessarily implicate the self. Cognitive judgements, he says, relate only to properties of the stimulus — there is a black cat on the mat — whereas affective (and emotional) judgements are made on a scale that incorporates both the properties of the various stimuli as well as the personal preferences of the individual — I like that black cat on the mat.

Lyons takes the personal perspective when discussing the cognitive content of emotions: this content, he claims, 'is not so much a source of knowledge about the world as an evaluation or appraisal of some part of the world in relation to oneself.' (Lyons, 1980 p71.)

This is not of course to rule out situations where individuals all appear to experience the same emotion. It seems right that a given section of a crowd at a football match shares similar emotional reactions during portions of the match (but different from those in other sections); a cinema audience watching a film is likely to share roughly the emotions that the filmmaker intended. Accepting that, the personal perspective recognises that each individual's experience is unique, much as in coarse-grained terms it may appear similar.

## **4.2 Values and the Personal Perspective**

Taking the personal perspective not only allows better understanding of an emotional reaction, it directs us to look to the origins of that reaction, to ask what it is in this person that causes her to have that reaction. Importantly, it encourages us to examine the relationship of values to affective and emotional reactions — to realise that the appraisal process is based fundamentally on individual values. This notion will grow in importance when I come to examine cultural values and their relationship to culturally specific values, but the principle applies at the individual level, and it is as well to establish it early. The relationship I am pointing to here is that values are an antecedent to emotional reactions — an emotional reaction reflects an underlying value.

Solomon has this to say on the matter:

Now we may say ... that the object of every emotion is never simply a fact, person, event, or state of affairs, but a network of values, expectations, and claims as well. Thus we have said that the object of anger is never simply a deed; it is an offence. (Solomon, 2006 p60)

I will feel loss for an object, then, if and only if I value that object; I will react to a racist remark because I value racial equality; I will react negatively to a poor assessment of my work, only if I value being thought of highly for my work. If I do not care about football, I will not care about slights against football players, teams or competitions. This also goes to intentionality: I feel loss for that particular (valued) object; I am offended by that particular affront to my racial equality values.

Each of Lazarus and Scherer (2009b) recognise the role of values by including them in their appraisal mechanisms as a matter of concern, recognising their antecedent role. Ben-Ze'Ev thinks we can view emotions as an expression of values:

'Emotions express our values and preferences; hence, they cannot be indiscriminate. Being indiscriminate is tantamount to having no preferences and values; in other words, it is a state of non-emotion.' (2001, p35)

To illustrate with some trivial examples of personal perspective, I am likely to have a positive affective reaction to an ice cream offered to me in the middle of a heat wave, because I will value its cooling and refreshing properties. If I am sheltering from the snow on a freezing day, I will not value the ice cream's cooling and refreshing properties, and am unlikely to have a positive affective reaction to its being proffered. An Australian Aborigine living in the perennial drought of the Outback is likely to value a shower of rain

more than someone in a rain-soaked area of England, and each will have her own different affective reaction to the shower. These affective reactions, this core affect, is the basis of emotions, so that different affective reactions will lead to different emotions — with their different values as their antecedents.

Importantly for the position I am defending, there is significant evidence of variation in emotion reactions between cultures, which I will analyse in some detail in Chapter Four. The concepts of anger and shame differ significantly between Americans and their Japanese counterparts, for instance, as does their use. Each of these two cultures has very different value antecedents for these emotions, and so in each case the emotions have different intentionality. An American valuing personal advance may feel pride at her angry reaction to thwarting of personal goals: she is proud of that action to protect that value. On the other hand, she may feel shame for her timidity, which is an affront to that value. A Japanese valuing harmony and peaceful interaction with society in general may feel shame for her angry reaction to the thwarting of her personal goals. She is shamed by her own particular affront to her values. And, conversely, she may feel pride at her timidity, pride that she upheld that particular value.

Such cultural variation has much occupied those who embrace the notion of basic emotions, but from a different perspective. Prinz (2004) is at pains to isolate values from the content of emotion concepts, but he accepts there is an inherent relationship. Sadness, he says, is related to loss, but something qualifies as a loss 'only if it is valued.' (p 226) He also says emotions reflect 'cultural values' (p 202) and '[c]ulturally informed beliefs and values can also influence the bodily states that underpin emotions' (p 233).

The role of values is however not a simple one. Values may conflict — to see this, consider the inherent conflict between truth telling and not hurting others (or, perhaps, not causing violence). The choice between telling an untruth and either either hurting someone or causing violence will be a difficult one. They may also be of different value — truth telling is likely to be a more important value than not wearing a hat inside.

The conflict between values and their relative importance will bear on how emotion affects perception, and particularly on a cross-cultural basis. To assist, I set out below a very simple taxonomy of values designed only for this purpose, to demonstrate how they may work together or conflict in formation of emotional reactions.

1. Values may be **foundational**, in that they are values upon which other values are based. There will be values that are absolutely foundational (in that the entire value system is based on them), and those that are less foundational, in that fewer values are based on them. Integrity may be a foundational value upon which truth telling is based, fairness may be a value upon which racial equality is based. Foundational values are necessarily important values, and will not easily be abandoned or overridden. Survival is an obvious foundational value.
2. Values may be **entrenched**, in that they have been held for a long time. Entrenched values are difficult to abandon, but they may be overridden. Once again, survival is an obvious foundational value.
3. Entrenched values may be **important** values (such as integrity) or **trivial** (such as not wearing a hat inside, or not buttoning the last button on a waistcoat). This means that values exist on a hierarchy of importance.
4. Values may be **foundational and entrenched**, or **trivial and entrenched**. This means that there is no necessary connection between being entrenched and being important.
5. Values are **multifaceted and dynamic** and, so they have applications in multiple situations, and are subject to change.

What this is designed to show is that there are certain values (those that are absolutely foundational and entrenched) which may be expected always to underpin emotions. There exists below this a whole set of values of various degrees of entrenchment and triviality — these values will compete for their place in underpinning emotions. Entrenchment and triviality will produce significant competition.

In a very real sense, appraisal involves an assignment of different values to possible reactions, and that assignment will to a large extent depend on the extent to which each value in the mix is foundational, entrenched, and important (or trivial).

What is most important in the context of this thesis, however, are those values that are both foundational (absolutely or otherwise) and entrenched. These values are the least dynamic values, and they will play a role in determining almost all emotional reactions. I do not wish to get ahead of myself, but an Australian Aboriginal whose foundational and entrenched values include harmony between individuals and their environment (being the whole of the environment, the earth beneath, sky above, the oceans, all all plants and animals between) will always have a different reaction to, say, the development of an enormous hospital facility deep in rural Australia than an Anglo-European doctor.

Taking a value-based personal perspective, the different emotional reactions of the Australian Aboriginal and her Anglo-European counterparts will allow understanding. And I am building the case that this difference will cause a difference in perception.

### **4.3 Conclusion on Values and the Personal Perspective**

Adopting a value-oriented personal perspective in my view adds much to the understanding of emotions and emotional experience: they are individual reactions,

closely related to the values each individual holds. Understanding this provides a foundation for understanding how emotions may differ between cultures.

## **5.0 Summary and Conclusion**

I opened this chapter by presenting a summary of the theory of emotions I will be developing in the coming chapter — it is in essence Barrett's constructionist theory, but with two important variations. I then went on to examine the first essential aspect of emotion formation, appraisal. Having identified the tension inherent in the demands made on appraisal, I examined a number of theorist's approaches, which varied from appraisals being non-cognitive in a reflexive sense, to appraisals constituting the entirety of the emotion formation process.

I went on to examine Carruthers' approach to two systems thinking, and to outline how it may be adopted into the appraisal process: I think it potentially provides a simple and elegant solution to the tension in the demands made on the process. This is a significant departure from Barrett's theory of emotions.

I concluded the chapter by examining one of the bases on which appraisals are made — values. I set out a very basic taxonomy of values, to demonstrate that values can be embedded, foundational and important at different levels. The extent of the role a particular value will have in an appraisal will depend upon how those various factors are weighed in each appraisal situation.

What, then, follows the appraisal? In the theory I am defending, there is an immediate somatic consequence, but not all agree. In particular, Ekman and adherents of his Basic Emotion Theory (BET) will have it that what follows is an immediate deployment

of an affect program, or a combination of affect programs, each representing a basic emotion. BET represents a strong variety of theories that endorse the existence of basic emotions, and there are some important considerations that go beyond the theories themselves.

I will address BET and these other considerations in the first half of the next chapter, before going on to demonstrate why it is necessary to recognise the somatic aspect of emotion formation.

## References

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- Arnold, Magda B. 1970 "Chapter 12 - Perennial Problems in the Field of Emotion." Feelings and Emotions. Elsevier Inc, 1970. 169–185. Web.
- Arnold, M. B. (1960). Emotion and personality. Columbia University Press
- Barrett, L. F. (2006). Valence is a basic building block of emotional life. *Journal of Research in Personality*, 40(1), 35–55. <https://doi.org/10.1016/j.jrp.2005.08.006>
- Ben-Ze'ev, A. (2001). *Subtlety of Emotions*. MIT Press.
- Brady, M. (2013). *Emotional insight : the epistemic role of emotional experience*. Oxford, United Kingdom: Oxford University Press.
- Carruthers, P. (2006). The architecture of the mind: massive modularity and the flexibility of thought. Oxford: Clarendon Press.
- Carruthers, P. (2015). The centered mind: what the science of working memory shows us about the nature of human thought. Oxford: Oxford University Press.
- Ekman, P. (1992). An argument for basic emotions. *Cognition and Emotion*, 6(3-4), 169–200. <https://doi.org/10.1080/02699939208411068>
- Ekman, P., & Cordaro, D. (2011). What is Meant by Calling Emotions Basic. *Emotion Review*, 3(4), 364–370. <https://doi.org/10.1177/1754073911410740>
- Evans, J. S., & Stanovich, K. E. (2013). Dual-Process Theories of Higher Cognition. *Perspectives on Psychological Science*, 8(3), 223-241. doi:10.1177/1745691612460685
- Frankish, K. (2007). *Mind and supermind*. Cambridge: Cambridge University Press.
- Goldie, P. (2009). *The emotions : a philosophical exploration*. Oxford: Clarendon Press.
- Griffiths, P. E. (2008). *What Emotions Really Are*. University of Chicago Press.
- Lazarus, R (2001), Relational Meaning and Discrete Emotions, in Scherer, K. R., Schorr, A., & Johnstone, T. (2001). *Appraisal processes in emotion : theory, methods, research*. Oxford, New York: Oxford University Press.
- Lisa Feldman Barrett. (2020). *HOW EMOTIONS ARE MADE : the secret life of the brain*. S.L.: Picador.
- Luiz Pessoa. (2013). *The cognitive-emotional brain : from interactions to integration*. Cambridge Estados Unidos ; London: The MIT Press.
- Lyons, W. (1980). *Emotion* (Cambridge Studies in Philosophy). Cambridge: Cambridge University Press. doi:10.1017/CBO9780511609244
- Mudrik, L., Arie, I. G., Amir, Y., Shir, Y., Hieronymi, P., Maoz, U., ... Roskies, A. (2022). Free will without consciousness? *Trends in Cognitive Sciences*. <https://doi.org/10.1016/j.tics.2022.03.005>
- Prinz, J. J. (2004). *Gut Reactions*. Oxford University Press.
- Scherer, K. R. (2009a). Emotions are emergent processes: they require a dynamic computational architecture. *Philosophical Transactions of the Royal Society B: Biological Sciences*, 364(1535), 3459–3474. <https://doi.org/10.1098/rstb.2009.0141>

- Scherer, K. R. (2009b). The dynamic architecture of emotion: Evidence for the component process model. *Cognition & Emotion*, 23(7), 1307–1351. <https://doi.org/10.1080/02699930902928969>
- Shiffrin, R. M., & Schneider, W. (1977). Controlled and automatic human information processing: II. Perceptual learning, automatic attending and a general theory. *Psychological Review*, 84(2), 127–190. <https://doi.org/10.1037/0033-295x.84.2.127>
- Solomon, R. C. (2006). *Not passion's slave : emotions and choice*. New York ; Oxford: Oxford University Press.
- Sripada, C. (2020). The atoms of self-control. *Noûs*. <https://doi.org/10.1111/nous.12332>
- Stanovich, K. E. & West, R. F. (2000). Individual differences in reasoning: Implications for the rationality debate. *Behavioral and Brain Sciences*, 23(5), 645-665.
- Vierkant, T. (2015). How do you know that you settled a question? *Philosophical Explorations*, 18(2), 199–211. <https://doi.org/10.1080/13869795.2015.1032330>
- Zajonc, R. B. (1980). Feeling and thinking: Preferences need no inferences. *American Psychologist*, 35(2), 151–175. <https://doi.org/10.1037/0003-066x.35.2.151>
- Zajonc, R. B. (1984). On the primacy of affect. *American Psychologist*, 39(2), 117–123. <https://doi.org/10.1037/0003-066x.39.2.117>

## **CHAPTER TWO: BASIC EMOTIONS AND THE SOMATIC ASPECT**

### **1.0 Introduction**

Chapter One was mainly concerned with the first essential aspect of emotion formation, appraisal. There I showed how the tension inherent in the demands made on appraisal could potentially be accommodated by adopting Carruthers' approach to two systems thinking. I showed how an appraisal can be made at various various speeds and with various degrees of reference to general cognitive resources, depending on the situation. But what comes next?

As I said at the end of the last chapter, on the approach I defend, there is an immediate somatic reaction to the appraisal. Not not everyone agrees, and in particular adherents of Ekman's Basic Emotion Theory (BET). I set out the elements of BET in the next section (as exemplifying strong basic emotion theories), as well as some significant evidentiary problems BET faces, which leave me free to turn away from it. But that is not the end of the notion of basic emotions, for it is applied in weaker versions elsewhere. The notion is also significant in the question of whether or not emotions are natural kinds — which has an impact on my position. Having examined BET, then, I will go on to examine the notion of basic emotions on a wider basis.

I will then turn to the necessity of recognising the somatic reaction as an essential aspect in the formation of emotions.

### **2.0 Basic Emotion Theories**

#### **2.1 The Idea**

The BET claim is that there is a set of basic, distinguishable, evolutionarily acquired emotions that is universal, and that is deployed on perception of appropriate stimuli,

without involvement of either bodily sensations or cognitive processing. These emotions exist as a natural kind. The purpose of this set of emotions is to allow the organism 'to deal quickly with important interpersonal encounters, prepared ... by what types of activity have been adaptive in the past' (Ekman 1999 p. 46). Each emotion category will manifest with identifiable category-specific characteristics: facial expression, voice expression, central nervous system responses, and subjective feeling.

Ekman is what I might call a 'pure' basic emotion theorist: he claims that basic emotions can account for all emotional reactions. There are other theorists such as Prinz (2004) and Griffiths (2008) who, whilst perhaps not making as strong a claim for basic emotions, have included the notion of basic emotion theory in their accounts of emotion. Because of this, basic emotion theory in general warrants close examination.

The primary claim of basic emotion theorists is that the basic emotions all have an associated neural correlate, an affect programme, which when triggered produces a given recognisably universal set of reactions. The claim is, for example, that once something dangerous is perceived, the affect programme is triggered, and fear results. Prinz describes affect programmes as:

'complex responses that involve appraisals, bodily changes, and action dispositions in response to perceived stimuli. Affect programs are also culturally universal, are underwritten by specific neural circuits, and have homologues in nonhuman species. They are generally associated with specific facial expressions.' (2004 pp. 81-82)

Ekman has this to say:

'It is necessary to posit emotion-specific central nervous system activity in my account of basic emotions. The distinctive features of each emotion, including the

changes not just in expression but in memories, imagery, expectations and other cognitive activities, could not occur without central nervous system organisation and direction. There must be unique physiological patterns for each emotion...' (Ekman, 1999)

If this is correct, then, there exists a set of basic emotions, each with a distinct set of appraisals, bodily changes, and action dispositions, and each associated with a specific neural correlate. Each affect programme contains 'pre-written' content, features that have proved themselves useful in providing for the survival of our ancestors: fear, anger and disgust spring readily to mind as the sort of actions that would promote survival in ancestral times. This is not to say our emotions are based entirely upon what our ancestors found useful: pre-written content is augmented with information from daily experience. Starting with this suite of basic emotions, we move to more complex 'higher emotions' either by a process of combination or slight variation of features associated with each emotion (or combination of emotions).

Given the evolutionary acquisition of affect programs, with pre-written content, BET theorists view emotions as natural kinds, things that exist in nature. This stands opposed to the various views canvassed in Chapter One (those of Lazarus and Scherer) that emotion categories are social and scientific categories, created for the purpose of study and in pursuit of possible natural kinds, rather than discovered.

The idea that we have at least some basic emotions is initially satisfying, particularly the notion that there exists a set of innate defensive programs that will have evolved over time, and are ready for rapid deployment. But as satisfying as the idea may be, it faces substantial empirical problems — most damningly the central BET claim of the

existence of affect programmes faces evidentiary problems. Affect programmes are core to the idea of basic emotions, but after more than twenty years of research, no substantial evidence of their existence has been found. Evidence from experiments on recognition of emotions from facial expressions (the FE Experiments) that is generally extended in support of basic emotion theory has also been called into question: the experiments, in which participants are asked to select which emotions are being displayed in a series of posed photographs, face significant problems.

In looking at the objections, I will be focussing primarily on the question of affect programs, as it is this aspect that others such as Prinz and, more reservedly, Griffiths draw from basic emotion theories (although there is some indication that Prinz may be considering amending his position). My examination of the FE Experiments will be critical, but this criticism does not exclude the theoretical possibility that common emotions may be recognisable by their display and other features. The experiments themselves, I will demonstrate, are too flawed to provide evidentiary support for BET — although it may be that other experiments may be developed to produce the required evidence, experiments that go beyond facial expressions, and avoid the methodological criticisms that dog the existing experiments.

## **2.2 The Search for Affect Programmes**

Identification of affect programs (neural correlates) involves specific identification at two levels: researchers must be specific about the brain region involved, as well as the emotion for which they are seeking a correlate. Neither is a simple task.

Studies that show particular regions of the brain are involved in the processing of a given emotion do not demonstrate that that emotion is processed solely in that region: other regions may be involved, and may be involved either consistently or only occasionally. Researchers will also encounter difficulties in determining precisely what it is for which they are seeking a correlate, for it is unclear that even one of the most commonly studied emotions in this area, fear, constitutes an irreducible singular phenomenon: are all incidents of fear across the board sufficiently similar to make this assumption? Russell says they are not, claiming that the notion of fear is much more heterogeneous than is often assumed (Russell, 2009).

Approaching the same problem from a slightly different perspective, Lyons has this to say about identifying anger:

'In short it is an impossible programme to find a list of behavioural items, some or all of which must be present if the behaviour in question is to be dubbed angry behaviour. Even to try poses a baffling question, namely 'How does one know which behaviour counts as angry behaviour?' Is picking one's nose angry behaviour? Is moving one's arm swiftly in a circle angry behaviour? Is going red in the face and shouting angry behaviour? Only the latter, you might reply. But how did you decide that only the latter was to count as angry behaviour?' (1980, p 22)

Turning to the neuroscience, the search for neural correlates was supported by some early positive results, with three meta-studies showing that there was possibly some evidence correlating specific emotions with brain regions (Vytal & Hamann, 2010; Murphy, Nimmo-Smith, & Lawrence, 2003; Phan, Wager, Taylor, & Liberzon, 2002; Fusar-Poli, Paolo et al., 2009). For this early promise to support meaningful conclusions, as I have said, however, data must show strong consistency of reaction, combined with specificity as to

exactly which reaction is associated with which emotion. And these early results were not interpreted uniformly: for example, Murphy, Nimmo-Smith, & Lawrence (2003) found the insula area to be disgust-specific, whereas it was found by Phan, Wager, Taylor, & Liberzon, (2002) to be associated with negative emotions generally.

It seems, then, that no significant evidence supporting BET emerges from these two early meta-analyses. Certain brain regions seem to be associated with certain emotions, but an association of that nature does not point to there being BET affect programmes.

Lindquist and her team subsequently conducted a meta-analysis (Lindquist, Wager, Kober, Bliss-Moreau, & Barrett, 2012). They predicted that strong evidence would be found for a locationist account if evidence consistently and specifically pointed to associations between emotion categories and brain activity. Consistency required that every incidence of an emotion show the same association, and specificity required that the emotion category be specific (such as fear, sadness, disgust and so forth). Evidence of this nature would be compelling indeed, but none was found.

Murphy, Nimmo-Smith, & Lawrence (2003) showed a fear/amygdala association in only 40% of cases, and a sadness/anterior cingulate association in only 50% of cases: this is very short of a bar they set at 100%. Setting a bar at 100% seems too great a barrier for any neuroimaging experiments — what is needed is something more realistic, such as 'better than chance'. If I develop a system for gamblers which I claim will allow them to predict the next event in a series, but tests show my system's accuracy is no better than chance, my system cannot be said to work.

Lindquist offers a more detailed account of the research on exactly this basis, and suggests that the associations sought occur at a rate 'no better than chance' (Lindquist 2010). The additional detail does show that association of some brain areas with certain emotions was evident in their research, but at a consistency no better than chance, which is insufficient a basis to predict affect programmes. The amygdala was consistently associated with perception of fear relatively more than any other emotion, for instance, but not more than chance alone would predict — but its association with the experience of disgust was also no more than chance alone. The suggestion is that the region is not specific to fear, and that it is more likely to be associated with high arousal affect. In a similar manner, although the anterior insula was consistently associated with perception of disgust more than chance would predict, it was also associated with the experience of anger. Throughout the study, although association of particular areas with emotions was occasionally shown at greater than chance, there was no consistent indication of specific neural circuitry associated with specific emotions — in other words, there is little or no evidence of the required neural correlates.

In the result, the neuroscience offers no significant support for the existence of affect programmes, and hence BET. Perhaps if there were compelling evidence from elsewhere that commended BET, or the idea that neural correlates exist for specific emotions, there may be reason to find some support in the research results. But, taken on its own, there seems little on which to base the idea that such correlates exist. This is a major stumbling block for basic emotion theories.

It also poses some questions, as I have said, for other theorists. Prinz includes the notion of affect programs extensively, discussing them not only in relation to BET, but

their possible relationship to embodied appraisals as well as to higher emotions, seeming to assume their existence. Griffiths (2008) uses the notion extensively, but takes care not to identify (necessarily) with Ekman's notion that there is a 'literal' neural correlate: he identifies, rather, a spectrum over which affect programs may be viewed. At one end of the spectrum is Ekman, with his 'literal' neural correlates, and at the other is simply a defined set of behavioural responses that bear no relation to any neural structures. Griffiths claims his analysis will fit either end of the spectrum, or any position in between.

Prinz has been clear on his position regarding affect programs, but as I will show a little later, he may have adjusted his position. Griffiths does not commit himself to any particular position on his spectrum. The research throws one end of his spectrum into doubt, with this doubt decreasing along the spectrum. At the other end of the spectrum, responses without any neural correlates, it seems questionable to use the word 'program' at all, for such responses would then be simply recognisable socially habituated reactions. It seems that what Griffiths sees as two ends of one spectrum may be better off regarded as unrelated.

Evidence for affect programs has also been sought in experiments based on recognition of facial expressions in photographs, the FE Experiments. Affect programs face some significant problems here, too — although of course display evidence for affect programs may be found in other experimental ways.

### **2.3 The FE Experiments**

FE Experiments found their basis in theorising by Tomkins (Tomkins, 1962, 1963) but were brought to public attention over a number of years by his protege Ekman, and a

significant body of evidence has been amassed since Ekman's first experiments in 1969 (Ekman, Sorenson & Friesen, 1969). In the Tomkins/Ekman template, participants are asked to look at a number of photographs of facial expressions, and to match those expressions to a list of six provided to them — originally happiness, surprise, fear, anger, disgust-contempt and sadness.

The final set of thirty photographs in Ekman's 1969 experiment was selected from more than 3,000, each one of a professional actor carefully posed with the purpose of isolating and expressing only one emotion. The photographs were presented to participants from three industrialised countries: The United States (90 participants), Brazil (40), Japan (29), and two 'non-western non-literate' communities (two samples from New Guinea, totalling 42, and one from Borneo of 15 participants). Data that emerged from the three literate groups were claimed as supporting the researchers' 'contention of a pan-cultural element in facial affect display'. Their results were replicated by Izard (Izard, 1971), who was conducting similar experiments at the same time but with a different set of photographs, and Izard drew the same conclusion. In a subsequent test conducted in Papua New Guinea, and adjusted to take into account problems associated with non-literacy, Ekman and his fellow researchers produced similar results. Thus was the precedent set.

This does seem powerful stuff in support of BET, and indeed much subsequent research using the Ekman experiments as a model pointed in the same direction — the conclusion offered by Elfenbein and Ambady in a meta-analysis in 2002 is clear: evidence seems to indicate that there exists a basic set of emotions common to all cultures, recognisable cross-culturally at a better than chance level. (Elfenbein & Ambady, 2002)

Acceptance that this research supports BET was not, however, universal, and doubts were expressed as to both methodology and conclusions. Russell asked what is it exactly that is being demonstrated by the data: his suggestion was that valence and arousal were being recognised in these experiments, not emotion categories, and that emotion categories were still culturally specific (Russell, 1991).

Barrett adopts a somewhat harsher position, criticising the experiments as flawed for, amongst other things, priming participants with an 'unintentional cheat sheet' (2020, p. 45). She is not alone in her objections, which take the form of objections to the principal — do the experiments actually test recognition for underlying emotions? — and the methodological, that the participants are not given sufficient free choice to justify the conclusions.

Barrett's (2020) objection to the FE Experiments is that emotion expression is not limited to facial expression, and that indeed facial expression can mislead. She illustrates her point with the picture in Figure 1.2, asking what the facial expression tells us. Taking a cautious Russellian approach, it seems safe to assume that the expression shows an underlying negative valence and a high degree of arousal. But taking a BET approach and choosing from the list of basic emotions, 'anger' is likely to be selected as the displayed emotion.

Far from depicting anger, or even any negative valence, the photograph is of Serena Williams in a moment of victory: whatever emotion she is expressing is likely to be positively valenced, and associated with victory. This photograph has of course been carefully chosen and cropped, and it seems reasonably clear that an athlete need not display a single basic emotion in a moment of victory, so that in the end, it cannot be

used as evidence that the observer identifying anger 'gets it wrong'. There is no reason to exclude anger from being a component in a BET-type complex emotion, and in this case the observer would be at least partially correct. But Barrett does go on to another set of photograph-based facial expression experiments in which participants identify different emotions from each other, and different from the emotion the actor sought to depict.



**Figure 2.1** Serena Williams' ambiguous expression.

The point of the experiments is, however, much more targeted: they demonstrate most clearly that photographs of posed facial expressions do not offer reliable evidence of the ability to recognise basic emotions. Demonstrating this, they serve to undermine the FE Experiments — which was Barrett's purpose — but not necessarily BET. Other experiments may be devised.

Barrett is not alone in her criticism of the FE Experiments. Aviezer and his team took the photographs Ekman had used in his 1976 experiments to portray disgust (five males, five females), and used them to test the influence of context on the assessment of displayed emotions (Aviezer et al., 2008). They superimposed the Ekman portraits onto bodies posed to display various different emotions, and found that context did indeed influence participants' assessment of displayed emotions. Non-conforming bodily poses caused participants to make 'strikingly different' assessments.

Barrett also takes up questions as to methodology in the FE experiments.

First of all, she points out that participants are not actually asked to identify an underlying emotion from the photographs presented to them: more accurately, they are asked to choose the most likely fit from a given set of emotions. The question is not, 'What is the underlying emotion?', but 'Of which of these emotions is this expression most representative to you?' On this basis, the results seem to be primed, and accordingly do nothing to indicate that these six emotions are basic. They indicate only that there is something in each facial expressions which (at a better than chance level) can be associated with one of the alternatives presented. (Lisa Feldman Barrett, 2020, pp. 45-4; see also Gendron, Roberson, & Barrett, 2015).

The FE Experiments do seem to face serious if not fatal objections, but as I said, it may be that other experiments may be devised that do not concentrate only on facial expressions, and avoid the methodological problems that have been noted. These could be offered in support of BET, but they may equally support a weaker position on the idea of basic emotions, some other form of basic emotions.

## **2.4 Some Form of Basic Emotions?**

The previous two sections present what I think is a very powerful case against the existence of basic emotions as formulated by Ekman as a basis for a theory of emotions, or as taken up by Griffiths and Prinz as part of such a theory. This is not, however, to exclude the notion of there being some universal set of commonly shared emotions, for there is a powerful intuition that such emotions do exist. I think there is room for such commonality, based simply upon who we are and how we live. By 'who we are' I mean to refer to our physical or bodily constraints, which will be dictated a set of physical responses that are possible. And by 'how we live' I mean to refer to cultural and societal pressures: we all wish to survive and to thrive with our cultural and societal environments, and to this end we will to a great or lesser extent adopt conforming behaviour, which will include (again to a great or lesser extent) emotional reactions.

Some emotional reactions such as fear seem inevitable to survival and thriving, and we may expect to find such fundamental emotions more or less universally. The less essential the emotion, on this logic, the less prevalent it will be. But such universality or commonality need not entail affect programmes — at least as they are formulated in BET.

## **3.0 Basic Emotions, Affect Programs and Natural Kinds**

### **3.1 Generally**

In the previous section, I devoted some time to examining the empirical evidence for the existence of neural correlates of affective reactions, and found that no convincing evidence had been found. But of what import is it that affect programs do not exist? The

matter goes to the argument about basic emotions and how they may exist, if at all — and whether, if they do exist, they do so as natural kinds.

Approaches to how to view basic emotions are not uniform. Ben Ze'ev (2001) sets out a number of different criteria which may be used to determine which emotions are basic:

1. Development: basic emotions emerge earlier than non-basic emotions;
2. Function: basic emotions will be related to basic activities, survival and reproduction;
3. Universality: that it is found universally;
4. Prevalence: that it is found more often than others;
5. Uniqueness: that it is related to features of physiology, expression, phenomenology;
6. Intentionality: that it can occur without specific intentional objects.

Having set out these possible criteria, he defends a different approach, suggesting that basic and non-basic emotions can be divided on an intentionality-based criterion. He argues that basic emotions are those which essentially serve the self, while non-basic emotions reflect humankind's development of the mental capacity to take the place of the other in society. Non-basic emotions are more sophisticated, requiring second-order intentionality.

The basis that Ekman adopts is essentially the affect program. To recap: affect programs are thought of by Ekman as evolutionarily acquired programs that form the basis of affective and emotional reactions, programs in the sense that they are 'pre-wired' into the brain, as it were — that each affective and emotion reaction is underwritten by a neural correlate. Once an affective program is triggered, it cannot be stopped, nor can its

progress be altered. This is not to say that all of our affective reactions are based on reactions that our ancestors found useful, that our reactions are determined by unstoppable and unalterable artefacts from our evolutionary past — although these reactions do form the base of each affect program, they are added to by things that we learn in life. They may be updated by addition. Subtraction may however not be as easy — according to Ekman, it is difficult to be rid of an affective reaction once it becomes part of an affect program.

The existence of affect programs means that emotions may be easily categorised, based on the underlying affect program: anything produced by the anger affect program is anger. And the categories will be easily recognisable, in virtue of the common properties — each emotion will be represented by a cluster of recognisable properties.

Griffiths adopts a more cautious position: he identifies affect programs, but is not committed to their having neural correlates — they may exist somewhere on a spectrum between being completely underwritten by specific circuitry and being merely recognisable sets of behaviour.

Prinz enters into a substantial defence of basic emotions in his book, which in many ways does not differ from my approach to basic emotions outlined above: by reason of who we are and how we live, we share the same emotions. It may certainly occur that emotions have different nominal content in different situations, but this does not undermine their shared identity — what is important is substantive content. That the same emotion has different names is equally unimportant, as again it is substantive content that is important. And that substantive content is dictated by the circumstance of who we are and how we live (not Prinz's phrase). He does not offer a comprehensive list of basic

emotions, for he says it is too early to do so. I would not disagree with any of the substance of this argument. There may be slight differences to be ironed out, of course: I would insist that there are emotions that are unique to their culture, and he may insist in his turn on basic emotions being pan-cultural — but if a list of basic emotions could be established, the difference could possibly be settled by calling complex emotions a compound emotion, having one or another basic emotion as its base. My point of departure from Prinz's position is a more fundamental one, relating to the nature of the categorisations in which emotions exist. Like Lazarus, Scherer, Barrett and others, I think those categories are social and scientific constructs, abstracted from behaviour, that are useful in both folk psychology and scientific examination of emotions. Prinz claims on the other hand that emotions are a 'natural kind in the strong sense' (2004 p 102).

This is where the existence (or otherwise) of affect programs becomes important. Underlying the notion of affect programs is that emotions are natural kinds, that they exist pre-theoretically in nature and that each of them is there to be discovered. This is important to me, because if emotions do exist as a natural kind, not only is my approach to a theory of emotion wrong, but emotions will end up being less individualistic, less personal, less culturally divided than I am suggesting they are. It is for this reason that I am pursuing the matter.

### **3.2 Basic Emotions as Natural Kinds**

Natural kind categories 'cut nature at its joints': the categories exist in nature. Two common methods for identifying a natural kind are, first, through identification of recognisable property clusters common to the kind (Boyd, 1991), and second through

identification of a distinct causal mechanism that produces that natural kind. That latter approach, sometimes terms 'natural kind essentialism', makes a claim that there is some essence in a natural kind, which is the source of its observable properties (Kripke, 1972; Putnam, 1975; BeeBee, 2013). Prinz and I would not differ on the matter of recognisable property clusters — indeed, I think that as emotions are not natural kinds, recognisable property clusters are the only way in which we may create emotion categories. It is the causal mechanism basis on which we would differ — I would deny there is any causal mechanism common to any emotion category, while Prinz (and Ekman of course) would point to affect programs, in the sense of them having identifiable and specific neural correlates.

The neural correlates requirement is a simple one: if evolutionary forces have produced a set of heritable affect programs, each physically manifest in the brain in specific neural circuitry, then the affect programs (and hence their related basic emotions) exist in nature. They are natural kinds. I deny this, as do others I have drawn on, including Lazarus, Scherer, and Barrett, and claim that individual emotion labels do not reflect an underlying natural division in nature — they are abstractions created from behavioural studies. These behavioural studies have allowed us to identify recognisable property clusters, from which we create emotion categories — simply for ease of study. They are not natural kinds.

So, we are back to neural correlates. There seems something fundamentally wrong in continuing to assert the existence of neural correlates when twenty years of research have failed to produce proper evidence of their existence. The position has become

worse now in the face of compelling evidence that brain structure and functioning may be organised in a way that makes the existence of neural correlates impossible.

Functional network theory makes the claim that the brain is not organised according to psychological behaviours that we may identify, as the neural correlates theorist would claim. Rather, the brain is organised in networks according to necessary brain (as against psychological) functions (Barrett & Satpute, 2013, Yeo, B T Thomas et al; Menon, 2011; Bressler & Menon, 2010; Maliske & Kanske, 2022; Raichle & Snyder, 2007; Buckner, 2012; Schaefer, Alexander et al. 2018). With functional networks, psychological states including emotional states are not realised in any given or predetermined brain area, nor in any given or predetermined neural circuitry spread between brain regions.

Where the lack of convincing evidence of neural correlates of affect programs called the existence of affect programs into question, there is significant evidence of the existence of a completely different brain structure — one that excludes the possibility of neural correlates for any psychological property. But where does this leave us? First, it goes some way to explaining the lack of success in the search of neural correlates. And I think it calls for the abandonment of the notion of neural correlates for emotion categories: in functional network theory, no one stage of anger is necessarily realised in the same manner as any other, even within the same individual.

On this approach, then, emotion categories are social and scientific constructs: we experience an affective reaction, a product of general brain functioning and not of an identifiable particular part or function of the brain, which we later match with the socially-constructed emotion constructs which we have acquired.

This makes emotions and emotional experiences a great deal more personal — the experience of anger is not the experience of an evolutionarily acquired mechanism, shared by all (but modified to reflect a degree of personal experience), but it is a personal experience, made up wholly of how the individual has learned to behave.

As I have said, it may be that Prinz is considering adjusting his position. In a recent exchange with Moors about emotions as natural kinds, recent in that it post-dates the publication of his book, Prinz and two colleagues motivate a different position from that in his book, in which he claims that basic emotions have neural correlates (Eickers, Loaiza, & Prinz, 2017). This position is closer to Griffith's position that they may not. They assert that it is not important that there exists a one-to-one relationship between neural structures and specific emotions for emotions to be real, and that emotions do not have to be natural kinds to be real. Disunity in the physiological cause of a phenomenon does not exclude emotions from constituting scientifically valid categories, provided there exist appropriate homeostatic property clusters (Boyd 2019; Scarantino, 2012). They go on to cite a number of categories that are considered scientifically valid, that are not natural kinds, that are social constructs. He concludes that emotion categories may be nothing more than social constructs.

### **3.3 Conclusion**

This discussion on basic emotions, affect programs and natural kinds has been an extended one, but equally an important one. By examining recent and extensive scientific research, I have demonstrated that the case for the existence of neural correlates for emotion categories is not sustainable. When there are no neural correlates, the argument

that emotions exist as natural kinds loses much if not all of its force, and emotion categories may be more simply viewed as social and scientific constructs. This leaves the path clear for an individualised and cultural approach to emotions. Within the constraints of social and cultural pressures (which will be reflected in the content of emotion concepts), the individual is free to construct her emotions from their various aspects, and to assign meaning to them according to her own concerns, her own values — and those of her culture.

This does not rule out a set of observable behavioural responses, categorisable according to stimulus or aspects of the behaviour, which may be termed basic, and which may be observed cross-culturally. But within such categories, there is room for individuality and most particularly for cultural specificity.

Having examined the idea that the automatic deployment of an affect program follows appraisal, and found no reason to accept it, I may return to the emotion formation path that I am defending, turning to the next aspect, the somatic aspect.

## **4.0 The Somatic Aspect**

### **4.1 Why a Somatic Aspect At All?**

On my approach, an appraisal will always be followed by a somatic reaction, the core affect, and emotions emerge from the cognitive act of categorising that core affect. But, why should this be so? If, as I have demonstrated, appraisal is a cognitive act, if a low-level and very rapid one, why cannot emotions be wholly cognitive as well? Indeed, having adopted Carruthers' approach to two systems thinking, it seems sensible that emotion formation continues in ongoing cycles beyond appraisal, with increasing levels of

information until there is sufficient information to allow an emotion to be formed. In some respects, this is what is suggested by Cunningham & Zelazo (2007), who think emotions can be formed simply by iterative cycles. And there are a number of pure cognitive theories that exclude any somatic participation in emotion formation.

So why involve the body? I will answer this question in more detail in the following section, providing more than (the compelling) intuitive answer that experience tells us we feel our emotions. I will then go on to examine the purely cognitive approach — I will find that whilst this approach certainly has merit for involving a cognitive element, it does not account for certain situations which demand a bodily aspect to emotion formation.

## **4.2 Demonstrating the Body's Involvement**

To start this section, I must acknowledge the powerful experienced-based intuition that the body is involved in emotions — we do indeed feel emotions. We blush when embarrassed, our hearts race with excitement, our stomachs contract with fear, our hearts ache with sorrow. To deny these real experiences a place in a theory of emotion seems folly.

A first response to this is the observation that it seems possible to experience emotions without experiencing any bodily feelings at all: statements such as 'I love my work', or 'I hate this ongoing war' may be made without any associated emotional bodily feelings. A simple riposte to this is that such statements may be statements of dispositions, rather than reflective of an emotion.

Another response is found in approaches that allow the bodily aspect as a concomitant of an emotional experience, but which insist that cognitive elements and

only cognitive elements are constitutive of the emotion — emotion-related bodily sensations are simply incidental to an emotional reaction. In support, examples may be given of emotions that do not seem to require bodily sensations (such as pride and ambition, perhaps). Arguing along these lines, Schachter & Singer (1962) identify two distinct elements, the physical sensations on the one hand, and the labelling of those sensations on the other. Only the labelling, a cognitive element, they claim, is constitutive of the emotion. Barrett's (2020) approach is similar: although she is at pains to acknowledge the essential role of (bodily) core affect, for her the emotion is constituted by the subsequent conceptual act.

But drawing a line, as Schachter and Singer do, between the various components of a phenomenon and excluding some of them from the definition of the whole seems artificial. In determining what is constitutive of the emotion, it seems to me that the sensations are not properly separable from their labelling. The labelling act may add content to the emotion experience, but that content is additional to the content in the sensations. Labelling a tree stump a stool and sitting on it adds information to 'stump' by recognising an affordance — the stump is now additionally a stool, but does not eliminate the stump from being a stump, nor does it separate them. In the same way, labelling a sensation does not change that sensation or separate it from its label — it simply adds information. As 'stump' becomes 'stump and stool', a strongly negative affective reaction becomes both that reaction and 'anger'.

Secondly, and more powerfully, there is strong empirical evidence that emotions can be induced by purely physical means, by chemicals (drugs and hormones), and by facial feedback. If emotions may be induced by physical means alone, the physical must

be intrinsic to emotions. There has been extensive empirical work on the hypothesis that adopting a facial expression can either modulate or produce an emotion. Although some of these experiments are plagued by methodological problems, a review by McIntosh (1996) shows significant supporting evidence. A series of experiments with the Duchenne smile also produced evidence supporting the hypothesis, with the additional finding that the facial feedback effect seems more powerful when the 'artificial' expression closely resembles a basic human expressions (Soussignan, 2002). Mori & Mori, (2010) took the matter further, using bandages to create furrows on participants' foreheads, effectively an artificial frown, and found that this artificial frown caused participants to regard stimuli in a more negative manner. The large number of studies that show this result means that they do not constitute an exception — emotions can be modulated or produced without cognitive involvement.

The intuition that we feel emotions is not sufficient a reason to regard a somatic element as essential. It is possible to consider bodily reactions to be a consequence of an emotion — that when I feel a particular kind of fear, my heart races, I hold my breath, my blood pressure rises, and I experience all of those sensations. But I experience them as a consequence of an emotion that pre-exists the sensation.

That being said, that emotions can be induced without any cognitive involvement, by only bodily changes, is compelling evidence for bodily involvement. It indicates that the emotion is a consequence of or a part of the bodily reaction, and that emotions do require somatic involvement. To be clear, though, these experiments do not exclude the cognition aspect completely from the formation of emotions — it simply excludes cognition from being the source of emotions. In the experiment in which participants

foreheads were bound, for instance, what was being created was an artificial affective reaction, a frown. The usual processes of emotion formation continue from this point, and an emotion is formed in the usual way. The experiments tell us that a somatic aspect is essential to emotion formation, but not at the expense of the cognitive aspect.

I will now turn to pure cognitive theories, those that exclude any bodily involvements, in particular judgementalism, where I will come to an interesting conclusion: I will find nothing wrong with what is said about the cognitive aspect, the difficulty being that the cognitive aspect alone does not suffice to produce an emotion.

### **4.3 Pure Cognitive Theories**

Pure cognitive theories, ones that claim that emotions are purely cognitive and therefore deny there is any bodily involvement in emotion formation, are for the most part judgementalist: they view emotions as involving a particular type of judgement. On this approach, to have an emotion is to have a particular mental attitude to an object or phenomenon. In examining judgementalism, I will choose Solomon's approach, for so popular was his theory that a slogan 'Emotions are Judgements' emerged from it.

Solomon has this to say about how his theory was received:

'When Paul Griffiths took on what he misleadingly characterised as 'propositional attitude' theories of emotion as the enemy of all that was true and scientifically worthy, I knew that we had made it.' (2003).

What is particularly interesting about Solomon's theory, and why I have selected it, is that although it became renowned for being a pure cognitive theory, and it does

indeed operate as a pure cognitive theory, Solomon himself never intended to create a pure cognitive theory, and indeed he gradually progressed to include a somatic theory.

Solomon commences by adopting a particular approach to the word 'arousal', setting up his claim about judgements. He says that although arousal may occasionally have a physiological meaning, in the context of emotions it does not refer to the physiological at all. He has this to say:

And what is most important about 'arousal,' I want to suggest, is not physiological change as such, but rather the intimate connection between the judgments that make up emotion and desire. 'Arousal' sometimes means excited, but it also means, 'interested' and 'engaged.' Emotions, I suggest, are self-interested, desire-defined judgements.' (p94)

Having thus set the scene, he goes on to describe the nature of the judgements he has in mind. Features of emotion judgements include that they are:

- spontaneous, in that they are generally not deliberative, and not aimed at self-understanding;
- pre-reflective, in that they are inarticulate. This leaves room for misinterpretation and self-deception;
- evaluative, in that they are appraisals. This ties them in to ethical positions: my anger is an indication that I think I have been wronged;
- constitutive: some judgements are descriptive (the cat sat on the mat), while others, like emotional judgements, set up a scenario;
- systematic: they form part of an integrated system of judgements, beliefs and desires, and are only intelligible within that system;
- self-involved, in that emotions involve 'taking things personally'; and
- essentially tied to desires and their expression: the desire is not simply something in the background, it is a causal antecedent, necessary in understanding the emotion.

On the face of it, none of the features of judgements listed are offensive to there being bodily involvement in emotions — as indeed Solomon's later publications indicate. His initial publication, however, was taken as advocating a purely cognitive approach to emotion thinking, and it was on this basis that his position was examined and became popular.

I must address the issue of 'propositional attitude' before progressing any further, for this is a target of criticism by Griffiths and others — that Solomon, and others such as Kenny (2003) and Lyons (1980) take emotional judgements as entailing propositional attitudes. Griffith's (2008 ch 2) main thrust in criticising propositional attitude theories in this context is their focus on belief and desire, which he says do not offer sufficient a basis for emotions. Not so, says Solomon, there is no reliance on belief and desire. Propositional attitudes have it that an individual stands in a particular relation to a *proposition*: if Fred believes that spinach is good for you, then Fred stands in a belief relation to the proposition that spinach is good for you. On the other hand, if Fred loves Mary but hates spinach, says Solomon, Fred stands in particular positions *not* to any propositions, but to *Mary* and *spinach*, respectively. Solomon is clear: emotional attitudes are not expressed propositional attitudes, but attitudes to the object of the emotion. As is clear from the examples Solomon gives, he also extends attitudes beyond belief and desire, removing his approach further from Griffiths' criticism.<sup>9</sup>

For Solomon's response to Griffiths to succeed, however, the formulation of the attitude must be direct, without the intermediation of belief or desire: that Fred's attitude

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<sup>9</sup> In fairness to Griffiths, both Kenny and Lyons do seem to focus principally on belief and desire.

to Mary is one of love, rather than to the belief that Mary possess certain qualities. A common formulation, and one that Griffiths adopts, is the indirect attitude: Fred is in love with Mary because he believes her to be intelligent and compassionate. The emotion picks out properties in objects, and the emotion reflects a belief that the object bears that property. Lyons (1980 p75) adopts this indirect approach, but he accepts that there may be exceptions in which emotions are not propositional attitudes. He mentions 'objectless' emotions (a lack of knowledge or information may be the subject of an emotion, although it is a lack rather than an object), and learned 'Pavlovian' reactions, where fear might be triggered in the absence of a real elicitor.

But Solomon is clear that he thinks a direct perception may of itself be sufficient a basis for an emotion — perception of a large salivating dog may itself justify my fear. Mulligan (1998) recognises the indirect route, that perception of properties (the properties of large salivating dog, its bared teeth and speed in running towards me) may well be the basis for a belief that the dog is dangerous, but he too prefers the direct perception route. Direct perception of the properties of the dog can be the basis for fear, he claims, without the intermediation of a belief. The analysis survives the perception being an illusion or an hallucination, or entirely imaginary. In addition, looking at one of Solomon's previous examples, once Fred has perceived Mary's intelligence and compassion, he will not have to renew that perception every time he sees her — they are persisting properties. I think this direct approach is preferable for being both more simple and more flexible. And (as Solomon points out) it frees the cognitive aspects of emotion from the shackles of belief and desire.

Adopting this approach, I may now turn to examine the objections to judgementalism. Brady (2013) offers a framework for this, providing as he does a comprehensive analysis. I do not propose to mount a defence of Solomon to Brady's objections, but I think it is useful to find at least the basis of a response that might be led, for it supports the case for cognitive involvement in emotions (which I detail in Chapter Four). Solomon's characterising emotions as judgements also lends oblique support to how I see the assignment of meaning in an emotional context.

Brady extends six major objections, the first of which relates to what he terms 'objectiveness emotions' — emotions which have no apparent intentional object, such as moods, and hence lack an object for the propositional attitude. Eliminating propositional attitudes from consideration, this objection amounts to a question of the status of moods and depression as emotions. Some say moods are not objectless at all, but they have a diffuse or general intentionality, whilst according to Ben-Ze'Ev (2001) others will either claim 'moods are emotions in search of an object, or emotions with alternating objects; moods are general frames of mind that focus on a wide variety of loosely affiliated objects.' (Ben-Ze'Ev himself regards moods as dispositional states).

My approach is to resolve this issue by pointing to the distinction between core affect and emotion. In Chapter One I set out the elements of the position I defend, and the position and role of core affect: I provide more detail on core affect in Chapter Three, but for now I may take it simply as an initial affective reaction to the prevailing state of affairs. The richer emotional state emerges from the core affective state by a cognitive process of categorisation, or matching. Bearing this distinction in mind, I take moods and depression and the like as non-intentional core affective states. It may be expressed as,

'There's something about the prevailing state of affairs that is making me feel quite low. I'm not sure what.' (As I will show, that state of affairs includes internal physiological states.) Viewing moods and depression and the like as core affective states accommodates Ben Ze'ev's notion that they are dispositions, as the non-specific core affect leaves the individual disposed to negative emotional states. She is already feeling negative, so that the slightest provocation will add to that negative affect, and will also provide intentionality: she will easily categorise the entirety of her negative emotional state as a particular negative emotion, with the source of the provocation as its intentional object. In the end, though, however this matter turns out will not really affect the judgementalist's position any more than other theorists'.

Brady goes on to list two further objections, which effectively treat emotion judgements as ordinary judgements: if emotions are judgements, then recalcitrant emotions will constitute an unacceptable inconsistency in judgements, and, in addition, there will be a proliferation of emotions. Seemingly contradictory judgements arise, for instance, if one is frightened of the dog while knowing that the dog is harmless, and on the judgementalist's approach one seems to be making contradictory judgements. A response may potentially be found in Solomon's distinction between 'thinking' and 'thoughts': thoughts, he says, do not necessarily occur in an orderly manner, and do not occur by way of organised activity. Thoughts 'are sometimes wilful, sometimes obsessive and beyond our control' — and where the judgement involved in an emotion is a thought, it is also non-reflective, and not articulate (Ch 11). The thrust of this response is that emotion judgements are not subject to tests of rationality, and nor are they intended to be. In Solomon's words:

'... what distinguishes emotions from ordinary judgments is their lack of "cool," their seeming urgency, even after weeks of simmering and stewing. There are no cold emotions, no cool anger, no deliberate love.... Emotions are rational in that they fit into a person's overall purposive behaviour. But this is not to say that a person's various purposes are always consistent or coherent.' (p 13)

These comments are interesting, not only as a defence of the theory, but because they emphasise that there is a particular emotional mental state — one expects such a state whether or not one adheres to a cognitive theory of emotions.

Brady identifies the danger that emotions will proliferate if judgements are emotions, but it seems this will only follow if *all* judgments are emotion judgements. Solomon responds that this is not the case: there are features of the types of judgement that produce emotions that distinguish them from general judgements, so that not every judgement is an emotion judgement. He provides one of the distinguishing features, appearing in the quote I provided above: 'what distinguishes emotions from ordinary judgments is their lack of "cool," their seeming urgency, even after weeks of simmering and stewing. There are no cold emotions, no cool anger, no deliberate love.'

A possible drawback of this response from Solomon is that the category 'emotion judgment' may end up defined as simply any judgement that produces an emotion, an ex-post facto categorisation. The response will avoid the proliferation problem that Brady identifies, but there is something unsatisfying about so circular a definition.

Brady is also concerned that judgements underdetermine emotions, that the evaluative criteria (evaluative beliefs) of judgements are insufficient to produce a rich

emotion landscape. The substance of this concern seems to reflect the discussion on appraisals (and indeed, Solomon considers emotion judgements to be appraisals). In that discussion, the question of cognitive resources and their use was unimportant, and it seems that the evaluative beliefs available for an appraisal seem to be equally available for a judgement. The question of underdetermination does not arise. Griffiths seems to agree, allowing that a variety of reactions can spring from appraisal of a single stimulus, without worrying about underdetermination<sup>10</sup> — I suggest that a response to this objection may be that the cognitive resources available to such an appraisal will be equally available to a judgement, which would undermine this objection.

Finally, Brady raises a general objection to judgementalism, which is that it places the cart before the horse — we tend to form evaluative judgements on the basis of our emotional experience, rather than have our emotional experience based on evaluative judgements. In his words, 'emotional experience is often the "input" to which evaluative judgement or belief is the "output".' A response to this might be recognising an interim step: emotional experience is the input, pre-existing judgements are then used to inform the process, of which the output is fresh judgements.

In the end, it may be that the most substantial objection to pure cognitive approaches such as judgementalism is the fundamental one: these approaches ignore the physiological aspects of emotions. As I have said, in this section I have been using Solomon as a foil to Brady's criticism of judgementalism deliberately, because over time even he adjusted his views and explicitly rejected a pure cognitive approach (if indeed he

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<sup>10</sup> Griffiths observes that '[a] suite of adaptive responses to a highly abstract class of stimuli can be triggered by a single central cognitive evaluation' (p 87).

ever advocated one). This I think demonstrates that a comprehensive cognitive aspect to emotions does not exclude a somatic aspect.

Having established a basis for including a somatic aspect as an essential aspect of emotions, and having examined, albeit briefly, judgementalism as an example of a pure cognitive theory, I will provide more detail on the role of the aspect in the next chapter. In so doing, I will also examine pure somatic theories — ones that exclude the cognitive aspect.

## **5.0 Summary and Conclusion**

I opened this chapter with a discussion of basic emotions, first in the specific context of BET, and I found there that the theory faces significant evidentiary challenges in relation to the neural correlates that are an intrinsic part of the theory, and that there are questions associated with the FE Experiments that are used to support the theory. The first represents a significant problem for BET, which stipulates the existence of neural correlates. That the FE experiments do not provide the empirical support claimed of them is less of a problem for the BET theorist, who may seek other methods to verify that emotions can be universally recognised.

Much as the absence of neural correlates undermines the basis for BET, it leaves room for basic emotions in some other manner — without neural correlates. I discussed the notion that basic emotions may be thought of as recognisable and universal behavioural patterns (at one end of the spectrum that Griffiths describes), that fall short of constituting emotions as a natural kind.

Turning then to the matter of the somatic aspect of the production of emotions, I provided what I regard as compelling evidence that the somatic aspect is essential — that emotions can be invoked with purely bodily stimuli. I then went on to examine the pure cognitive approach, of which judgementalism is typical. There I found that although judgementalism is open to criticism, there may be robust responses — but none of them exclude a somatic aspect.

Emotions do have a somatic aspect, then — but what exactly is its function? In the next chapter, I will examine the possible roles: first I will look to how the most recent descendant of the James-Lange somatic approach, Prinz's perceptual theory, views the role of the body in emotion formation. I will then move on to my preferred approach — that the somatic element is a matter of core affect, and that core affect is the base from which emotions emerge.

## References

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- Aviezer, H., Hassin, R. R., Ryan, J., Grady, C., Suskind, J., Anderson, A., ... Bentin, S. (2008). Angry, disgusted, or afraid? Studies on the malleability of emotion perception. *Psychological Science*, 19(7), 724–732. <https://doi.org/10.1111/j.1467-9280.2008.02148.x>
- Barrett, L. F. (2006). Valence is a basic building block of emotional life. *Journal of Research in Personality*, 40(1), 35–55. <https://doi.org/10.1016/j.jrp.2005.08.006>
- Barrett, L. F., & Satpute, A. B. (2013). Large-scale brain networks in affective and social neuroscience: towards an integrative functional architecture of the brain. *Current Opinion in Neurobiology*, 23(3), 361–372. <https://doi.org/10.1016/j.conb.2012.12.012>
- Beebe, 2013 'How to Carve Nature Across the Joints Without Abandoning Kripke-Putnam Semantics', in S. Mumford & M. Tugby (eds.), *Metaphysics and Science* (Oxford: OUP, 2013)
- Ben-Ze'ev, A. (2001). *Subtlety of Emotions*. Mit Press.
- Boyd, R. (1991). Realism, anti-foundationalism and the enthusiasm for natural kinds. *Philosophical Studies*, 61(1-2), 127–148. <https://doi.org/10.1007/bf00385837>
- Boyd, R. (2019). Rethinking natural kinds, reference and truth: towards more correspondence with reality, not less. *Synthese*. <https://doi.org/10.1007/s11229-019-02138-4>
- Brady, M. (2013). *Emotional insight : the epistemic role of emotional experience*. Oxford, United Kingdom: Oxford University Press.
- Bressler, S. L., & Menon, V. (2010). Large-scale brain networks in cognition: emerging methods and principles. *Trends in Cognitive Sciences*, 14(6), 277–290. <https://doi.org/10.1016/j.tics.2010.04.004>
- Buckner, R. L. (2012). The serendipitous discovery of the brain's default network. *NeuroImage*, 62(2), 1137–1145. <https://doi.org/10.1016/j.neuroimage.2011.10.035>
- Cunningham, W. A., & Zelazo, P. D. (2007). Attitudes and evaluations: a social cognitive neuroscience perspective. *Trends in Cognitive Sciences*, 11(3), 97–104. <https://doi.org/10.1016/j.tics.2006.12.005>
- Eickers, G., Loaiza, J. R., & Prinz, J. (2017). Embodiment, Context-Sensitivity, and Discrete Emotions: A Response to Moors. *Psychological Inquiry*, 28(1), 31–38. <https://doi.org/10.1080/1047840x.2017.1255492>
- Ekman, P. (1999). Basic emotions. In T. Dalgleish & M. J. Power (Eds.), *Handbook of cognition and emotion* (pp. 45–60). John Wiley & Sons Ltd.
- Ekman, Sorenson, E. R., & Friesen, W. V. (1969). Pan-Cultural Elements in Facial Display of Emotion. *Science (American Association for the Advancement of Science)*, 164(3875), 86–88. <https://doi.org/10.1126/science.164.3875.86>
- Elfenbein, H. A., & Ambady, N. (2002). On the universality and cultural specificity of emotion recognition: A meta-analysis. *Psychological Bulletin*, 128(2), 203–235. <https://doi.org/10.1037/0033-2909.128.2.203>

- Fusar-Poli, Paolo et al. "Functional Atlas of Emotional Faces Processing: a Voxel-Based Meta-Analysis of 105 Functional Magnetic Resonance Imaging Studies." *Journal of psychiatry & neuroscience* 34.6 (2009): 418–432. Print.
- Gendron, M., Roberson, D., & Barrett, L. F. (2015). Cultural Variation in Emotion Perception Is Real: A Response to Sauter, Eisner, Ekman, and Scott (2015). *Psychological Science*, 26(3), 357–359. <https://doi.org/10.1177/0956797614566659>
- Griffiths, P. E. (2008). *What Emotions Really Are*. University of Chicago Press.
- Izard, C. E. (1971). *The Face of Emotion*. New York: Appleton-Century Crofts.
- Kenny, A. (2003). *Action, emotion, and will*. London ; New York: Routledge.
- Kripke, S. A. (1972). *Naming and necessity*. Malden Ma: Harvard University Press.
- Lindquist, 2010, *The Brain Basis of Emotion: A Meta-analytic Review*, Boston College University Libraries, Boston College Electronic Thesis or Dissertation. <http://hdl.handle.net/2345/2647>
- Lindquist, K. A., Wager, T. D., Kober, H., Bliss-Moreau, E., & Barrett, L. F. (2012). The brain basis of emotion: A meta-analytic review. *Behavioral and Brain Sciences*, 35(3), 121–143. <https://doi.org/10.1017/s0140525x11000446>
- Lisa Feldman Barrett. (2020). *HOW EMOTIONS ARE MADE : the secret life of the brain*. S.L.: Picador.
- Lyons, W. (1980). *Emotion* (Cambridge Studies in Philosophy). Cambridge: Cambridge University Press. doi:10.1017/CBO9780511609244
- Maliske, L., & Kanske, P. (2022). The Social Connectome – Moving Toward Complexity in the Study of Brain Networks and Their Interactions in Social Cognitive and Affective Neuroscience. *Frontiers in Psychiatry*, 13. <https://doi.org/10.3389/fpsy.2022.845492>
- McIntosh, D. N. (1996). Facial feedback hypotheses: Evidence, implications, and directions. *Motivation and Emotion*, 20(2), 121–147. <https://doi.org/10.1007/bf02253868>
- Menon, V. (2011). Large-scale brain networks and psychopathology: a unifying triple network model. *Trends in Cognitive Sciences*, 15(10), 483–506. <https://doi.org/10.1016/j.tics.2011.08.003>
- Mori, K., & Mori, H. (2010). Examination of the Passive Facial Feedback Hypothesis Using an Implicit Measure: With a Furrowed Brow, Neutral Objects with Pleasant Primes Look Less Appealing. *Perceptual and Motor Skills*, 111(3), 785–789. <https://doi.org/10.2466/02.07.24.pms.111.6.785-789>
- Mulligan, K. (1998). From Appropriate Emotions to Values. *Monist*, 81(1), 161–188. <https://doi.org/10.5840/monist199881114>
- MURPHY, F. C., NIMMO-SMITH, I., & LAWRENCE, A. D. (2003). Functional neuroanatomy of emotions: A meta-analysis. *Cognitive, Affective, & Behavioral Neuroscience*, 3(3), 207–233. <https://doi.org/10.3758/cabn.3.3.207>

- Phan, K. Luan., Wager, T., Taylor, S. F., & Liberzon, I. (2002). Functional Neuroanatomy of Emotion: A Meta-Analysis of Emotion Activation Studies in PET and fMRI. *NeuroImage*, 16(2), 331–348. <https://doi.org/10.1006/nimg.2002.1087>
- Prinz, J. J. (2004). *Gut Reactions*. Oxford University Press.
- Putnam, H. (1975). *Mind, language and reality*. Cambridge ; New York ; Melbourne: Cambridge University Press, , Cop.
- Raichle, M. E., & Snyder, A. Z. (2007). A default mode of brain function: A brief history of an evolving idea. *NeuroImage*, 37(4), 1083–1090. <https://doi.org/10.1016/j.neuroimage.2007.02.041>
- Russell, J. A. (1991). Culture and the categorization of emotions. *Psychological Bulletin*, 110(3), 426–450. <https://doi.org/10.1037/0033-2909.110.3.426>
- Russell, J. A. (2009). Emotion, core affect, and psychological construction. *Cognition & Emotion*, 23(7), 1259–1283. <https://doi.org/10.1080/02699930902809375>
- Scarantino, A. (2012). How to Define Emotions Scientifically. *Emotion Review*, 4(4), 358–368. <https://doi.org/10.1177/1754073912445810>
- Schachter, S., & Singer, J. (1962). Cognitive, social, and physiological determinants of emotional state. *Psychological Review*, 69(5), 379–399. <https://doi.org/10.1037/h0046234>
- Schaefer, Alexander et al., 2018 “Local-Global Parcellation of the Human Cerebral Cortex from Intrinsic Functional Connectivity MRI.” *Cerebral cortex* (New York, N.Y. 1991) 28.9 (2018): 3095–3114. Web.
- Solomon, R. C. (2003). I. Emotions, Thoughts and Feelings: What is a “Cognitive Theory” of the Emotions and Does it Neglect Affectivity?. *Royal Institute of Philosophy Supplement*, 52, 1–18. <https://doi.org/10.1017/s1358246100007864>
- Solomon, R. C. (2006). *Not passion’s slave : emotions and choice*. New York ; Oxford: Oxford University Press.
- Soussignan, R. (2002). Duchenne smile, emotional experience, and autonomic reactivity: A test of the facial feedback hypothesis. *Emotion*, 2(1), 52–74. <https://doi.org/10.1037/1528-3542.2.1.52>
- Tomkins, S. S. (1962). *Affect imagery and consciousness: Vol. 1. The positive affects*. New York: Springer.
- Tomkins, S. S. (1963). *Affect, imagery and consciousness: Vol. 2. The negative affects*. New York: Springer.
- Vytal, K., & Hamann, S. (2010). Neuroimaging Support for Discrete Neural Correlates of Basic Emotions: A Voxel-based Meta-analysis. *Journal of Cognitive Neuroscience*, 22(12), 2864–2885. <https://doi.org/10.1162/jocn.2009.21366>
- Yeo, B T Thomas et al. “The Organization of the Human Cerebral Cortex Estimated by Intrinsic Functional Connectivity.” *Journal of neurophysiology* 106.3 (2011): 1125–1165. Web.

## CHAPTER THREE: THE ROLE OF THE SOMATIC ASPECT

### 1.0 Introduction

In the last chapter, I used the facts that emotions can be produced with only bodily stimulation to demonstrate that there is indeed a somatic aspect to emotion formation. I also showed that having a cognitive aspect does not exclude a somatic aspect. In this chapter, I will examine the role of the somatic aspect, and will address a number of questions, the first being whether a somatic aspect is always necessary. Some theorists think it is not, and give examples of how emotions can be produced without a somatic aspect. I will show why I disagree.

The second question is whether the somatic element (with appraisal) is sufficient — or, in other words, is a cognitive element necessary? Here I will examine the basis of Prinz's response, which is that the somatic element is sufficient, and I will embark on the first of a two-part explanation of why it is not: the first part relates to the somatic aspect only, the second, relating to the cognitive aspect, I will address in the next chapter.

There is I think a useful question to be asked when approaching the notion of whether a cognitive aspect is necessary, which is whether there is anything that a cognitive aspect can add to make an emotion complete. There is no thought that emotions exist in the body independently of the mind — interoceptive sensory systems at very least exclude that. As part of the integrated whole, then, mental processes will have information relating to the emotional state — the question is, what can they add? The somatic theorist has it that there is nothing the mind can add, so that there is sufficient information in the body to inform the full range of the contents of an emotional state. I will address this question in this and the next chapter, particularly in relation to Prinz's position.

Importantly, there is another question here to which I will return, raised by Brady: emotions are an alert, a call to attention, a signal that there has been a salient change in the environment which merits attention and action. If the end of the emotion process is the bodily reaction, then what of the role of emotions as alerts, as signals? An appraisal presses the alert bell, as it were, and on this approach the only response is bodily. This does not seem satisfactory as the complete process — what of consideration, reappraisal, at the very least.

I will proceed in this chapter by first outlining the James-Lange body-only approach to emotions, and use this as a springboard to distinguish between bodily sensations on the one hand and bodily feeling on the other hand. I will use the distinction to establish a source of intentionality for emotions — Goldie's (2009) feeling towards. I will then ask the question of whether bodily sensations are essential or whether an emotion can be experienced without the body being involved. I will answer in the negative.

I will then go into an examination of the role that the body plays in emotion formation, looking in particular from the perspective of what is represented in the body in the emotion experience. I will examine Prinz's (2004b) approach, and suggest that he demands too much of bodily representation, and I will prefer the core affect approach, which places a significantly lower information burden on bodily representations.

## **2.0 Bodily Sensations and Feeling Towards**

### **2.1 Generally**

Psychologists William James and Carl Lange, working independently in the late 19th Century, are considered the modern pioneers of somatic theories of emotion, their position being that bodily changes are at the heart of emotions, that the emotion is a product only of detection of bodily changes by the mind. In more recent times neuroscientist Antonio Damasio (1998) has advanced a somatic theory of emotions, whilst

as I have said, more recently still, Prinz (2004b) defends a somatic theory of emotions, in which, broadly, bodily changes constitute a representation of an emotional reaction — an angry reaction, for instance, is a representation of anger in the state of the body.

Great care must be taken here, though, to distinguish between bodily sensations, on the one hand, and on the other, bodily feelings — the non-somatic emotional feeling associated with emotion, what Stocker (1983) terms 'psychic feeling', and what Goldie (2009) terms a 'feeling towards'.

James and Lange are both clear that it is bodily sensations and bodily sensations alone that constitute the emotion, and indeed dismiss completely the notion that anything remains from which emotions may be constituted once bodily sensations are eliminated. To demonstrate their point, each theorist offers a similar exercise: the reader is invited to imagine an emotion, and then systematically eliminate the associated bodily sensations: you are left, they claim, with nothing. In Lange's words:

"If from one terrified the accompanying bodily symptoms are removed, the pulse permitted to beat quietly, the glance to become firm, the colour natural, the movements rapid and secure, the speech strong, the thoughts clear,—what is there left of his terror?" (Lange, C. G. 1885, p 193)

James (1894) uses the phrase 'mind stuff', saying that absent bodily sensation, there remains no 'mind stuff'(p 193) which could constitute the emotion. Although the comment seems to have been aimed at cognitivist theories, this does not seem right, for it does not take into account bodily feelings, the non-somatic feeling state associated with emotions — 'psychic feelings' or 'feeling towards'. It is clear, though, that James is of

the view that a feeling state is simply a feeling of bodily changes — that elation may be a feeling state of a racing heart. The relevant aspect is strictly somatic and physical.

That being said, feeling states play an important role in emotional states — indeed, a term coined by Goldie 'feeling towards' something is a source of intentionality. Recollect Olivia, who experienced a negative reaction to her husband's drunken antics, and whose emotions changed as time progressed: initially she was angry at her husband, and then became angry at those who had egged him on. Initially, she was feeling towards her husband, later towards others. I will develop this notion in the next section.

## 2.2 Intentional Feeling States

Lieberman (2018) has observed dryly that it is perfectly possible to have all the aspects of an emotional episode, including expressions and behaviour, without the feeling element — but, he says, we call that acting, not emotions. His observation rings true, for true emotions do have a phenomenological content — anger *feels* this way, sadness *feels* that way and so forth — which go beyond a racing heart, a blush in the face, a hollow stomach and so forth. And it seems true that no-one may truthfully say 'I am in love' without having feelings of love, nor 'I am frightened' without having feelings of fear.

Stocker (1983) describes what he terms 'Psychic States':

'It is obvious that the psychic feelings of light and ease and early joy, as well as those of a humdrum, twilight quality are important. So too, it is obvious that we are concerned that those we love and care for be interested in what they do, and that they care for those they live and work with. We are also concerned that they hold and act upon their values with care, concern, and interest. However, the total lack

of feeling, totally flat affect, as found in such psychotic states as extreme depersonalisation, is also — probably even more — to be avoided.'

Such feelings of light and ease, of interest in and concern for loved ones welfare all seem to be recognisable intentional mental states, and they do not seem to entail experience of bodily sensation.

A feeling need not be precise, nor will we always be aware of it: Zajonc (1984) avows that we cannot meet another without immediately experiencing a feeling, one of attraction or aversion (and without knowing that the other is doing the same) — and if at a later stage we learn that our first impression feelings were wrong, we are surprised. Zajonc also claims that feeling, affect, is primary, that it is arrived at without any cognitive processes — although, as I have said in relation to appraisal, I would add the proviso that it is not always arrived at without cognitive process. But I would agree that the affect remains primary, in the sense that it is the primary reaction, upon which emotion is built.

Primary feelings are not thoughts Zajonc (1980), but we can think about feelings — and when we think about our emotion feelings, emotions gain their intentionality. This is Goldie's 'feeling towards': emotions involve a feeling towards the object of the emotion: Olivia feels anger *towards* her husband for his behaviour, the child is frustrated *at* her mother, he is happy *with* his new car.

I have discussed that emotion feelings have associated bodily sensations, and these bodily sensations do not by themselves provide any intentionality — the flushed face and racing heart she experiences in her anger provide no direct clues as to their origin. Goldie talks of 'borrowed intentionality' in this context. Olivia's flushed face and

racing heart are of course part of the phenomenology of her anger, but it is only when they are combined with a 'feeling towards' her husband that an intentionality is established — her bodily sensations (flushed face, racing heart) are borrowing the intentionality of the 'feeling towards'.

This intentionality is inherent in the notion of 'feeling towards', as 'feeling towards' consists in thinking of a thing with feeling: Olivia first thinks of her husband's behaviour with feeling, and then she thinks of those who egged him on with feeling; the child thinks of her mother with feeling, Jacques thinks of his new car with feeling. No amount of introspection about a flushed face and a racing heart will tell Olivia with any certainty that her bodily sensations are about her husband's behaviour — what is required for her to make the association is for her to be thinking about her husband with feeling, with anger. Or, subsequently, about those who had egged him on. Her bodily sensations in the emotion, inseparably part of the phenomenology of her anger, have borrowed intentionality from her 'feeling towards'.

We do not always get the association right. We may misdirect our anger, start to think with feeling about the wrong object, or we may not recognise features in an object that would ordinarily produce fear. When we are scared, Goldie claims (and I think reasonably), we tend to look around and attribute dangerous properties to harmless objects. The adage 'once bitten, twice shy' is relevant here: another of Goldie's examples, is the appreciation of the danger of slippery ice: before I slipped on the ice, I had an intellectual appreciation of its dangers, but I felt no fear; having slipped and fallen, I now feel that fear. Before falling, I was thinking about the danger without feeling; having fallen, I now think about the danger with feeling.

We have, then, the feeling state of emotions (Stocker's psychic feelings) — which, as Lieberman tells us, distinguishes them from acting — which includes bodily sensations and 'feeling towards'. 'Feeling towards', thinking about something with feeling, establishes the intentionality of the emotion.

### 3.0 Are Bodily Feelings Essential?

There remains the question of whether emotions may be experienced without any bodily feeling. As I outlined in section 2.1, Prinz aligns himself with James and Lange (2004b p 207), and in addressing this issue his claim is that examples given that do not seem to involve bodily sensations are not emotions at all, but are dispositional states. You may *be* jealous for years, but you will only *feel* jealous when, for example, you find your lover in bed with another. You are generally *disposed* to feel concern for your loved ones, but only *feel* that concern when, for instance, illness strikes. Solomon adopts the opposite view, claiming that one may be angry for 'days or years' without feeling the anger, with the caveat 'so long as being angry is not thought to mean "having a disposition to feel angry."' (Solomon 2006, p 6)

There remains an objection: unless this is settled as a definitional matter (it is stipulated that all emotions are associated with bodily changes), this remains an argument that can only be discussed on theoretical grounds, because gathering empirical evidence is extremely difficult. Pride or ambition are often presented as emotions that can be experienced without any bodily sensation, but actually ascertaining whether an individual is experiencing a bodily sensation is difficult, as is isolating the relevant emotion. From an empirical point of view, establishing a negative is impossible — that there are no

emotional experiences without bodily sensations. It seems possible to make the converse of Solomon's assertion: the individual experiencing pride or ambition is experiencing a bodily sensation, however slight, unless being proud or ambitious is thought possible without bodily sensation. Is it strictly possible to experience pride without feeling something, a slight swelling in the chest? Can one be ambitious without the sensation of some sort of drive or urgency?

Notwithstanding that this is considered a somatic theory, Damasio claims that bodily sensations are not necessary for the experience of emotion, that the body can be by-passed and the mind produce the emotion. This is a position shared by Cunningham & Zelazo (2007), who present an iterative processing model in which an emotion is an endpoint in an interactive process, a high-order mental state that is more a product of the iterative process (in which the mind is trying to find a solution by re-processing increasing amounts of information) than of any bodily sensations. In principle, then, they say it is possible for the mind to produce an emotion from this iterative process without involving bodily sensation. Emotions would generally look different, and have a different character, if there was absolutely no bodily constraint on them, but the possibility remains on this type of theoretical account.

I think the answer to this lies in Cunningham & Zelazo's assertion that the emotions would have a different character if they were produced and experienced without any bodily involvement. First, I have to stipulate clearly that the type of production I am talking of here must have no bodily involvement, and it is not clear that the type of processes that Cunningham & Zelazo have in mind do not involve any bodily processes. The iterative process they have in mind is an information-gathering process, at the end of

which there is sufficient information for an emotion to be formed, but it is not clear how that information is used. It may be that at a given point in the process, the process itself produces a somatic reaction — a change in core affect. This is not unlike my imagining myself to have lost a loved one, and carrying that imagining to the point that I actually feel as if I had experienced the loss. In this situation it is this core affect that starts the process, and the end product is a genuine emotion — with the same character.

But it is conceivable that an emotion-like reaction could be induced by mental processes only and have no associated somatic element. Stipulating that this occurs, then, it is my suggestion that it would not consist in a genuine emotional experience. It would have sufficiently different a character that it not constitute a genuine emotion. I liken this experience to virtual reality: I may use a virtual reality device and 'walk amongst a pride of lions', or 'summit Everest', but my experience in these cases would be of a virtual reality simulation of being amongst lions or atop Everest. A wholly mental experience of an emotion-like reaction would be sufficiently different to mark it as not being an emotional experience.

This has an air of stipulation about it: stipulating that emotions must have bodily involvement, any emotion-like experience without bodily involvement cannot be a true emotion, and I accept that. The initial condition for this analysis, that there is no somatic involvement at all, was highly artificial: the experience of fear as an entirely mental phenomenon, for instance, seems an impossible abstraction. It is recognised even by non-somatic theorists such as Schachter & Singer (1962) and appraisal theorists such as Scherer and Lazarus that there is physical sensation associated with emotion (albeit not constitutive of the emotion) — for indeed it seems impossible to imagine emotion without

a bodily component. It is this artificiality is the source of the air of stipulation. To make the initial conditions more realistic, there would have to be some bodily sensation allowed — so that the end product of the Cunningham iterative process includes bodily sensation. In this case, I would respond that the iterative process has produced conditions to which the body has reacted, very like my imagining having lost a loved one. The emotion emerges from the subsequent categorisation of the bodily reactions — the core affect — and is not a product of the iterative process at all.

In the end, then, I maintain my position that the somatic aspect is essential to all emotion experiences.

#### **4.0 The Role of Bodily Sensations, Generally**

I have been discussing the participation of bodily sensations in the formation of emotions (or, more precisely, of the perception of bodily changes), without so far examining what precisely that role may be. One possibility, with significant following, is that the bodily changes represent the underlying emotion. This is a purely somatic theory of emotion, in which the emotion is achieved without any requirement for cognitive contribution — supporters of this position include perceptual emotion theorists such as Prinz.

Another possibility is that the bodily changes are an affective reaction, so that they represent the affect the state of affairs has on the individual. In this case the representation is less contentful, less rich in information, than that demanded by the perceptual theory. More (some cognitive contribution) is needed to achieve a full emotion experience. In this camp we find core affect theorists, who see core affect as something of

a staging point on the way to a full emotion experience. This, of course, includes the approach I defend.

In examining each, I will return to the question of what the cognitive aspect has to offer over and above the somatic aspect. If, as Prinz (2004b) suggests, it is convincing to think that there is sufficient information in the somatic aspect to allow for a full emotional experience, and to allow emotion to fulfil its function as an alert, then the cognitive aspect seems superfluous. As I have heralded, this is complex issue, because it requires not only a somatic representation of the state of affairs in sufficient detail to allow a full emotional experience, but it requires that the emotion concepts also be represented somatically. And there needs to be a mechanism for their matching.

## **5.0 Representing the Emotions**

I have drawn upon Prinz (2004b) so far in this chapter, and as he is a strong proponent of a somatic/perceptual theory of emotion, I will continue to do so here. How on his account the detection of bodily changes becomes a representation of the emotion requires some explanation. First of all, Prinz thinks that what is represented are not emotions, but rather Lazarus' 'Core Relational Themes', set out in Figure 1.2 in Chapter One — these core relational themes, recollect, are then related by Lazarus to fifteen distinct emotions. Anger, then, is a representation of 'a demeaning offence to me or mine'. The link between the state of the body and the demeaning offence is achieved in a manner described in a theory of representation which Prinz defends in 'Furnishing the Mind' (Prinz, 2004a). The notion is that the content of any representation is determined by its function, what it is that representation's function to detect (which can include anything

about which we can think). The function of a representation of a demeaning offence to me or mine is to represent anger — a function that is derived from reliable co-occurrence of the bodily changes and core relational themes. Anger has been *set up* by previous experience in order to be *set off* by a demeaning offence to me or mine. In Prinz's own words:

"[Emotions] represent core relational themes, but they do so by perceiving bodily changes.... Something dangerous occurs. That thing is perceived by the mind. This perception triggers a constellation of bodily changes. These changes are registered by a further state: a bodily perception. The bodily perception is directly caused by bodily changes, but it is indirectly caused by the danger that started the whole chain of events. It carries information about danger by responding to changes in the body. That further state is fear." (2004b p 69)

In other words, over time patterns have been noticed, patterns of how the body reacts to given types of states of affairs, how it prepares itself to react (increased heart rate, held breath, elevated blood pressure): sufficient co-occurrences lead to the ability to recognise the types of states of affairs that cause this type of preparation. The body prepares itself to react, in response to the danger, and those preparations reliably co-occur with danger: the preparations, then, become a representation of fear, and the intentionality is established through the initial perception of the danger. This is the role played by the body — it reliably forms the basis on which the mind represents the emotion.

I have taken Prinz (2004b) as providing an exemplar of perceptual models. As is evident from the description, he is a literalist about the perceptual approach: he regards emotions to be literally sensory perceptions. The body sensations are the centre of the

process, it is there that the emotion is formed. There are other mixed or non-literal approaches. Döring (2003) for instance takes a mixed approach, and views emotions as perceptions like any other perceptions, but with the addition of a 'feeling towards' (here following Goldie). In this instance, perception does not serve only emotion, so that the role of body sensation is diminished from that suggested by Prinz, and is only partly contributive to the emotion. It is however the literalist approach that interests me here, for non-literal approaches leave room for other roles for body sensations, and may be included in my discussion of core affect theories in a later section. The question for me, then, is whether a literal perceptual model of emotions provides a complete description of the role bodily sensations have in emotions. And my answer, at least at this stage of development of Prinz's approach, is that it does not (and some of the problems I have with Prinz's approach will necessarily generalise to other literal perceptual accounts).

Prinz's approach is deeply entrenched in his theory of concepts, that concepts are based on 'proxytypes', perceptually derived constructions used to detect instances of categories (Prinz 2004a). This theory, which he accepts is incomplete (Prinz replies to observations on his theory in Weinberg, J. (2003)), has difficulty overcoming problems of concept individuation — how do two or more individual and different representations of anger come to be linked under the same concept? Prinz (2004b) relies on a type of default representation, so that we may expect something of a 'master image' of anger. Such a master image may progress the matter, but again the question is one of linkage: how is the master image differentiated from other images, and how do all instances of fear come to be grouped together? This particular problem may be specific to Prinz's formulation of a perceptual theory of emotions, but it does highlight the amount of work

any perceptual model demands of perception, without involvement of any non-perceptual higher level cognitive processing: everything is done at the perceptual level.

It seems that literal perceptual models do allow that this is a large burden, for inherent in some such theories (such as Döring's) is a provision for further processing. Allowing for such processing, however, must end the notion that they are literal perceptual models at all. I have mentioned this problem before, recognised by Brady (2013 p 63), who points out that one of the functions of emotion, even in a perceptual model, is to identify salient phenomena, to direct attention to those phenomena for further consideration. Such further consideration is cognitive, rather than perceptual. What, then of this further consideration? It seems that there may be an initial perception of an emotion, but then what transpires after further cognitive consideration? That initial perception must open for adjustment or even overruling in some way — but at very least it is open to change. Such a change makes the model not a literal model of perception.

The significant point here relates to information: if the claim is that an emotion (in all its content-full richness) is perceived in the first instance, then the perception (and its associated representation) must be extraordinarily information rich: recognising all instances of 'demeaning offence to me or mine' by a process of matching only perceptual information places a considerable information burden on perception. But, there does seem to be room for a more modest claim, one that makes a lesser informational demand on perception. It seems more manageable if the somatic aspect involved capturing less information than that required for a full emotion — and that further processing takes place later. What I am getting at here is the notion of core affect, something less specific, less content-full than a full emotion. Core affect represents an affective reaction, which is

less rich, contains less information than a full emotion. It may be used as the base upon which subsequent processing may build a full emotion. As core affect plays a significant role in the theory I am defending, it merits a close look.

## **6.0 Core Affect**

### **6.1 Generally**

Anderson & Barrett (2016) may overstate the position when they claim that there is no such thing as a neutral perception (although Solomon agrees (2006 p213, quoted in section 2.1), but it seems there is little escape from affect in day-to-day life. Zajonc makes a more tempered claim, before going on to argue that affect always accompanies thought:

'There are practically no social phenomena that do not implicate affect in some important way. Affect dominates social interaction, and it is the major currency in which social intercourse is transacted.' (Zajonc 1980)

This near-ubiquity of affective response, as I will demonstrate in this section, is related to core affect, which is a permanent state of the body: we are always in some core affective state (which may conceivably at times be completely neutral).

The notion of core affect extends beyond its place in emotion formation, encompassing as it does all bodily and mental functioning, operating as a kind of barometer indicating how the individual, the organism as a whole, is functioning, given the current state of affairs. Although emotion elicitors in the state of affairs will inevitably be reflected in core affect, they are not its sole source. Emotion elicitors are not isolated

from the general well-being of the individual — they are incorporated into the general mix of internal and external factors that contribute to or threaten wellbeing. This integration of emotions into the overall wellbeing of the individual fits well into what I have said about considering emotions as aspects of one indivisible whole — and will fit equally with what I will say about viewing emotions and perceptions equally as aspects of an indivisible whole. That core affect has sources beyond emotion elicitors clearly demonstrates that emotions are one aspect of a fully integrated sensory and reactive system that promotes the fundamental aims of the organism (and the individual) — that is to survive and thrive.

I will have more to say on this later, for now I will start my examination of core affect with the observation that the ongoing state of affairs affects us in one way or another: we react to the environment as it changes, as we react to changes in the internal milieu (Anderson & Barrett, 2016).

How the environment and the inertial milieu affects us will manifest in various different ways throughout our bodies. Some of these ways may be measurable, such as heart rate and respiration, sweating, blushing, hormone production and posture, while others will be more subtle — and the entirety of our state at any given time, the sum of all of our reactions in a snapshot, is our core affective state. This may most simply be thought of as a summary of all of those reactions in a given moment, in a feeling state — this is how the body is reacting, and how do we feel about that right now? It is both a representation of and a feeling about how we are in relation to states of affairs from moment to moment (Barrett & Bliss-Moreau, 2009). In many ways, it is a full-bodied and feeling-state representation of our relation to states of affairs.

The state itself is a mental state (incorporating a feeling state), grounded in the entire physiology of the individual: what is involved in its formation is the full range of visceral, kinaesthetic, proprioceptive, and neurochemical reactive fluctuations (Barrett, 2006b, Barrett & Bliss-Moreau, 2009, Russell, 2009). It is referred to as 'core affect', according to Barrett, for a number of reasons, including the full range of its grounding, that it can influence the homeostatic core of the individual, that it represents the core of experience, and that it constitutes core knowledge — in short, it is core to the individual (Barrett, 2006b). Russell associates the term 'core' with the essential self, calling it 'irreflexive, first-order consciousness' (Russell, 2005). As I have said, core affect is also not static: constant changes in environment and mental states make our affective states dynamic — the affective system can be thought of as a process, its output a constantly changing core affect. Changes will be determined not only by new stimulus, but by the then prevailing state, as well as prior states (Cunningham, Dunfield, & Stillman, 2013; Asutay et al., 2019).

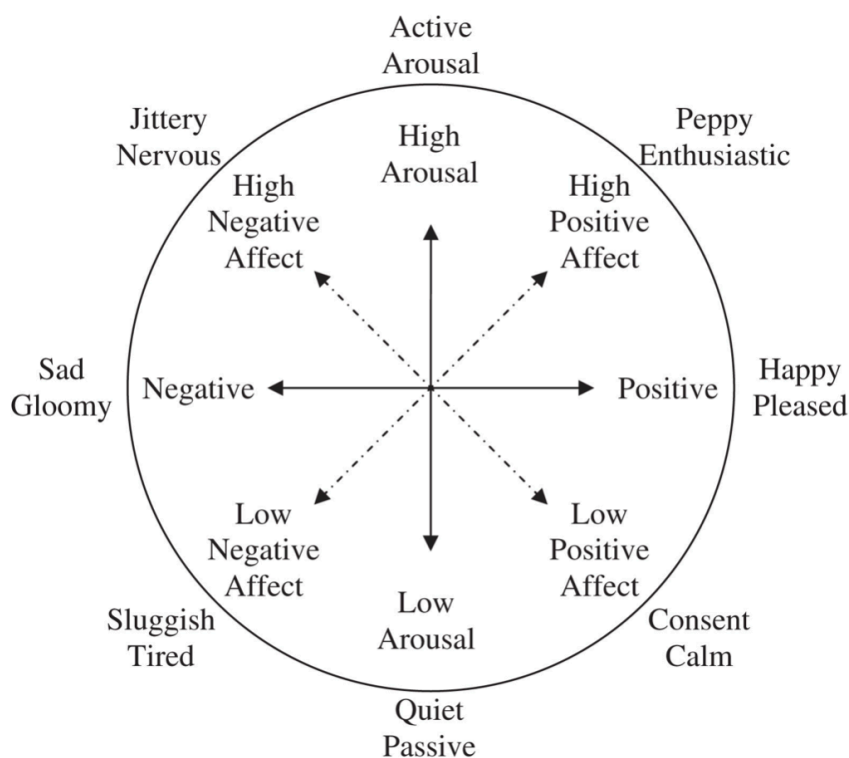
## **6.2 The Circumplex**

Core affect is often thought of in the two dimensions of valence and arousal — simplistically, whether we are feeling good or bad about how things are, and how it arouses us. Some leading circumplex theorists such as Russell and Barrett feel this two dimensional approach to core affect is sufficient to cover all affective states, and depict it graphically in what is called the 'Circumplex Model' (see Figure 1.3). With two dimensions, the circumplex allows for easy representations of the combination of valence and arousal (Posner, Russell, & Peterson, 2005).

The circumplex model may be overly simplistic. Some theorists suggest that the two dimensions do not adequately cover the complexities of core affect: other dimensions (such as control or relative power, the extent to which any aspect of the situation may be controlled) are needed to allow more accurate depiction of core affect. Russell himself acknowledges control or relative power in affective situations, and a number of other possible dimensions, but considers they are concerned with the circumstances surrounding core affect, that they contribute to core affect and are not themselves part of it. I think this distinction leaves core affect unnecessarily stripped of information — the circumplex seems to represent a convenient summary, but if as Russell says much of the information takes place elsewhere, the contribution of the diagram to understand core affect is less clear. It is also worth noting, as I have drawn on Lazarus, given that emotions are generally taken to be situated in specific places on the circumplex, Lazarus' (2001) contention that the same emotion may have different valences is not accommodated by the circumplex model.

My attitude towards attempts to depict core affect graphically as in the circumplex model, or generally to establish the dimensions of core affect, is equivocal. Core affect is a complex state, involving potentially a large number of physical reactions, all combined with a feeling state, and it is impossible to imagine two core affective states being identical, even within the one individual. Yet, it is important that we try to understand the state and its implications. And I think it is at this level that the circumplex model and other dimensional models are useful: they allow us to describe in very general terms some common properties of the state in an illustrative manner. So whilst understanding how two of the major properties of the state interact by representing them graphically is a

valuable tool, I do not think the state can be reduced to those two dimensions, or any other fixed dimensions — the state is too complex. And its complexity is reflected in its grounding, and in its very name.



**Figure 1.3:** The Circumplex

### 6.3 Sources of Core Affect.

Perception and interoception are generally recognised as the primary source of core affect. As I have already mentioned, emotions have an intentionality, a 'feeling towards' (Goldie, 2009, ch 2), an intentionality without which they seem to lack meaning: she is angry *with* her husband, he is sad *at* the death of his cat. But there can be intentionality even at the level of core affect: it is a reaction to something, and in order for a reaction to occur, that something has to be brought to consciousness. Or, more

prosaically put, we have to detect something before we can react to it: I perceive the bear on the path, and I react with fear.

For these purposes, perception can be looked upon as a simple process: I perceive the bear, which results in negative core affect about the bear; Olivia perceives her husband and his behaviour, which results in a negative care affect about that situation. (Core affect, of course, is subjected to further cognitive processing and categorisation, resulting in an emotion.)

Just as perception may be seen as a method for monitoring the external environment, interoception is the process used for monitoring the internal milieu. We monitor heart rate, respiration, temperature, nourishment levels, liquid levels and so forth, to determine whether the respective systems are operating effectively. And interoceptive signalling may also trigger a change in core affect which will be interpreted: feeling unwell may result in a change in core affect, or hunger or thirst; or, to be emotion-specific, an elevated heart rate may trigger a change in core affect ultimately to be categorised as anxiety. (Critchley & Garfinkel, 2017; Craig, 1976, Seth & Friston, 2016; Tsakiris & Critchley, 2016).

Where interoception informs us of the state of internal functioning of our bodies, proprioception tells us about the position of our bodies in space. It is the process by which we become aware of where our limbs are at any time. I may touch my nose with my finger while my eyes are shut, because proprioceptive signalling tells me where both my finger and nose are. I do not hit door jambs with my arms because proprioception tell me where my arms are (Mcgee, 2018, pp. 571-3). This may seem otiose in relation to emotions, but of course on this approach core affect is not an emotion, but simply a base

on which emotions may be built. That being said, interceptive information may turn out to be important in examining any relational content in emotions<sup>11</sup>.

Finally, I think it uncontroversial that imagination may produce a change in core affect: for some, merely imagining a spider or a rat or a decomposing body can produce a felt reaction. For others it may be imagining a sharp knife being drawn across their abdomen, leaving a deep incision.<sup>12</sup> It is equally uncontroversial that a change in core affect may be brought on by hallucination and artificially induced mental states (drug induced or similar) may produce a change in core affect.

#### **6.4 From Bodily Sensations to Core Affect**

I think I have been clear that core affect involves more than a monitoring of the physiological — it is a monitoring of the state of affairs against the benchmark also of the concerns of the individual, her likes, dislikes, goals and so forth. This opens core affect to

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<sup>11</sup> To demonstrate where thinking on the relational nature of core affect and its associated emotions may go, Prinz conducted a series of experiments on the matter, and presented some preliminary views in a talk at the University of Geneva in 2021. In the experiments two actors, a male and a female, were photographed singly in various poses to indicate various possible relations with others — submission, dominance, avoidance, acceptance, anger and so forth. These photographs were then placed together in various combinations, and participants were asked to identify the emotion being experienced by each actor. The results seemed to demonstrate that the emotions identified varied considerably as posture combinations varied. The emotion that was identified (and by implication possibly felt) varied according to the relative postures (body positions) of the actors. Prinz's preliminary thinking was that core affect seems to be at least perceived to be relational, and tentatively that emotions are indeed likely to be relational. No paper has yet been forthcoming, so my mention of the experiments and preliminary views is purely to demonstrate a possible future direction in investigating the relational nature of emotions.

<sup>12</sup> Phan et al showed not only that an emotion (and hence necessarily a change in core affect) can be induced by imagining a situation, but precisely which part of the imagining process is the eliciter (Phan, Wager, Taylor, & Liberzon, 2002).

purely mental stimulus. So for instance something thwarts us in our goal striving, we will experience a negative reaction, which will be reflected in core affect. Equally, when something promotes that goal striving, we will experience a positive 'feeling towards' that thing. Further, how we think about a particular state of affairs may change our core affective reaction to it.

Recollect Olivia's negative affective reaction to her husband's antics — I will add an additional dimension to this story: on reflection, Olivia realises that all her husband's friends who had egged him on obviously liked him an enormous amount, they seemed to look up to him — while he was singing and dancing on the table, they were all laughing with him, not at him. Her feeling towards the incident changes completely — and her core affective reaction changes from negative to positive. She starts to feel good about the incident, and her feeling may give rise to affection and pride, albeit temporarily. There are times, then, when we may be able to change how we feel about situations by changing the way we think about them: at these times, mental states as a source of core affect are a source of emotional reaction.

### **6.5 Core Affect: a Summary**

What we have, then, is the full range of perceptive inputs causing a change to core affect: the smiling image of the loved one, the racing heart, the change in respiration, the defensive raising of the arms. We also have memory of prior affective states and further processing of more recent affective states both contributing to the occurrent affective

state. The result is rich and nuanced — a physical and mental representation of the changing state of affairs, combined importantly with a 'feeling towards' either that state of affairs in general or a specific aspect of it.

This representation forms a basis upon which the organism, the individual, may react in order to survive and to thrive. It is used as a basis to maintain physiological systems in optimum condition, to maintain allostasis: hormones are secreted, sweating is initiated, capillaries are expanded or shut, hunger or thirst manifests and so forth. And of course emotions arise — and they arise, as I have said, from this fully integrated system of organismic monitoring, to promote the survival and thriving interests of the individual. Emotions, I am saying, are an inseparable aspect of the overall operation of the organism.

Finally and importantly, where a literal perceptual model will have perception and conceptualisation (or categorisation) all taking place at the bodily level, core affect provides only the basis on which on which conceptualisation may take place at a cognitive level.

## **7.0 Summary and Conclusion**

Bodily sensation is an essential aspect in emotion formation, and this chapter examined not only why this is so, but what that role is. Bodily sensations must be carefully distinguished from bodily feelings — the former is the recognition of a bodily state, the latter is purely a feeling state. This pure feeling state is also an essential aspect of emotion formation, and in it we find a source of intentionality in emotions: we direct those feelings towards an object or a phenomenon by thinking about the object or phenomenon with feeling, and find intentionality.

Bodily sensations are encapsulated in the notion of core affect — a bodily sensation and feeling state that represents how the current state of affairs affects our prevailing concerns. Core affect is a barometer, as it were, providing guidance, essentially, as to 'How are we doing?', gathering information not only from external but from internal sources — and, potentially, relational information as well. It represents that information in its reaction: accelerated heart rate, held breath, elevated heart rate and so on.

This information is then available for interpretation by cognitive processes: these processes are what make the affective experience, the ongoing core affect meaningful.

## References

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- Anderson, E. C., & Barrett, L. F. (2016). Affective Beliefs Influence the Experience of Eating Meat. *PLOS ONE*, 11(8), e0160424. <https://doi.org/10.1371/journal.pone.0160424>
- Asutay, E., Genevsky, A., Barrett, L. F., Hamilton, J. P., Slovic, P., & Västfjäll, D. (2019). Affective calculus: The construction of affect through information integration over time. *Emotion*. <https://doi.org/10.1037/emo0000681>
- Barrett, L. F. (2006b). Solving the Emotion Paradox: Categorization and the Experience of Emotion. *Personality and Social Psychology Review*, 10(1), 20–46. [https://doi.org/10.1207/s15327957pspr1001\\_2](https://doi.org/10.1207/s15327957pspr1001_2)
- Barrett, L. F., & Bliss-Moreau, E. (2009). Chapter 4 Affect as a Psychological Primitive. *Advances in Experimental Social Psychology*, 167–218. [https://doi.org/10.1016/s0065-2601\(08\)00404-8](https://doi.org/10.1016/s0065-2601(08)00404-8)
- Brady, M. (2013). *Emotional insight : the epistemic role of emotional experience*. Oxford, United Kingdom: Oxford University Press.
- Craig, E. (1976). Sensory experience and the foundations of knowledge. *Synthese*, 33(2-4), 1–24. <https://doi.org/10.1007/bf00484707>
- Critchley, H. D., & Garfinkel, S. N. (2017). Interoception and emotion. *Current Opinion in Psychology*, 17, 7–14. <https://doi.org/10.1016/j.copsyc.2017.04.020>
- Cunningham, W. A., & Zelazo, P. D. (2007). Attitudes and evaluations: a social cognitive neuroscience perspective. *Trends in Cognitive Sciences*, 11(3), 97–104. <https://doi.org/10.1016/j.tics.2006.12.005>
- Cunningham, W. A., Dunfield, K. A., & Stillman, P. E. (2013). Emotional States from Affective Dynamics. *Emotion Review*, 5(4), 344–355. <https://doi.org/10.1177/1754073913489749>
- Damasio, A. (1998). The somatic marker hypothesis and the possible functions of the prefrontal cortex. In A. Roberts, T. Robbins, & L. Weiskrantz (Eds.), *The prefrontal cortex: Executive and cognitive function* (pp. 36–50). Oxford: Oxford University Press.
- Döring, S. A. (2003). Explaining Action by Emotion. *The Philosophical Quarterly*, 53(211), 214–230. <https://doi.org/10.1111/1467-9213.00307>
- Goldie, P. (2009). *The emotions : a philosophical exploration*. Oxford: Clarendon Press.
- James, W. (1890). *The principles of psychology*. New York: Dover.
- James, W. (1894). The physical basis of emotion. *Psychological Review*, 1, 516–529.
- Lange, C. G. (1885). *Om sindsbevaegelser: Et psyko-fysiologisk studie*. Copenhagen: Jacob Lunds. Reprinted in C. G. Lange & W. James (Eds.), I. A. Haupt (Trans.) *The emotions*, 1922, Baltimore: Williams and Wilkins.
- Lazarus, R (2001), *Relational Meaning and Discrete Emotions*, in Scherer, K. R., Schorr, A., & Johnstone, T. (2001). *Appraisal processes in emotion : theory, methods, research*. Oxford, New York: Oxford University Press.

- Lieberman, M. D. (2018). Boo! The consciousness problem in emotion. *Cognition and Emotion*, 33(1), 24–30. <https://doi.org/10.1080/02699931.2018.1515726>
- Mcgee, S. R. (2018). *Evidence-based physical diagnosis*. Philadelphia, Pa: Elsevier.
- Phan, K. Luan., Wager, T., Taylor, S. F., & Liberzon, I. (2002). Functional Neuroanatomy of Emotion: A Meta-Analysis of Emotion Activation Studies in PET and fMRI. *NeuroImage*, 16(2), 331–348. <https://doi.org/10.1006/nimg.2002.1087>
- POSNER, J., RUSSELL, J. A., & PETERSON, B. S. (2005). The circumplex model of affect: An integrative approach to affective neuroscience, cognitive development, and psychopathology. *Development and Psychopathology*, 17(03). <https://doi.org/10.1017/s0954579405050340>
- Prinz, J. J. (2004a). *Furnishing the Mind*. MIT Press.
- Prinz, J. J. (2004b). *Gut Reactions*. Oxford University Press.
- Russell, J. A. (2005). Emotion in human consciousness is built on core affect. *Journal of consciousness studies*, 12(8-9), 26-42.
- Russell, J. A. (2009). Emotion, core affect, and psychological construction. *Cognition & Emotion*, 23(7), 1259–1283. <https://doi.org/10.1080/02699930902809375>
- Seth, A. K., & Friston, K. J. (2016). Active interoceptive inference and the emotional brain. *Philosophical Transactions of the Royal Society B: Biological Sciences*, 371(1708), 20160007. <https://doi.org/10.1098/rstb.2016.0007>
- Solomon, R. C. (2006). *Not passion's slave : emotions and choice*. New York ; Oxford: Oxford University Press.
- Stocker, M. (1983). Psychic feelings their importance and irreducibility. *Australasian Journal of Philosophy*, 61(1), 5–26. <https://doi.org/10.1080/00048408312349841>
- Tsakiris, M., & Critchley, H. (2016). Interoception beyond homeostasis: affect, cognition and mental health. *Philosophical Transactions of the Royal Society B: Biological Sciences*, 371(1708), 20160002. <https://doi.org/10.1098/rstb.2016.0002>
- Weinberg, J. (2003). Making sense of empiricism. *Metascience*, 12, 279-303.
- Zajonc, R. B. (1980). Feeling and thinking: Preferences need no inferences. *American Psychologist*, 35(2), 151–175. <https://doi.org/10.1037/0003-066x.35.2.151>
- Zajonc, R. B. (1984). On the primacy of affect. *American Psychologist*, 39(2), 117–123. <https://doi.org/10.1037/0003-066x.39.2.117>

## **CHAPTER FOUR: MAKING SENSE: THE COGNITIVE ASPECT**

### **1.0 Introduction**

Walking through the emotion production process as I have set it out so far, the individual first appraises the state of affairs (with full access to cognitive resources, including values), and comes to experience a particular core affect. It is both a feeling state and a mental state: it is essentially, 'I feel like this about the situation.' It is an affective state she is in, one from which her emotion experience will emerge — and it will emerge once she matches her core affect to a particular emotion concept.

Here then is the matter for this chapter, the final aspect: the need to make sense of the experience, to make it meaningful. The essence of the matter is the matching of core affect with emotion concept. The concept is the source of that meaning: it will be replete with information about the emotion, and it is on the basis of this information that she will make sense of what she is feeling.

### **2.0 Matching Information with Knowledge**

Although the 'making sense' aspect of a theory of emotions reasonably clearly refers to the cognitive aspect of emotions, I have chosen the phrase because I think it is a more specific description of what is actually going on, of what cognitive processes add to the emotion formation. The individual needs to make sense of her affective reaction, and that understanding is not necessarily automatic. If a bear appears in my path, I may achieve complete understanding in a moment. But again, sudden and overwhelming stimuli such as that bear are the exception rather than the rule: states of affairs are usually

more complex, containing multiple stimuli, and may well produce a variety of possible and actual reactions.

So, what is involved in this making sense? To achieve understanding, to attribute meaning, information must be matched with knowledge. Matching data with known concepts, labelling data based on known concepts, imparts meaning. Let me demonstrate how this notion applies in the various theories I have been examining.

Prinz (2004) makes explicit comments about this matching or labelling. His theory of emotions is a perceptual theory, but at its heart it is essentially somatic — emotions are embodied representations. Looking at his theory from this perspective, it would seem to exclude any element of matching or labelling — indeed, it would appear to be purely non-cognitive. But he explicitly wishes to include elements that explain why emotions do make sense:

'In particular, somatic theories do not explain why emotions seem so meaningful, intelligible, and rational. To rectify this deficit, it is important to show that emotions are not merely perceptions of the body but also perceptions of our relations to the world. This book is an attempt to patch a major hole in somatic theories. It is an attempt to bring body, mind, and world together.' (\*p 20)\*

What Prinz highlights here is that emotions are meaningful, and that any theory of emotions must demonstrate how they become meaningful — how we make sense of our emotions. As I outlined in the previous chapter, at the core of Prinz's theory is his theory of proxytypes, and a sophisticated matching of representations in the process of forming concepts. Importantly from an emotion theory perspective, these concepts are matched to bodily representations of the state of affairs. Very broadly, the notion is of pre-existing

information-rich bodily structures to which meaning has been assigned. New information-rich bodily structures are brought into being by perceptual processes, and which are assigned meaning by being matched to the appropriately selected pre-existing mental structure. New information is being matched with existing concepts, it is being labelled — once this happens, he is clear that the information becomes meaningful.<sup>13</sup>

I have given reasons why I think Prinz's approach is problematical, and why I think the problems with it could be solved by allowing that bodily states represent something less than full-blown emotions, and then allowing that the assignment of meaning is a cognitive one. Core affect is an ideal candidate: it represents a more simple reaction of the individual to the prevailing state of affairs, and is more easily represented in bodily structures. That being said, I think it is an important point to make: the process by which meaning is assigned on Prinz's formulation is in principle the same as that which I am defending: new information must be matched to existing information, existing knowledge, in order for that information to become meaningful.

My point of departure from Prinz in this respect is the amount of information that his approach demands be bodily represented. Because his theory postulates the existence of basic emotions, and the essential reference is Lazarus' (2001) fifteen key relational themes, the amount of information that needs to be stored is theoretically limited, as complex emotions are on this approach a compound of basic emotions (and

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<sup>13</sup> I have already outlined the problem Brady (2013) identifies here, that emotions are a call to attention, but Prinz's labelling or matching is presented as the end of the emotion process. Although I think that some initial understanding may be achieved with the matching, based on the information contained in the concept, I agree that the manner in which Prinz presents his theory prevents further reflection and hence limits the opportunity to make sense of the emotion.

their key relational themes). I am sceptical about whether every emotion on the full spectrum of potential emotional reaction can be constitutively analysed as a compound of a set of basic emotions (something I return to in a later section), but this notion still faces a formidable obstacle, for complex situations have to be matched with existing knowledge without reflection — without thinking. I will illustrate with the example of Jacques, who has just bought a new car.

Looking at his new car, Jacques experiences a positive reaction, and, on Prinz's approach, preparatory changes will take place in his body, which will be matched with reliably co-occurrent previous changes. But, what if Jacques is initially unsure of exactly what he feels about his new acquisition? He may be forced to deliberate. His instinctive reaction may be that he is proud, proud of the work he has done and what he has achieved to allow him to purchase the car. But, then, he has been brought up with the view that personal pride is a deadly sin, and its pull ought to be resisted, and so he must resist personal pride. As an alternative, he may be proud of his car — but when he has thought about it on occasion, the notion of being proud of an object with no associated personal pride has seemed nonsensical. He would be inclined to resist matching his feeling with pride on two counts, then. There is another solution, that his positive feeling is simply that he likes his car — this is a match to which he would be more inclined, that he simply likes Ferraris. In the end, then, the likely end emotional position is that he loves his new Ferrari.

Here there is a process involved in Jacques coming eventually to simply loving his new car, a process that involved rejecting one emotion on moral grounds, another on rational grounds, and eventually ending up with something personally acceptable. This is thinking — something that is excluded in Prinz's model. Prinz's model demands that all of

the information required for the process be contained in bodily representations, so that processes such as the one I have outlined for Jacques simply do not occur, and that all emotional reactions are predetermined and fixed. The problem Brady (2013) identifies is directly in point: I have been discussing the need for processing in selecting the appropriate emotion concept match — as Brady points out, subsequent deliberation and reappraisal seems excluded on Prinz's model.

Core affect not only carries a lesser burden of information than Prinz demands, it allows for further processing. So, following Russell, Zajonc and Barrett, I take the affective state (core affect) and its associated information as primary in the sense of being a precursor to a full emotion experience. This information is a feeling state that is providing (at very least) information as to the positive or negative aspects of that state of affairs. This is raw data in the bodily representation, set up and available for matching or labelling. Where Prinz's matching demands all relevant information be represented in the body, my approach allows the thinner information content to be matched with thicker information content, stored mentally — stored as emotion concepts. The matching I propose involves the same process as that proposed by Prinz, but the difference is in information. I think the amount of information required is more readily stored in the mind, the dedicated human store of information.

On my approach, then, this cognitive matching or labelling (or categorisation) exercise will involve matching up each of (i) the state of affairs (ii) the feeling of core affect, and (iii) the various emotion concepts she has available to her. Once she has done this, the content of the emotion concept will be available to her, information to provide

meaning — to help her make sense of her affective experience in the context of the state of affairs.

Sometimes this process will be simple — the bear in the path — but for the most part it will be more complex, as Olivia's and Jacques' examples demonstrate. Given the complexity of aspects of our lives, possibly incorporating some or all of our cultural and personal values, as well as like, dislike, love, hate, jealousy, envy and so forth, the matching process may be extremely complex, and will often involve reflection and adaptation. There a large amount of information potentially available, or actually made available, in the content of each emotion concept involved.

Matching (or categorising or labelling — they connote the same process in this context) is explicit in some emotion theories, such as Schachter and Singer (1962) and Barrett's (2020) 'conceptual act' theories. Barrett in particular pays great specific attention to categorisation. She also says that the content of the emotion concept not only provides information to help identify (or make sense of) the affective state, but additional information of what the emotion entails (such as, for instance, in some societies, if I am angry and I am a man, I may demonstrate my anger physically; if I am sad and a woman I may weep). Scherer (2009) talks specifically of labelling as part of his Component Processing Model, an appraisal theory, and makes the same claim as Barrett concerning additional information.

In others, matching or categorising is implicit as part of making sense. Solomon (2006, ch 2), for instance, thinks that an emotion involves an interpretation of the elicited emotion's concept: for him, emotion concepts are part of the emotion. It is helpful to be more specific with Solomon's theory, so as to make clear that a matching is involved.

Solomon's emotion judgement is an individual judgement that matches the information to the concept: to label a state of affairs frightening and to match it to the emotion concept fear is to judge that state of affairs to be frightening. The process is essentially no different from other matching processes I have presented: new information is matched with existing knowledge.

What I am getting at here is that the matching of information to emotion concepts in order to achieve meaning is an idea common to many emotion theories: we make sense by labelling information, or matching it to concepts, or categorising it. On my approach, core affective information is the information that is assigned meaning by this process, and the meaning is contained in the emotion concept. This now turns the making sense focus onto emotion concepts, and in particular for me, the manner in which emotion concepts and their content varies from culture to culture.

### **3.0 Cultural Differences: Emotion Concepts and Values**

My starting point will be an examination of the extent to which what is accepted as the same emotion concept varies in use and content between cultures. I have shown the influence of values on emotions, having described in Chapter One their position as antecedents to emotions, and it is this theme that I return to here, with an additional focus. Previously I have focussed on their role in appraisal: a loss will only relate to sadness if what is lost is valued by me. In this case, the loss is appraised by me as a negative event, and it will produce a negative affective reaction — which will reflect in core affect, and in its turn will reflect in the sadness that eventuates. This is the role of values in an antecedent sense — an antecedent to the appraisal. It is part of the elicitor.

But there is an additional and different contribution that values make to emotions — they are reflected in emotion concepts. A value may operate as an antecedent to an emotion, but equally that value may affect the information content of the emotion concept. I will be leading evidence in a short while about how shame is treated differently in America and Japan: in the first place, cultural differences in values may operate to produce different elicitors of shame — something that is shameful to an American may not be shameful to a Japanese. In the second place, these same differences may result in different manifestations of shame, displays and the like. Cultural values, then, have potentially two positions from which they may influence emotional reaction — and in this section I will cover them both.

There is significant research demonstrating that cultural values can dictate the content of emotion concepts. This is important in the overall scheme of the position I am defending, that there may be significant differences in emotional profiles between cultures: the more diverse the cultures are, the more their values are different, the greater the disparity will be between their emotional reactions (by reason both of the antecedent and constitutive contribution values may make). What Olivia values is likely to be significantly different from what an Australian Aboriginal brought up in a traditional manner may value, so even to the extent her Anglo-European culture shares the same emotions concepts nominally with traditional Australian Aboriginal culture, by reason of their different values they are likely to have completely different emotional profiles.

The starting point is that emotions are a product of social values (Ratner, 1989; Solomon, 2006 p 36; Ben-Ze'Ev 2001, Ch 2, Hoemann & Barrett 2019). This relationship between emotions and values in the sense I am referring to seems reasonably intuitive on

a personal level: Olivia will only become offended by a remark if it denigrates something she values, she will only become upset by an action if it harms something she values. If she sees no value in football, she will not be offended by someone ridiculing the game; but if she values racial equality, she will be offended by racist remarks. I have backed this intuition with authority in Chapter One. There is also significant authority on how different cultural values determine different content of emotion concepts.

In order fully to understand an emotion, then, we need to look beyond bare identification of the elicitor or the emotion concept, and place that emotion within its cultural context, within the context of the values in that culture. Mesquita and Leu (2007) are specific, suggesting that emotional profiles within cultures will match distinct cultural models, the goals and practices (and hence values) of self and interpersonal relationships.

Research showing cultural differences in emotions abounds. In experiments that focus on how values contribute to emotion content, Breugelmans *et al.* (2014) found differences in the experience of regret between participants in the United States, the Netherlands, Israel and Taiwan. Examining the influence of values on elicitors, Hur *et al.* (2009) found that regret was experienced in Korea more often as a consequence of violation of intrapersonal norms than in the United States, where it was more likely to occur based on violation of interpersonal norms. Komiya *et al.* (2011), in another elicitor-based study found that personal inaction regret was more prevalent in respondents from the United States than in those from Japan.

Scherer & Brosch (2009), understandably, Scherer being an appraisal theorist, focussed particularly on appraisal — this incorporates both elicitor and content roles. He hypothesised that 'culture-based goal, belief, and value systems' may produce biases in

appraisals. Their review showed them that these culture-based factors may 'systematically' bias appraisals, and hence influence the nature and content of emotional experience.

Scherer, with international participation from many others, also embarked on a massive study covering thirty-seven countries, examining both elicitors and manifestations of six emotions joy, fear, anger, sadness, disgust and shame (Scherer & Wallbott, 1994). The questionnaire-based research revealed that within a high degree of universal individuation of the emotions, there were 'significant' cultural differences in all of elicitation, manifestation, and regulation.

Miyamoto et al (2017) also looked at regulation, in a study tracing cultural values through to tendencies to value positive or negative emotions. American culture, they say, values independence and self-reliance, and a linear analytical thinking style that is relatively intolerant of contradiction. On the other hand, East Asian cultures value interdependence in society, in which people are expected to adjust their own expectations to accommodate others, and a more dialectic style of thinking, in which contradictions are tolerated. By reviewing other studies, they linked these cultural values to differences in both the tendency to value positive and negative emotions, and the manner in which emotions are regulated. Americans have a tendency to value positive emotions highly, and consequently in their regulation to suppress negative emotions. East Asians, they say, are more balanced, not favouring either positive or negative in value or regulation.

Boiger et al. (2013) compared the relative treatments of anger and shame between modern American culture, where anger is condoned and shame is condemned, and Japanese culture, where the reverse happens: anger is condemned and shame is

condoned. This is a study, then, of values as antecedents, antecedents not to the original anger or shame, but to the reaction to their manifestation. The researchers linked the mismatch or this inverse relation directly to underlying cultural values: the underlying values dictated whether the anger or shame would be received positively or negatively. Americans value independence, individuality and strength: an angry reaction to anything that thwarts the individual is to be expected and condoned, and shame, associated with individual weakness, is to be condemned. On the other hand, Japanese values of harmony and interaction with society as a whole mean that anger related to thwarting of personal goals is condemned (and indeed is encountered less frequently than in America). Consistent with shame being associated with the individual doing damage within society, it is condoned (and is less negatively valenced than its counterpart in America).

Imada and Ellsworth (2011) found different emotional reactions to success between American and Japanese subjects: Americans value success as a personal achievement and reacted with pride, whereas Japanese respondents simply considered themselves lucky. Here cultural values mean that the same event elicited different emotions.

In further research, Boiger et al. (2018) adopted a different theoretical approach. Rather than examining differences in anger and shame across cultures, they sought to examine emotional reactions and seek similarities. Reflecting Barrett's notion that a category of emotions is based on observation of a set of instances across a population, they sought to create types of reaction, and then examine correlations between those types and cultural groupings. To increase the generalisability of their conclusions, they added Belgians to American and Japanese respondents, on the basis that although Belgium is considered a Western, individual-oriented society somewhat aligned with

American values, Belgians were thought to be more caring and society-oriented than their American counterparts. They represented perhaps a middle ground. The study consisted in participants responding to various emotion-eliciting scenarios put to them. Rather than assemble the results according to culture, the researchers assembled them according to the type of response. They were able to recognise two general categories of anger, and three of shame — and they found the types predicted cultural grouping. This is a case of different cultural values determining (slightly) different content of emotion concepts.

There is, then, considerable empirical evidence, and of course variation in values and their consequent emotion profiles has practical importance at a day-to-day level. A Western business executive may easily cause offence by ignoring the formal protocols of swapping business cards in Japan (Богатова, П. В., & Уткина, Д. Г. 2014), Chinese tourists cause offence and resentment with cultural-specific behaviours such as spitting on the pavement (Gong, Detchkhajornjaroensri, & Knight, 2018; Chio, 2010). If Olivia were to be offered offered a transfer to work in her employer's Tokyo offices, she would be wise to consider that Japanese emotional profiles have been shown to differ significantly from those she is used to. The differences in the workplace will be matched by differences in social circles, and finding a local social group may be difficult.

These cross-cultural studies clearly back the intuitive link between the values of a society and both how they affect the elicitation of emotions and the content of their emotion concepts: a reasonably generalised prediction can be made concerning the differences in emotional reactions between American and Japanese individuals, based on the known differences in the values that underlie those emotional reactions. The differences noted so far may lead to social embarrassment and minor communication

problems and the like — but I will demonstrate in Chapter Seven that where there is a vast gap between the values of two cultures, there is the potential for a more significant breakdown in communication.

In this section, I have dealt with differences in the content of emotion concepts shared between two cultures, as well as their use. The evidence shows that there are also emotion concepts that are unique to single cultures.

#### **4.0 Culturally Specific Emotion Concepts**

All of the emotion categories I have examined so far have been cross-culturally recognisable, if manifest in different ways. But, there are emotion concepts that may be reasonably common, that some cultures simply do not have.

At least conceptually there seems no limit on the number of emotions for which a concept may develop within a culture, and these concepts may be culturally specific. To see this, consider a society of headhunters. Such a society would necessarily have values and an associated set of emotional concepts associated with headhunting: although anger or shame or the like are all likely to be present, there are likely to be values and emotion concepts specific to their headhunter rituals. Similarly, a wild existence on a vast, open plain may produce an emotion associated with the realities of that life and its dangers. Conceptually, a society may simply develop without a concept of anger, having gradually over time developed a markedly different set of behaviours to deal with what are for other cultures anger-eliciting offences to values.

There are difficulties in such cases, because there is a tendency to try to absorb these emotions within those emotions already more familiar to us. This is not necessarily

an example of parochialism or colonialist thinking, for wielding the razor serves simplicity. We must be certain that what we wish to label unique is not simply a known emotion, differently labelled. Take the example of *liget*, an emotion concept specific to the Llongot people of the Philippines. Albeit a relic, *liget* refers specifically to the emotion that makes one want to cut off someone's head and throw it a great distance from the body (Wierzbicka, 1992). This artefact of headhunting is something which can only develop in a society which engages in ritualistic headhunting, particularly because headhunting and the values associated with headhunting played a complex role in its society. Absent this complex role and the underlying values, it would be easy to co-opt *liget* to anger — after all, why would one decapitate another unless one were angry? This approach, however, is based on non-Llongot values and emotion concepts, and it misses the cultural significance and complexity in the act. A non-headhunting culture without Llongot values does not appreciate the respect and status accorded to the headhunter: headhunting was a ritual for the Llongot people, an important component of the cultural landscape. Recognised as such, as a source of pride and status in an historical cultural landscape, *liget* cannot properly be co-opted to anger.

Examining *ligit* in its cultural and values context throws light on an important aspect of emotion concepts: they are not something simply to be known, they are a source of emotional experience. Should Olivia in the course of her studies come across the notion of *liget*, it would be in academic terms only. She may comprehend the words and the concept, but by virtue of her background, it will be difficult for her to have a genuine *experience of ligit*. In order to experience the emotion, she would have to have had a sufficient exposure to headhunting in the manner of the Llonglot people (of old) to

allow her to understand and appreciate the values, and hence to develop the associated reactions. She would then recognise a feeling within herself, in the appropriate ritual experience, that she wishes to cut someone's head off and throw it a great distance from the victim's body, and only then will she experience *liget*. The notion that we may all at one time have had a desire to cut someone's head off is simply not sufficient, for it ignores the values which underpin this specific emotion.

The point highlighted is that experience of emotion is not simply an intellectual exercise: the starting point for *ligit* is the values of the culture in which it developed, and that is not developed by gaining an intellectual understanding of *ligit*: it requires, in short, all the values that are associated with headhunting by the Llonglot people. The distinction between understanding and experiencing is important in seeing how emotion may restrict communication between cultures, so it is worth further elaboration.

Whilst we can and do individuate emotions, emotional reactions exist within an holistic network of cultural values and associated emotion concepts. In an echo of Liebmann's (2018) comment about the distinction between emoting and acting, without a proper experience of that holistic network, without immersion in the experience of the entirety of that network, a full experience of those values and their associated emotion concepts would be difficult to achieve. Any experience based on less than full experience may not constitute acting, but it may not constitute a full and complete experience. This raises the possibility of mistake in matching or categorising, in making sense — we may be wrong about our emotions.

A Western psychopath with the appropriate tendencies is likely to experience a positive core affect when contemplating cutting someone's head off and throwing it a

long way away. If this psychopath has in her spare time read something of the Llonglot people and of *ligit*, she may believe she has that emotional experience when contemplating throwing a decapitated head a long way. But, my contention is that she would be mistaken. The emotion concept is different from the core affect by reason of its having additional information, and this additional information necessarily comes from cultural sources. Our psychopath must have all of that information within her emotion concept. If I allow that she has dedicatedly studied Llonglot culture in relation to headhunting and its associated rituals, the information she gains will still be lacking, for its focus on one particular aspect. If I go further, and allow that she has studied all available cultural information on the Llonglot people, I think she will be closer to the possibility of experiencing *ligit*, but is still likely to fall short, simply because it is in the nature of the holistic network of values that they be experienced in their context to become complete.

I do not wish to speak in absolutes here, for it is not in the nature of learning and cultural experience to be able to do so. There is no definitive line before which an individual has had inadequate to the holistic network of the values of a culture to be able to experience it fully. It is more likely to be a very blurred line, with some concepts being more easily absorbed than others. Nonetheless, I think the line definitely exists: our western psychopath is on one side of that line — and perhaps the line is easier to cross with other less specific emotions.

That the western psychopath may understand but not experience *ligit* gives further reason not to co-opt *ligit* into anger: members of non-*ligit* cultures simply do not know the experience, and are unable to make claims as to what that experience might be. It may appear bizarre to outside observers that considering decapitating someone and

throwing their head a distance is not associated with anger, and it may be inconceivable within their cultures that anger is not involved. But not understanding another culture does not legitimise reducing its values and emotion concepts to those of another culture.

On a less bloodthirsty and more approachable note, but one that raises similar issues, *nginyiwarrarringu* is an emotion concept of the Pintupi Aboriginal tribe in Western Australia: the concept of the type of fear that makes one stand up and look to where the danger is coming from (Goldie, 2009). On the face of it, there is temptation to regard this as an ordinary case of fear. Should Olivia encounter this concept in her studies, she is likely to find the concept less alien than that of *liget*, and she may even see herself able to experience the emotion. But here she would be falling into the same trap: she may understand the concept, which after all is not a difficult notion, but can she really experience it? Like *ligit*, experiencing *nginyiwarrarringu* requires experience in the culture, requires immersion in its values — to deny this and to co-opt *nginyiwarrarringu* into fear is to reject the tribe's assertion that this is a particular experience. And the assertion can only be denied by someone who is capable of experiencing *nginyiwarrarringu* — mostly members of the culture.

*Song*, an emotion of the Ifaluk people of Micronesia, may well also be a 'victim' of unwarranted co-opting, having been co-opted into anger by Catherine Lutz — more specifically as 'justified anger' (Lutz, 1982; Wierzbicka, 1992). Lutz describes the Ifaluk people as a peace-loving, non-confrontational people, for whom inter-personal violence is almost unheard of. Disapproval is never directed at the guilty party, but more directed inwards. To see how this inward disapproval may take place, consider a young child helping herself to more than double her fair share of a delicacy at the family table. Self-

centredness, a lack of consideration, or a childish failure to think of consequences, however it came about, this action can certainly be an emotion eliciter. But, consider two types of response.

In family A, the mother reacts by slapping the child, while the father yells at her for being greedy and inconsiderate. In family B, the mother and father both react by turning away, pouting, and refusing steadfastly to take any of the delicacy. The same eliciter has produced clearly identifiable anger in family A, but whether family B's reaction is anger is questionable. Eliciting events do not necessarily determine the nature of the emotional reaction. This is the case with co-opting *song* into anger: although the two emotions share the same elicitors, the commonality ends there — as Wierzbicka points out. The content of the concept anger will almost always include action tendencies which, if they are not aggressive, will certainly be outwardly directed — directed towards whatever is identified as the elicitor of the emotion (Frijda, 1988; Frijda, Kuipers, & ter Schure, 1989; Wierzbicka, 1992). *Song*'s action tendencies are however directed inwards: the individual experiencing *song* will take action against herself, even as far as suicide — with the goal of changing the behaviour of the person responsible for the emotion. Anger gives rise to action which is often considered destructive, whereas *song* is regarded as beneficial, and it is considered particularly helpful for parents who wish to instruct their children. The thought experiment with families A and B establishes the idea, but of course the idea is insufficient. Wierzbicka offers a detailed comparison of the indications of anger, and finds them significantly different from those of *song*. As she points out, the 'goal' of *song* may indeed be, 'to change the situation by altering the behaviour of the offending person', and this may be a goal shared with anger, the actions associated with

the two emotions are completely different. Both emotions are associated with another doing something 'bad': the angry reaction is something like 'because of this I would want to do something bad to this person', whereas the reaction in song is not directed at any other person (p. 305).

If the assumption is that the Ifaluk must have a concept of anger, there may be grounds for assigning *song* to that role — after all, they seem to share the same elicitor. But, more is required than saying, 'If someone did that to me, I'd be angry!' to establish that an individual is angry. We search for similarities in categorisation, and *song* simply does not look sufficiently like anger for us to conceptualise it as anger. It seems that *song* is not simply anger, but is better thought of as a different type of emotion.

Hark back for a moment to the question raised earlier about the ability to experience the emotions of another culture: it is my position that it requires significant exposure to the holistic network of cultural values. Whilst I will not draw a definitive line, I have said our western psychopath will not experience *ligit*. But because it is not as closely related to culturally unique rituals as headhunting, I think it may be somewhat easier for a foreigner to experience *song* than *ligit*. Where *ligit* involves completely alien rituals, *song* involves responses to more familiar interpersonal relations.

There are other examples, such as the Ifaluk concept of *fago*, best described as a combination of compassion, love and sadness (Wierzbicka, 1992), but the two examples do provide sufficient evidence of the existence of culturally specific emotions, with their associated underlying values.

## 5.0 Dealing with Counter-Evidence

I have presented a reasonably significant amount of evidence that there are both cultural variations in emotions concepts, and cultural value-based variations in emotion elicitors, but I must now face the fact that there is probably an equal amount of evidence for a pan-culturalist view — that emotional experiences are essentially universal. Prinz (2004) takes this view. From almost the same data, support can be found for both culturalist and pan-culturalist views — which is why I specially included Scherer's extensive thirty-seven country study: he specifically offers evidence for both camps. Why is it, then, that I can present the research I do, knowing that there is other data supporting pan-culturalism? The answer lies in what it is that the data actually mean — and the point of departure for the pan-culturalist and the culturalist is in how each views basic emotions.

The pan-culturalist will take the data I present, and interpret it from the standpoint of basic emotions: she will acknowledge the data, acknowledge the variations, but view those variations as simply basic emotions with cultural variations in relation to manifestation (display and action tendencies). She will point to the similarities as the important data points, and will take them as evidence supporting the existence of basic emotions. I will deny the existence of basic emotions (as the pan-culturalist conceives of them), and take the variations as the important data points.

This means the substance of the discussion is the existence of basic emotions, or how they may be thought to exist. I have addressed this issue before, but having developed my position further, I have a little more to say.

Griffiths thinks of a spectrum on which basic emotions may be thought of existing: at one end, the BET end, they may exist in virtue of real physical structures: heritable and

innate neural structures that underwrite the basic emotions. Here, they are natural kinds. At the other end, they may exist as abstractions from human behaviour, categories created for ease of study: the commonalities exist because of who we are and what we do. No emotions are natural kinds. A choice need not be made of where on the spectrum one theory might be, but a choice does need to be made on questions such as neural correlates, heritability, and innateness. And on simplicity.

The simpler position is the culturalist position, at one end of the spectrum, that emotions emerge from cultural values, and basic emotions exist as abstractions. It is the simpler because it does not postulate any specialised neural structures, nor heritability, and it does not have to deal with the very real problem that no substantial evidence of neural correlates has been found in years of research. But is it the simpler position in a much more significant way, in its account of complex emotions. Complex emotions for the culturalist are simply formations of complex societal values and interpersonal relations. They require no special treatment. Towards the other end of the spectrum, complex emotions are considered to be compounds of basic emotions. This leaves the theorist required to produce plausible stories for how complex emotions are compounds of an as yet unsettled number of basic emotions. There is an air of stipulation about this: having stipulated that there are basic emotions, complex emotions must be compounds of basic emotions, and that a story may be told about each of them. The stories told may be plausible, but they are both unverifiable and unfalsifiable.

As Prinz (2004) puts it, 'If one wants to explain something other than one's own personal beliefs, one should exploit more objective methods. In particular, one should make use of scientific experiments' (Prinz 2004, p 29). For the notion that there are basic

emotions based in heritable and innate neural structures to be more than personal belief requires evidence. I have shown that there is no substantial evidence for the required neural correlates, and indeed substantial evidence that they cannot exist. Other evidence showing commonality is evidence only of basic emotions existing as an abstraction from observed behaviour.

In the absence of evidence, then, I am compelled to choose the simpler option, to deny pan-culturalism as being, to coin Carruther's words cited in Chapter One, an unnecessary complication. I must accept that basic emotions exist as an abstraction — a useful abstraction, perhaps, but an abstraction. This means that to the extent to which the evidence I have led indicates either commonality or variation, that evidence supports my position.

## **6.0 A Conclusion on Emotion Concepts**

Emotion concepts are in a real way the storehouses of information on their respective emotions, and their content is therefore integral to the nature of the emotion produced. In this section, I have been at pains to demonstrate both how that content varies between cultures, and indeed how some emotion concepts are culturally unique — and their relationship to cultural values. These cultural values are instrumental in the formation of emotion concepts.

I have also spent time demonstrating the role that cultural values play in the elicitation of emotions, their position as antecedents. This is an important role, for in this role they have a direct influence on core affect, and hence on which emotion concept will ultimately be used.

Finally, I took the opportunity to take and explain a position on the nature of basic emotions.

## **7.0 Summary and Conclusion**

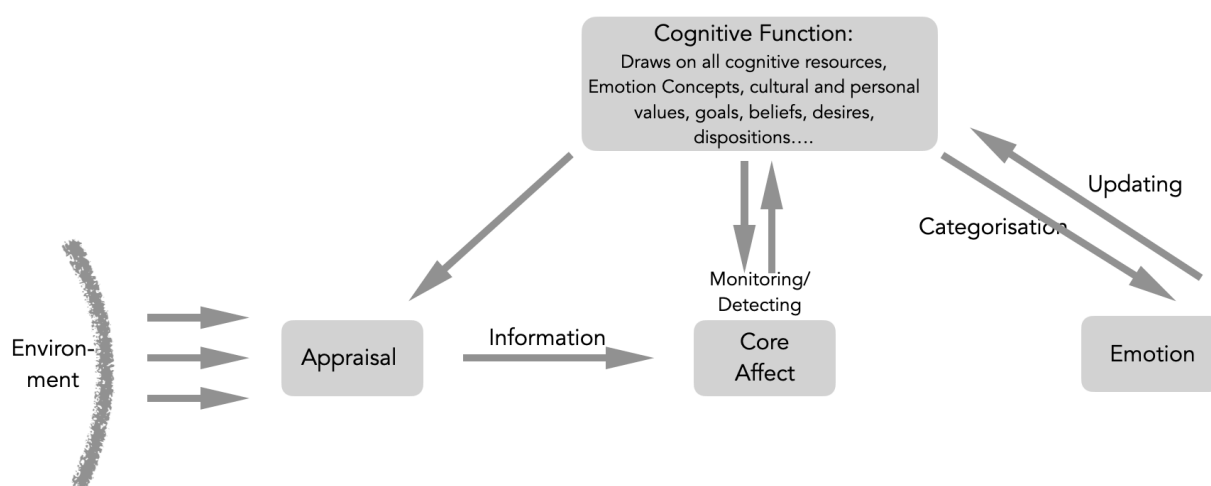
In this chapter I portrayed the manner in which we make sense of affective reactions as a matter of matching: new information is matched with old information, with knowledge. I showed how this portrayal reflects how making sense is characterised by a number of theorists, including Prinz, Barrett and Scherer, and how theories such as Solomon's lend themselves to this portrayal.

I then examined what it is that is matched with new information — the emotion concept — and the manner in which values influence that content, and particularly cultural values. I also examined again how cultural values play a role as antecedents of emotion. I demonstrated that they play an important part in emotion formation in both roles.

At this stage, then, I have come to the end of the path of emotion formation, with a culturally-informed emotion emerging from core affect. It is not the end of the story, though, because there is the matter of the updating of cognitive resources. I have repeated here the image for Chapter One, depicting the image of the theory I defend, and the essential role of general cognitive functioning, with all of its resources is evident .

Information relating to the emotion, to aspects of the matching or categorisation that produced it, will feed back to become part of general cognitive resources, and all of these resources will be available to the appraisal process. This is a significant departure from Barrett's theory, and one which would be a natural consequence of including Carruthers' approach to two system thinking. I think it is a necessary departure, because it

allows the vital function of appraisal to have access to real-time current cognitive resources. For appraisal to lack resources or for its resources to run behind current information is a significant disadvantage.



Including Carruthers' approach has the additional advantage of offering a simple solution to the tension inherent in appraisal — the trade off between speed and accuracy. Simple appraisals may be made rapidly, more complex appraisals may take (very slightly) longer.

At the beginning of Chapter One, I set out the success conditions for a theory of emotion. The theory should accommodate first that affective states and emotions act as an alert: they are reactions to the state of affairs, to how that state of affairs impacts upon our concerns. Second, we both feel this alert and interpret it: it is neither wholly a bodily state, nor wholly a mental state. Third, this alert function must be integrated in an efficient manner into the ability to react to the alerts. Fourth, there must be an efficient updating

system: alerts must relate to the then prevailing concerns of the individual. Finally, the theory must allow for a plausible evolutionary development of the system: it developed to serve the primary goals of survival and thriving, nothing more. The theory I defend satisfies each of these conditions, producing an all-encompassing theory that accommodates bodily feeling, cognitive processing, and proper integration into other systems in the individual.

I will close this chapter, and this section on emotions, with two examples of the theory in action. The first is intended to illustrate an important aspect of the theory — it is a trivial example, but it highlights the reality of real-time appraisal updating. The second places the theory directly in the context of the my overall thesis.

In the first example, Beth despises oysters: she has never tasted an oyster, but the thought of eating one and the idea of its sliminess in her mouth fill her with disgust, the sight of them on a plate as a foodstuff revolts her. One evening, in an effort to appear worldly in front of a new acquaintance, she agrees to try an oyster, and she experiences immediately a wonderful explosion of tastes and textures. She decides she likes oysters, after all. Looking at the oysters remaining on the plate she is filled with desire, with a yearning for another: they look appealing, they look appetising.

It is a simple enough story, but indicative of an important aspect of the position I defend. Beth's appraisal mechanism is not modular or encapsulated, nor does it have access to a limited set of cognitive information that is subject to diachronic updating: her appraisal mechanism is simply one unseparated aspect of her cognition, and so the information available to it does not require special updating.

In presenting this example, I am not suggesting that other emotion theories have it that, by reason of isolation of appraisal resources or otherwise, Beth will continue to appraise oysters and negatively and to react to them with a negative emotions, for I do not believe that to be the case. But certainly those theorists who favour reflex-like, modular-based or lock-and-key appraisals and appraisal structures have questions to answer on the updating of the basis of appraisal to accommodate Beth's change in emotional reaction from negative to positive.

The final example is directly relevant to my thesis: it features Kirra, an Australian Aboriginal who has been brought up in a traditional Aboriginal manner. She has (I stipulate at this stage) foundational and entrenched values that prioritise an individual's association with her community, and that community's (and each individual members') association with the land and other creatures. These values are reflected in folklore and myths whose central theme is the unity of human, animal, and the land: each is an equal aspect of an over manifestation of spirit. On the basis of these foundational and entrenched values, early cycles of Kirra's appraisal of a new hospital being built on ancestral land produces a negative affective reaction.

Kirra will make her match or categorisation, selecting sadness, or perhaps despair. These will become System Two inputs, available for conscious consideration. The development tearing a great swathe through the countryside, destroying natural habitats, huge earth moving equipment pouring their sounds and smell into the air, temporary and semi-permanent offices and housing — all of this will be information for conscious System Two processes (and are unlikely to change her reaction). And this will also continue to be System One input — and again is unlikely to produce a different result.

When Kirra talks about the project to Sarah, an Anglo-European Australian, Sarah will quite possibly react negatively to her sad response to the new facility. She does not possess the same values as Kirra: Sarah's values (to some extent both foundational and entrenched) will prioritise healthcare and personal welfare. On these values, the new hospital will contribute enormously to the wellbeing of the local community — and quite possibly on Sarah's values Kirra's response is ill-considered, short-termist, and overall bad for the community.

If Sarah is inclined to, she may well come to a point where she sees Kirra's point of view, and may feel some sadness for things like the passing of time and the loss of a cultural heritage — but because of the difference in values, I do not think she will feel the same way as Kirra does. She will regard the loss as a cost worth bearing, because her values relating to healthcare and personal welfare are more foundational, entrenched and important than those relating to preservation of a natural environment.

Kirra feels the offence to her own foundational and entrenched values, and because those values are so foundational and entrenched, the offence will be deeply felt. Her entire value system is being assaulted. The offence Sarah feels about the development, her feeling about the loss of the environment after talking to Kirra, is an offence felt either in sympathy, or simply in respect of values that she does not prioritise. Her values relating to healthcare and personal welfare will demand that she will have a tendency to react positively to the development. She will from time to time adjust her appraisal, as Olivia has had to in relation to her husband, to allow for some sadness about the loss of the environment.

Kirra's example merely gestures towards the type of communication problems that may plague people from widely different backgrounds. As honest and open and friendly and sympathetic to Kirra's plight as Sarah can make herself, she will never experience the offence at the same level as Kirra does. In truth, neither will really understand each other. But this is a gesture to a larger problem, one that will become apparent when I demonstrate in the following chapters how emotions affect perception.

## References

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- Ben-Ze'ev, A. (2001). *Subtlety of Emotions*. MIT Press.
- Boiger, M., Ceulemans, E., De Leersnyder, J., Uchida, Y., Norasakkunkit, V., & Mesquita, B. (2018). Beyond essentialism: Cultural differences in emotions revisited. *Emotion*, 18(8), 1142–1162. <https://doi.org/10.1037/emo0000390>
- Boiger, M., Mesquita, B., Uchida, Y., & Feldman Barrett, L. (2013). Condoned or Condemned. *Personality and Social Psychology Bulletin*, 39(4), 540–553. <https://doi.org/10.1177/0146167213478201>
- Brady, M. (2013). *Emotional insight : the epistemic role of emotional experience*. Oxford, United Kingdom: Oxford University Press.
- Breugelmans, S. M., Zeelenberg, M., Gilovich, T., Huang, W.-H., & Shani, Y. (2014). Generality and cultural variation in the experience of regret. *Emotion*, 14(6), 1037–1048. <https://doi.org/10.1037/a0038221>
- Frijda, N. H. (1988). The laws of emotion. *American Psychologist*, 43(5), 349–358. <https://doi.org/10.1037/0003-066x.43.5.349>
- Frijda, N. H., Kuipers, P., & ter Schure, E. (1989). Relations among emotion, appraisal, and emotional action readiness. *Journal of Personality and Social Psychology*, 57(2), 212–228. <https://doi.org/10.1037/0022-3514.57.2.212>
- Hoemann, K., Xu, F., & Barrett, L. F. (2019). Emotion words, emotion concepts, and emotional development in children: A constructionist hypothesis. *Developmental psychology*, 55(9), 1830–1849. <https://doi.org/10.1037/dev0000686>
- Hur, T., Roesse, N. J., & Namkoong, J.-E. (2009). Regrets in the East and West: Role of intrapersonal versus interpersonal norms. *Asian Journal of Social Psychology*, 12(2), 151–156. <https://doi.org/10.1111/j.1467-839x.2009.01275.x>
- Imada, T., & Ellsworth, P. C. (2011). Proud Americans and lucky Japanese: Cultural differences in appraisal and corresponding emotion. *Emotion*, 11(2), 329–345. <https://doi.org/10.1037/a0022855>
- Komiya, A., Miyamoto, Y., Watabe, M., & Kusumi, T. (2011). Cultural grounding of regret: Regret in self and interpersonal contexts. *Cognition & Emotion*, 25(6), 1121–1130. <https://doi.org/10.1080/02699931.2010.516962>
- Lazarus, R. (2001). Relational Meaning and Discrete Emotions, in Scherer, K. R., Schorr, A., & Johnstone, T. (2001). *Appraisal processes in emotion : theory, methods, research*. Oxford, New York: Oxford University Press.
- Lieberman, M. D. (2018). Boo! The consciousness problem in emotion. *Cognition and Emotion*, 33(1), 24–30. <https://doi.org/10.1080/02699931.2018.1515726>
- LUTZ, C. (1982). The domain of emotion words on Ifaluk. *American Ethnologist*, 9(1), 113–128. <https://doi.org/10.1525/ae.1982.9.1.02a00070>
- Miyamoto, Y., Ma, X., & Wilken, B. (2017). Cultural variation in pro-positive versus balanced systems of emotions. *Current Opinion in Behavioral Sciences*, 15, 27–32. <https://doi.org/10.1016/j.cobeha.2017.05.014>
- Prinz, J. J. (2004). *Gut Reactions*. Oxford University Press.

- Ratner, C. (1989). A Social Constructionist Critique of The Naturalistic Theory of Emotion. *The Journal of Mind and Behavior*, 10(3), 211–230. <http://www.jstor.org/stable/24859883>
- Schachter, S., & Singer, J. (1962). Cognitive, social, and physiological determinants of emotional state. *Psychological Review*, 69(5), 379–399. <https://doi.org/10.1037/h0046234>
- Scherer, K. R. (2009). The dynamic architecture of emotion: Evidence for the component process model. *Cognition & Emotion*, 23(7), 1307–1351. <https://doi.org/10.1080/02699930902928969>
- Scherer, K. R., & Brosch, T. (2009). Culture-specific appraisal biases contribute to emotion dispositions. *European Journal of Personality*, 23(3), 265–288. <https://doi.org/10.1002/per.714>
- Scherer, K. R., & Wallbott, H. G. (1994). Evidence for universality and cultural variation of differential emotion response patterning. *Journal of Personality and Social Psychology*, 66(2), 310–328. <https://doi.org/10.1037/0022-3514.66.2.310>
- Solomon, R. C. (2006). *Not passion's slave : emotions and choice*. New York ; Oxford: Oxford University Press.
- Wierzbicka, A. (1992). Talking about emotions: Semantics, culture, and cognition. *Cognition and Emotion*, 6(3-4), 285–319. <https://doi.org/10.1080/02699939208411073>

## CHAPTER FIVE: OBJECTIONS TO RELATIVISM IN VISION EXAMINED

### 1.0 Introduction

Thus far, I have concerned myself with affect and emotions, with their formation. It is now time to turn to the second aspect of my thesis, perception, or, more specifically how affect and emotions affect perception. My thesis is that affect and emotions have an effect on the form of perceptual representation. I will be focussing on visual images, and defending the position that affect and emotions will have an impact on the form in which objects are represented: these influences will make object appear differently to different people and on different occasions.

It is worth expressing my position in the debate about the representation of visual properties. Visual properties are often divided into low-level visual properties, such as colour, shape, texture, motion and illumination and higher level properties such as openness, naturalness, familiarity or numerosity — and for reasons that will emerge, I include both affect and emotion as high level visual properties. The question is whether only low level properties are presented in early vision: Lyons (2005) is one who thinks only low-level properties are represented, Siegel (2006) is one who think both low-level and high-level properties are represented. I will demonstrate in the next three chapters why I think visual properties cannot properly be separated into high and low level — more specifically, that affect and emotion are properties that are inseparable from other visual properties.

What this means is that I reject what might be called a 'shape only' view: that vision presents us with only low-level visual properties — a shape — to which we react. I think that we react not to a shape presented by vision, but to states of affairs, and that all of our reactions to these states of affairs, including whether they are familiar (something Siegel addresses, to which I return below), or they are frightening. I do not see a simple shape,

but that shape in the context of my concerns — I see the shape as that shape concerns me. Why this is so and how it may occur I develop in these next three chapters.

I will commence by making some preliminary comments about what the 'shape only' view entails, drawing parallels with Brewer's 'Object View'.

I will then get to the heart of the matter from section 3.0, where I fully develop what I call the Shape Only View — the view against which I defend my position. The Shape Only View excludes affect and emotion from (at least) early vision (and does not necessarily allow their incorporation in later visual processes). It incorporates the claim that a shape is a shape, and this shape only is presented in early vision — to which all higher properties are added.

In the balance of the chapter I argue against the Shape Only View, demonstrating that perceptual processes in general do not provide us with absolute measures of states of affairs — and that they need not do so. Indeed, it is a simpler position, and more defensible from an evolutionary developmental viewpoint, that what perceptual processes must and do offer is information for survival and thriving — and no more. Relativism in vision is perfectly compatible with the goals of survival and thriving, and I spend some time demonstrating that problems usually presented associated with relativism in vision may be disposed of without demanding a Shape Only View.

This matter is not purely theoretical, and in the next chapter I will present empirical evidence to demonstrate how the empirical evidence supports my position.

## **2.0 Preliminary Comments**

My position is that a visual experience will incorporate an affective component (and when the subject matter is more complex states of affairs, an emotional content as well). This affective component may be aversive, attractive, or neutral, and depending on the situation, it is possible that the same object may be perceived as any of these three (I may equally find an ice cream aversive, attractive or neutral, depending on the situation).

The 'shape only' objector may accept that the ice cream looks different to me, but will claim that perception first represents low level visual features only, its shape, consistently across all perceivers in all circumstances. Higher level properties, she will insist, are subsequently added. She will claim that visual properties are separable into higher and lower level properties, and that affect as a higher property is not represented in vision, but is a subsequent addition.

Consider, then, the letter 'S'. The 'shape only' theorist will claim it will be represented as a geometric shape, it is something like two opposing curves, one atop another. That it represents a letter of the alphabet is a higher level property that is added after the geometric form is represented. Such a theorist may claim that it will have no affective content: it is simply a geometric shape. It turns out, however, that even the simplest of shapes can produce an affective reaction.

There is ample research in the fields of design and architecture showing that generally we prefer curves to straight lines and angles (Gómez-Puerto, Munar, & Nadal, 2016; Palumbo, Ruta, & Bertamini, 2015; Vartanian et al, 2013) — and this goes down to the smallest level: various typefaces have been shown to produce affective reactions (Kastl & Child, 1968). On this basis, then, I am open to an affective reaction to the simplest of geometric shapes — it seems that in common with most I will have a disposition to react positively to those with curves. Going further, it seems not only that I am likely to have a more positive reaction to the letter 'S' than to the letter 'A' (thus written), I am likely to react more positively to some depictions of the letter 'S' than others.

This does not mean that I will always have a particular affective reaction to a particular typeface: it means simply that the potential exists for me to have an affective reaction to it, depending on the circumstances.

Now, that I have an affective reaction to a particular curved geometric shape does not resolve the issue of whether what is represented is the lower-level property only, the shape only, to which I react affectively, or whether the affective reaction is incorporated

into the representation. I will return to this from time to time, and most specifically in section 3.3 below, but the position I defend is that lower level and higher level properties are not separable in this manner. In affective terms, we do not react affectively to a representation, we react affectively to a state of affairs, and we represent that reaction visually.

The naive realist will have something to say in objection, as will the cognitive penetration theorist, and their commonality can be reduced to their being shape only theorists. They object to relativism in vision: they reject the idea that the form in which an object appears to have to me is not necessarily the same form it appears to have to you. A naive realism object-directed approach to perception will tell us that one of the features of perception is to provide us with mind-independent information about objects, to give us a (more or less) objective sense of those objects and to assist us to think about those objects. Perception provides us with a shape, a shape that we all see, and we can be confident that how we think about that shape reflects in some accurate way the object itself. Brewer, who defends a naive realism approach that he terms the Object View, has this to say:

'[Perception] makes an essential contribution to our most basic conception of what mind-independent physical objects are that is in turn crucial to our capacity for any genuine thought about such things and to our growing empirical knowledge about them.' (Brewer, B, 2011, p 56)

The notion that affective reactions or emotions may alter the form of objects in representation offends this approach to what perception is supposed to do for us. If affect and emotion change the form of the object (by representing more than shape only), then we cannot know mind-independent objects — we can only know objects as they are presented to us through a filter of affect and emotion. To preserve our relationship with mind-independent objects, says Brewer, it is only perceptual circumstances (including angle, lighting and so forth) that can affect how an object appears to us — and we can correct for those. His claim is that our genuine thought about an object must be thought

about the object itself, and not the object presented through a filter of affect and emotion. Shape only must be represented. Empirical knowledge, too, demands shape only representation — indeed, Brewer thinks that perception 'plays a fundamental role in making empirical thought possible' (p 57), which demands at least consistent perceptual evidence of the object under consideration — that only shape is represented.

I do not disagree that perception is a crucial capacity for genuine thought, or that it has a fundamental role in making empirical thought possible. My position is that this role does not demand shape only representation, a naive realism approach to perception, and that other pressures actually demand that we represent more than shape only. Higher properties are represented, so that the representation is of the state of affairs as it affects our concerns.

Brewer is clear that his Object View accommodates the various appearances an object may have depending on the situation of the observer (including angle, lighting and so forth), but that the observer is able to compensate for these differences in order to determine a mind-independent form of the object. As will emerge over the course of these chapters, the position I defend is that the observer is able to compensate for affect and emotion-based differences in the appearance of an object by reference to (simply put) language and common usage, to achieve what is a relationship with the object that is both mind-dependent and sufficient a basis to promote the concerns of the individual.

### **3.0 Outlining the Problem**

#### **3.1 Generally**

It is reasonably clear that perceptual experiences will differ according to circumstances, and that these circumstances include core affect: my perceptual experience of an ice cream on an extremely hot summer's day is going to be different from my perceptual experience of the identical ice cream if I am freezing in the snow. And research tells us that my experience of the letter 'S' is likely to be in part determined by the font in

which it appears: it may vary from attractive through neutral to aversive. The difficulty lies in determining the source of the differences.

On a 'Shape only' approach, a more or less modular, more or less encapsulated visual system builds an image consisting only of lower-level visual properties, and, in a manner of speaking, holds that image up to other systems for reaction. Only shape of the object is represented, in the manner suggested by the naive realist: the letters 'S' and 'A' will be represented in an identical manner for everyone. Higher-level visual properties are subsequently provided in post-perceptual processes. Brewer's 'Object View' and shape only view share very similar results.

On a different approach, low-level and high-level visual properties are inseparable: the formation of the image involves incorporation of both low-level and high-level properties. I will call this the Inseparability Thesis. The letters 'S' and 'A' will appear differently to different individuals, by reason of such high level properties as familiarity and affect. If I react positively to the letter 'S' because I like its curves, its representation will include that positive reaction (call this S1). This may change if later perhaps because they remind me of a recent encounter with a snake, I come to dislike its curves (call this S2). S1 and S2 are represented differently in virtue of the different affective content.

Using the letter 'S' in this manner may seem trivial, but it serves to establish the effect of the Inseparability Thesis, which will apply in all circumstances. Write larger than a single shape, entire states of affairs will be represented with their associated affective reactions — and, of course, we may expect associated emotions to emerge from these affective reactions, the changes to core affect. We do not react to a shape only representation of a bear or a panther: we react to the state of affairs, and our representation includes our affective and emotional reaction to that state of affairs. This is a core theme for me, and I will be returning to it in subsequent sections and chapters to develop it further, but the point is simply made: by the Inseparability Thesis, all visual properties are represented in perception — we do not represent a bear or a panther and find it scary, we represent a scary bear or a scary panther.

Adjudicating between shape only and the Inseparability Thesis is difficult because it relies largely on an intuition, one that the visual experience is different partly by virtue of a difference in the representation. Susannah Siegel attempts to approach the matter by commencing with the thinnest possible intuition, that two similar visual experiences may be experienced differently.

### **3.2 Siegel's Thesis K**

Susannah Siegel's maintains in her Thesis K that higher-level properties can be represented in vision, higher level properties being those 'other than colour, shape, illumination, motion, their co-instantiation in objects and successions thereof' (Siegel, S. 2006 p 482).

The basis of her defence of Thesis K is a minimal intuition concerning two perceptual experiences, one of an unfamiliar situation (E1), and one of the identical but familiar situation, (E2) : the minimal intuition is that the two experiences E1 and E2 are phenomenologically different. Her example is of pine trees, but it may equally be of people or neighbourhoods: Charles Siewert for instance urges us to consider 'how individual people look different to you after you have gotten to know them than they did when you first met,' (Siewert, 1998, ch 7).

Siegel defends her position that the difference in phenomenological experiences is attributable to the representation of additional higher properties ('K' properties) in the familiar situation. Her position reflects the Inseparability Thesis.

She acknowledges the objection that the difference in phenomenology may potentially be solely attributable to non-sensory cognitive phenomenology, but does not see this as an obstacle. For the difference between E1 and E2 to be attributable solely to such non-sensory cognitive phenomenology, there would have to be a cognitive event (and associated cognitive phenomenology) as a basis for that phenomenology, and that event would have to take place on all occasions. This is not necessarily so, says Siegel, for familiarity does not need to be cognitively acknowledged. I may on occasion

acknowledge cognitively my familiarity with my neighbour (or a pine tree or a neighbourhood), but equally I may not, it may go completely unacknowledged. In this latter case, there is no cognitive event (of acknowledgement), and yet the phenomenology will still differ between E1 and E2. Given, then, that 'familiarity' is not a raw feel, but requires an object (in its representation), the difference between E1 and E2 is visual: the representation is different in each case. This seems to apply equally to the difference between S1 and S2. The change in core affect between S1 and S2 may go unnoticed and hence unacknowledged, it may not involve any cognitive event, so that the difference between the two cases is visual.

At a first pass, the parallel between the two cases seems to break down if E1 and E2 are examined taking into account Zajonc's (1984) view that recognition itself will bring with it a change in core affect. There seems to be a timing mis-match: Siegel's claim is that recognition requires an object in its representation, and mine is that there is an affective reaction already incorporated into the representation. This appearance of a mis-match disappears, however, if the process of representation building is taken into account. On the position I defend, and will detail in Chapter Seven, affective information forms part of the overall feed-forward feedback information flow from the earliest stages of representation building. At these earliest stages, as a representation is gradually being formed, the first possibility of familiarity will begin to be acknowledged. These earliest-stage representations serve as an object (in representation) for Siegel's purposes, and will serve as the first stages in an affective reaction. The differences between E1 and E2 grow in tandem with the differences between S1 and S2.

Siegel seems, then, to offer a solution to the problem — based on the slimmest intuition, she appears to demonstrate that the difference between S1 and S2 is visual. But the matter may not be disposed of quite so simply, for Lyons (2005) takes the same matter of phenomenology in recognitional disposition, and comes to the opposite conclusion. He chooses familiarity with an individual where Siegel chooses pine trees, but

nothing should turn on that choice, any more than anything should turn on choosing the letter S.

The difference between the two theorists is attributable, I think, to the underlying commitments each has — and a recognition of those commitments I think allows a useful reframing of the argument.

### 3.3 Reframing the Argument

The underlying commitment which Lyons articulates and which I think plays a major part in his coming to the opposite conclusion to Siegel is to modularity, albeit a weak form of modularity. He envisages a more or less encapsulated visual system. This provides a useful clue to how to reframe the argument.

A shapes only approach such as Brewer's Object View demands that only low-level visual properties are represented in vision. This entails some sort of isolation of the visual system from high-level properties, some kind of encapsulation. Lyons elaborates on the reasons for modularity:

'On my view, a cognitive system for some task [such as vision] is an isolable cognitive mechanism that specialises in that task and exhibits a kind of functional unity.... Systems must be isolable in the sense of being independently capable of performing those tasks in which they specialise, in the absence of other mechanisms.' (p 239)

This moves the discussion into the area of cognitive penetration: the impenetrability thesis will provide a 'shapes only' representation. Additionally, on this approach how we think about an object has some direct relation to an object in the world — specifically, its shape — and this points towards a naive realism theory (I have mentioned Brewer's 'Object View', a naive realism approach). We are talking therefore about cognitive penetration and naive realism.

The Inseparability Thesis, on the other hand, denies both the impenetrability thesis and naive realism. The argument can therefore be reframed in terms of the cognitive

penetration and naive realism. The balance of this chapter deals with theoretical reasons advanced against the Inseparability Thesis (and hence in support of the impenetrability thesis and naive realism). Empirical evidence, particularly relating to the impenetrability thesis, is the subject of the next chapter.

Pertinently, one of the motivations behind the Inseparability Thesis is that cognitive systems are not specialised in single tasks, that they do not need to be 'isolable in the sense of being independently capable of performing those tasks in which they specialise ' as Lyons claims, and that indeed from the perspective of the organism as a whole, they ought not to be. I have articulated this indivisible unit perceptive in relation to emotion, and it applies equally to perception. I will elaborate on the indivisible unit approach.

### **3.4 The Indivisible Unit Approach**

I have already presented the basis of my approach in relation to emotion, that it is important to view the individual as a single, undivided whole, whose needs (and goals) may be reduced to two simple elements: survival and thriving. All bodily systems work as aspects of the individual ultimately to fulfil these two elements: sensory capacities work in tandem with affective capacities, and in tandem with motility capacities; the ability to consume, to digest, and to excrete waste — the individual is a 'network of processes' (Maturana, H. R. 1970) which serve survival and thriving.

Viewed in this light of a network of processes in an indivisible whole, there seems very little to encourage the organism to develop a system to represent shape only, and a separate system to react to that representation. There is no reason to think the systems were developed separately and put together, the final product of one being the subsequent primary input for another, and every reason to think they developed together to serve the two goals. A system of a shape only representation, and a separate subsequent system for reaction is an inefficient structure. What is more efficient, and more likely to have developed, is that the organism operates as a whole, all of its systems working seamlessly, so that it produces one image and one image only, one that

incorporates all of the required information — and hence does not need enhancement with high level visual properties. The Inseparability Thesis serves the goals of survival and thriving, and operates more efficiently.

### **3.5 Some Fundamental Points**

To summarise, then: first, I think survival and thriving are the two primary goals of the individual, and it is useful to regard these goals as the fundamental drivers in the development of our visual apparatus. For these purposes, I take thriving to include anything relating to efficiency: anything that allows us to survive with greater efficiency, to use less internal resources to achieve what is required, will produce an advantage that may be selected for. The two are essentially the same goal (Akins & Hahn, 2014).

As Janetos & Cole (1981) express it, 'for survival, animals need not be optimal but only good enough'. In section 5.2 below, I will demonstrate how this view is supported by analysis of optimisation programmes, but for now I make the point that our visual apparatus will develop to provide only what we need to survive and to thrive, and no more.

Second, I think it is important not to view the development or role of vision or any other system in isolation: we did not develop visual, auditory, thermoreception or emotional systems in isolation in order for them to operate in isolation — rather, we have systems as integrated aspects of a single entity, with the essential goals of surviving and thriving.

Taking these two fundamental points together, there is no reason to believe the various systems we are perfect, they are simply sufficient for our purposes. Human visual systems do not need to produce better and better visual acuity — they need to work in concert with and integrated with all other systems to the end of survival and thriving of the overall organism.

Having outlined the position I am defending, I will now set out the basis of the views I am opposing, by establishing in some detail what I will term the Shape Only view.

In the balance of the chapter, I will flesh out my position by examining a number of theoretical objections, and demonstrating how these objections may be better and more simply addressed in the manner I propose. In the next chapter, I will move on to matters of empirical evidence.

## **4.0 The Shape Only View**

### **4.1 Sources**

In defending my position that emotions have an effect on perception, as I have said, I face opponents from at least two camps — those who oppose the notion that cognition may penetrate perceptions (the cognitive penetration debate), and the naive realist. Each camp puts forward supporting reasons specific to its own position, but equally they occupy common ground: coming from different positions, they converge towards the same conclusion, anti-relativism in vision. Theirs is what may broadly be termed a realist position. My strategy is not to address individual arguments from each camp, but to demonstrate that their common conclusion — anti-relativism in vision — is both unsustainable and unwarranted.

From a cognitive penetration perspective, the impenetrability thesis is that vision provides a window to the world independent (to a greater or lesser extent) of cognitive penetration. But what it is for a visual process to be penetrated? Macpherson & Batty (2016) suggest that there are a number of conditions that need to be held constant for cognitive penetration to be said to occur: (1) the object (2) the perceptual conditions (3) normally functioning sensory organs, and (4) attention. With these held constant, there is cognitive penetration if higher cognitive factors such as goals, beliefs, desires and so forth can alter the perceptual experience.

But opponents of cognitive penetration do not all demand that the entirety of the visual process be separate from higher cognitive processes — this strong version is defended by amongst others Firestone & Scholl (2015). Pylyshyn (1980) defends the weaker impenetrability thesis, which is that only early visual processes are impenetrable,

the balance of the visual system is open to higher cognitive processes. He illustrates the division very simply with the example of meeting and recognising Ms Jones: you must first build a visual image, and then you must match that to information you have on Ms Jones so as to recognise her. The first stage, the visual image, is a product of impenetrable early vision processes, whilst the second demands access to higher cognitive resources for recognition to occur.

My purpose here is not to discuss either the strong or the weak impenetrability thesis in any detail, but some comment is called for. The strong version seems to me to fall on practical grounds at Pylyshyn's example of the need to recognise Ms Jones (I identify more theoretical grounds in the next section). I do have some sympathy for the weak version: conceptually I agree that there is a point before which only visual systems can practically be involved, in order to provide non-visual systems something to work with — edges, for instance. Non-visual systems can only become involved after a certain point. I think however, for reasons which will emerge, that this is probably a good deal earlier than the stage Pylyshyn has in mind. My difference with Pylyshyn, then, seems to be a matter of degree. But I think that degree will be important, for it seems that he anticipates the point I identified earlier, the point at which non-visual systems become involved, will be when a full image of Ms Jones has been built. I think affect and emotion become involved in the image-building process at a much earlier stage.

Naive realism is said to have an 'external directness', having a focus on mind-independent objects that our senses detect, and that on their approach, perception will provide a (more or less) objective sense of those objects. The thought is that at the base of perception are mind-independent physical objects which we view from various spatiotemporal points of view and in various circumstances — as Martin (2002) puts it, 'the objects have actually to be there for one to have the experience, and indeed one may claim that they are constituents of the experiential situation.' There is thus an epistemological element to perception, in that it establishes a relationship of acquaintance between perceiver and object — this covers knowledge by acquaintance,

making perceptual relations with the world more primitive than relations with propositional attitudes. Perception thus becomes the foundation of propositional knowledge.

There is common ground between the cognitive impenetrability theorist and the naive realism theorist: that there exist objects that we perceive in a form that is independent of cognitive processes. This common ground is reflected in Putnam's metaphysical realism notion, which asserts the existence of a pre-theoretic reality. Since Putnam, metaphysical realism has since been couched in both negative and positive terms. Alston (2001) defines it by reference to an anti-realism position, portraying his position as a denial of a universal proposition that 'everything [there is] depends at least in part on our conceptual-theoretical choices' (p 10) He is then able to accept that at least some of what is does so depend on such choices. Miller (2022) expresses himself in positive and initially general terms, saying that metaphysical realism is the view that the world exists independently of how we think about it. He then focusses more closely, saying that the metaphysical realism claim is that something exists, and that it exists in a mind-independent manner — the claim, again, is not that everything exists in a mind-independent manner.

Toribio offers a description which seems apt for my purposes, as she describes it for the purpose of discussing relativism:

'A metaphysical realist maintains that there is an objective world, "objective" in the sense of being constituted by objects and properties which are what they are independently of the knowledge we have about them and independently of the cognitive resources available to us to achieve such knowledge. The existence of these objects and properties is thus absolutely fixed and independent of any epistemic considerations; it is completely independent of our mental activity, our practices and our background beliefs.' (Toribio, 2002)

The metaphysical realist will make the same epistemological claim as the naive realist: that perception provides the foundation for propositional knowledge. The claim is

that there are objects knowable by perception — that there is a necessary correspondence between belief and world.

Each of the impenetrability and the naive realism theorist takes an anti-relativist stance, then, in relation to perception. There are objects which exist independently of cognitive processes, which may be detected by our perceptual apparatus in a particular form (dependent on the modality) — this form, then, is universal, in that given normally functioning perceptual apparatus, it is the same form for all humans. Call this the Shape Only View. It is the Shape Only View that I reject.

#### **4.2 The Shape Only View and Veridical Perception**

There is an important conceptual objection to make to the anti-relativist position of the Shape Only View. It seems uncontroversial to accept that not all perceptions are veridical — for perception to be veridical, it must be constant in all conditions: that every time I view that particular letter S, I will be presented with exactly the same image by my perceptual apparatus.<sup>14</sup> Macpherson & Batty's (2016) restrictions for isolating incidents of cognitive penetration show that this is not the case: for perception to be considered constant, perceptual conditions and attention must be constant, and there must be normally functioning sensory organs. Clearly, I will perceive the letter S differently depending on the intensity, colour and direction of the light illuminating the image, and equally clearly there will be differences if my vision is slightly blurred first thing in the morning or by external pressure, or by substances I may have taken, knowingly or otherwise.

That perception can be affected other than by top-down processes means perception is not veridical. Now, this does not present any practical problem in day-to-day functioning, because we do not expect perception to be veridical — we expect

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<sup>14</sup> I accept that affect-based differences in the representation of the letter S are likely to be minuscule — the differences in representation of an ice cream may be more readily appreciated. As the principle still stands with the harder example, I will continue with the letter S, if only to emphasise that processes dictate that these differences do not depend on scale.

perception to give us sufficient to make our worlds go smoothly, to serve survival and thriving. We achieve this with a type of internal and external consensualism: internally, we will form a belief as to the form of that particular letter S through comparing multiple images over multiple exposures, coming to an internal informational consensus as to its form. Externally, we will have that form confirmed by communication with others.

But this has important consequences: once the point is conceded that a *single* perception may not be veridical, there is no base from which to argue that *any* perception is veridical. No single perception is available as the 'foundational' perception, the one, single veridical perception against which the accuracy of all others may be determined. Our accuracy is determined simply by our internal and external consensus as to what that particular letter S looks like.

I have arrived at roughly Putnam's position that there is no pre-theoretic perception, highlighting along the way the consensualism that we use to make our worlds go smoothly. It is in principle impossible to attain perceptions which are not in any way determined by theory (at least, our internal and external consensualism), and so we can have no notion of what it would mean to have perceptions which were not so 'distorted' by theory. There are two consequences: first, the idea that the theory 'distorts' perception loses all purchase. It is an empty statement. Second, and relatedly, there is no possibility that we may compare any perception for accuracy against anything other than another perception. Any possible pre-theoretic form of objects is unattainable — consensualism is the only tool available to us.

I will put Pylyshyn's weak impenetrability thesis aside for the moment, for as I have said, I think my difference with this thesis is one of degree and not principle. But, putting this aside, here we have a conceptual problem with both strong impenetrability theories and naive realists — with the Shape Only View. To the extent that either camp allows that not all perceptions are veridical (which I believe they must), they must introduce an element of consensualism into their thinking, however that consensualism is formulated. This means we can have no notion of what it would mean to have perception that did not

rely on this consensualism. It becomes meaningless in principle therefore to talk of any correspondence between a mind-independent form of objects and our perception.

In the result, all perceptions must be determined partly by some form of mind-independent objects and partly by mental processes, the latter being at very least the necessary consensualism by which we come to account for different external and internal perceptual conditions.

Much as it is important to make this point in principle, there remains the correlation conundrum similar to that identified by Hume and others in relation to causation: however we may think of causation, we are presented daily with massive data that seem to point to some causal mechanism. Reserving the matter in principle, it behooves us to examine the massive data associated with perception and their possible correspondence to the mind-independent form of objects. But I will do so bearing in mind the consensualism I have established.

## **5.0 An Essential Perspective: The Indivisible Unit**

### **5.1 Generally**

In previous chapters, I raised the point a number of times that it is helpful to regard emotions as having aspects, rather than parts — that appraisal, core affect and so on are aspects of a single whole, rather than parts that operate together. In Chapter Three I suggested that the greater whole of which they were aspects was usefully regarded as the entire organism — emotions are simply one aspect of an organism, the individual, whose goals can be reduced to simply survival and thriving. What I am urging here is a similar perspective on perception: emotions and perception are usefully regarded as aspects of a whole, with the same goals. Here I elaborate on what I said in Chapter Three.

The idea that we may be divided into parts comes easily from how we study human functioning, in parts: we study vision separately from hearing, thermoregulation separately from the autonomic nervous system, the circulatory system separately from the respiratory system. These divisions, as practical and helpful as they are, push us towards

the view that the individual is an assemblage of parts, in the manner perhaps of an aircraft. An Airbus, for instance, is designed as an integrated whole consisting of interacting parts, each with their function and optimised for that function; these parts are manufactured at facilities all over continental and non-continental Europe, transported to France, and the integrated whole Airbus is assembled, each part making its contribution to the whole. It is not that we think any of the Airbus parts (or human systems) can operate independently, but that the parts (or systems) are independent units contributing to the whole. The engine cannot operate without the fuel system, and vision cannot operate without the circulatory system, but these are nonetheless distinct and independent units. The notion is tempting but flawed. To take the notion to its extreme: we may study an individual's gait by looking at her walking normally, with both legs. If we were to isolate the function of one leg to determine its contribution, we would see that its effect (alone) would be to produce hopping (and falling) (Akins & Hahn, 2014). In truth, the processes contributing to gait are not divisible into individual legs, and probably not to legs alone — feet, spine, shoulders and head all seem intuitively to be involved, if not the entirety of the organism.

And this is the point. Although careful division is essential for ease of study, it is the organism overall that is important. A restatement of selection is that the human organism has developed to survive simply by surviving. Surviving by selection involves no design, no optimal solutions — it involves nothing more than successful hazard, a process that offers success to whatever happens to allow for success. Taking this perspective, it is easy to see that we will not have developed an ideal visual system, or an ideal auditory system, each contributing to an overall ideal sensory system within a great ideal whole. I will show that what we developed is better characterised as the minimum overall faculties which when integrated promote survival of the whole — and the position remains unchanged by replacing the word 'survive' with 'thrive'.

Standing in stark contrast to my position is that of the optimisation theorist, whose basic assumption is that adaptive advantage will always produce an optimal solution. There is good reason to question that assumption.

## 5.2 Questioning Optimisation Models

An optimisation model in this context is a mathematical model that may be used to predict behaviour — based on the assumption that the mechanisms associated with adaptive advantage ensure an optimal solution to a problem will always arise. Modelling optimal solutions for animal behaviour based on adaptive advantage makes the same assumptions as the notion that adaptive advantage will produce, for example, an optimal perceptual system. There are, however, good and multiple reasons to question these assumptions.

First, and consistent with the point I am pressing about the evolutionary development of the whole rather than individual parts, optimisation models tend to seek a single optimal solution to a particular identified problem within an identified system, whereas in actuality there are multiple systems in play, and potentially in conflict. Schmitz *et al.* (1998) use the term 'multi-objective optimisation' to allow complex situations to be recognised in optimisation studies: given the number of different systems involved, their level of interdependence, and the complexity of possible decisions, the researchers claim that no single solution may be considered 'optimal'. Each decision carries with it both advantage and disadvantage, and behavioural solutions will inevitably involve compromise. Cody makes a similar point, suggesting that competing goals are an obstacle to optimisation.

Given the complexity of the organism as a whole, and competition between the various systems within the organism, optimisation of a single system is unlikely. But, what if by optimisation we are not referring to individual systems — is there some notion of optimisation that is workable?

Emlen, looking from an ecological perspective, asserts that the notion of optimisation applies to populations, and not individuals, and that no-one anticipates that any single individual is behaving optimally. Optimisation models predict a notional end-point for behaviour across a population. If this is correct, then 'optimal' is a notional target for an overall population (not individual systems within individual organisms), and behaviour is subject to a process of optimisation. On this approach, optimisation is a target, and one that is unlikely ever to be met.

Emlen identifies genetic reasons why optimal solution targets are unattainable. First, if the fittest phenotype is generally heterozygous, by virtue of Mendelian recombination, at most only 50% of each subsequent generation will have the phenotype. Further (in a genetic expression of the multiple objectives that Schmitz et al. identify), genes can produce phenotypic traits by interacting with others to which they are linked (on the same chromosome), or with other genes in other loci, or they may be pleiotropic (have effects on more than one phenotype). He predicts 'halting progress' in a selected trait, that will achieve a final less than optimal 'oscillatory state', and concludes that 'complexities in the genetic system virtually preclude [the possibility of optimisation]' (p 170).

It is helpful to apply Emlen's notion at an individual level, taking all of the systems within an individual to be the population he refers to. In other words, he takes the entirety of the systems that make up the individual, from perception to emotion to locomotion and so forth to be the population.<sup>15</sup> Taking this view highlights that overall, the individual is gradually developing on a trajectory towards optimisation. This optimisation is a target that is unlikely ever to be reached, but the approach offers insight: at this point, the multiple objectives identified by Schmitz et al. merge into a singular objective, that of

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<sup>15</sup> This move may seem strange, as the systems making up an individual may be thought not to compete in the same way as individual members of an ecological population. In a real way, however, each system within an individual is in competition for limited resources available to the individual in the same way in which individual members of an ecological population compete for resources available in the ecological environment

optimal survival. It is a target, one that will not be reached — but usefully for my purposes, the adaptive process employed in its pursuit serves survival and thriving. There is abundant empirical evidence that our human systems are not optimal systems but are simply sufficient to perform their tasks. Akins delivers a clear example with her discussion of the human thermoreception system.

### **5.3 Akin's Critique of Naturalist Theories**

Akins provides a critique of what she terms naturalistic theories, which would include those with the Shape Only View (Akins, 1996). She offers an analysis of human thermoreception that is useful in highlighting the essential principle that we evolved to survive by surviving. Her summary of what a naturalistic theory holds is succinct:

'If the senses are the brain's window on the world, then any system worth its salt (and functioning correctly) ought to provide an accurate account of just how things are: the brain must be able to tell, from the signals it receives, how things stand in the world.' (ibid p. 342)

Akins is clear in her view on what a 'window on the world' approach to perception must be, and it reflects the requirements of the Shape Only View: the difficulty is, she says, it is neither universally nor even generally true. What follows is given in general opposition to the Shape Only View, to demonstrate that there is little reason to believe that our senses provide a Shape Only View in any modality: most particularly, Akin's analysis shows that what the senses pervade is that information we need to survive and to thrive, and nothing more. I will be more specific in relation to the contribution of emotions in later sections.

Turning to her chosen perceptual system, she gives three requirements a thermoreception system would need to meet to satisfy the naturalistic theorist. Firstly, such a system in order to reflect the truth must produce signals every time a stimulus is present, and at no other time. Secondly, its signals must be calibrated in some way to the properties it represents: it must be, in her word, 'thermometer-like', providing information

that tracks temperature states of the world. Thirdly, the system must be 'servile', in that it must present information objectively, and not 'slyly skew the information to reflect [its] own interests or prejudices.' As Akins points out, however, the human thermoreception system has none of these features — on the contrary, the system exhibits human narcissistic tendencies, perpetually asking the question of its stimuli, "But how does this all relate to ME?" (p 345). The human thermoreception system skews all of its output with a self-centred gloss — its primary concern is not the state of affairs objectively examined, but how that state of affairs relates to the individual.

My precis is unfair, as Akins does not specifically refer to the thermoreception system as narcissistic — her metaphor is more general. Nonetheless, the thermoreception system offers a good example of a system that has gradually developed over time through survival, whose operation is to promote survival rather than to provide accurate information on prevailing external temperatures. The system consists of four different receptors, two pain receptors (nociceptors), and two types of thermoreceptors. The nociceptors fire only in cases of extremely high or low temperature, and their signal is indistinguishable — it is simply pain. The nociceptors do not deliver any specific information about external temperatures — the information is either 'too hot or too cold'. As much as this may be unhelpful in delivering a Shape Only View of temperature conditions, it is information sufficient to serve survival — and the service of survival is the end to which the system overall has developed.

The thermoreceptors do not fare any better in delivering a Shape Only View of temperature conditions. The two types deliver hot and cold signalling, which may seem sufficient to provide a Shape Only View of temperature conditions, except that there are many more cold receptors than heat receptors, and they are unevenly distributed across the body. This means that what constitutes a comfortable range of temperatures will vary across the body: the information they are supplying concerns not the actual external temperature conditions, but how those conditions affect survival. In addition, unlike a thermometer, neither the hot nor the cold thermoreceptors respond linearly to increases

or decreases in temperature: the hot receptor increases sharply with increases in temperature — the signal being sent is not of external temperature conditions, but the threat to survival presented by rising temperatures. We do not need to know that the water is at 86°C: we need only and necessarily to know that not withdrawing the finger from the pot is harmful.

Reporting on external temperature conditions does not seem to be the concern of the thermoreception system at all. A sudden change in temperature will cause the thermoreceptors to fire: running even tepid water over icy-cold hands will cause the thermoreceptors to fire, and a sensation of the tepid water being hot. Because of the non-linear nature of the thermoreceptors' firing, a change from warm to hot will be felt more keenly than a change from tepid to hot water. The system does indeed skew information on external conditions to suit its own purposes: it skews the information so as to promote survival. Sometimes, as in the last two examples, it does not do a particularly good job.

I mention that the system does not do a particularly good job to highlight that perceptual systems are not optimal systems — certainly the thermoreception system looks like a system cobbled together, but that nonetheless produces information to promote survival. The system is simply a product of selection and development, a process that offers success not to the optimum solution, but to whatever happens to allow for success. That tepid water feels hot on icy hands is unlikely to threaten survival; that I can confuse the system by holding one hand in warm water and another in cold for some minutes, and then placing them both in tepid water is also unlikely to threaten my survival. This latter well-known party game speaks volumes about how the thermoreception system does not produce anything like a Shape Only View of external temperature conditions. But, it is sufficient to allow for our survival and to provide for our thriving.

It seems, then, that at least our thermoregulatory system does not present information in a manner consistent with a Shape Only View. This is simply one example of

what Janetos & Cole (1981) call a 'trivial point', that optimal solutions are not necessary for survival. Optimal solutions are not needed — and indeed they may not be possible.

#### **5.4 Vision as Well as Thermoreception**

A response to Akins may be that the thermoreception system is an exception, and that no extension may be made to other systems, including vision. Thermoreception stands alone, while all other systems deliver their form of a Shape Only View. Akins also has vision in her sights, as it were, in particular colour vision, in a later paper with her colleague Hahn. Their analysis goes directly to this point (Akins & Hahn, 2014). If the answer to the question, 'Why do we have colour vision?' is, 'In order to see colour,' then there is some possible support for the Shape Only View approach, that somehow the Shape Only View offers a selective advantage. The apple is red, the chameleon was then that colour, is now this colour, a Shape Only View of perception would demand that we see these colours. Akins, however, provides another reason for our seeing colour — it is a matter of contrast recognition.

Our ability to see colour is rare amongst mammals: according to Akins and Hahn, of 4,600 species of mammal currently identified, less than 50 possess trichromatic vision, characterised by three different kinds of cone receptors in the retina, in sufficient quantities to compare their signals — and characterised also by good colour vision. The balance have either one or two kinds of cone receptors, and are either colour blind (monochromats) or have very poor colour vision (dichromats). The important distinction between these three types of visual systems is not colour vision, however, but visual acuity. To ask 'Why do we have colour vision?' is to ask the wrong question: the correct question is 'Why are we trichromats?'

Akins and Hahn look at vision for these purposes as distinguishing two features: intensity contrast and spectral contrast. Intensity contrast (light and dark) produces shadows, but shadows are a mixed blessing. On the positive side, graded shading offers information on the shape and texture of surfaces, and the shadows objects cast on other

objects offer information on relative position — but on the negative side, object boundaries or edges can be lost in shadow. Spectral (wavelength) contrast, however, does not produce shadows, which allows object boundaries to stand out. Intensity and spectral contrast detection complement each other, and the result is an enhanced ability to detect contrast. They also operate as a form of failsafe (Akins & Hahn, 2014, p. 149).

Whatever else colour vision may bring us in the experience of colour, seeing colour is a side-effect of a visual effect that is more obviously a candidate for selection — better visual acuity, through spectral contrast. We do not have colour vision in order to see colour, whether or not a Shape Only View includes colour.

Akins' and Hahn's analysis for colour vision may seem to offer only oblique support for the notion that our perceptual systems do not offer us a 'window on the world'. An objector to Akins (1996) may still avow that the thermoreception system is an exception — that particularly our visual apparatus does present this view. Spectral contrast is of course useful, but seeing colour is simply part of viewing the world as it is. There are a number of developmental ripostes to this response, which I set out in later sections, but for now I will present a counter in the Waterfall Illusion.

This well-known visual illusion may be brought on reasonably simply, by watching something moving for a few minutes, then looking away. Sitting next to and looking into fast-flowing water in a river will achieve the desired setup, because when looking away from the water and to a rock on the river bank, that rock will appear to be moving. But this is no ordinary illusion — for the rock also appears not to be moving. The Muller-Lyer illusion, an illusion in which two lines of equal length appear to be of different length, by virtue of arrowheads at their ends (see Section 3.6 in this chapter), is interesting as an example of a conflict between two intentional states in relation to the same object: the observer sees the lines as of different lengths, yet believes they are the same length. The Waterfall Illusion is interesting because it is a contradiction within a single attitude to perceptual content: the rock appears both to be moving and not moving.

The Waterfall Illusion is well known, then, for the contribution it makes to debates on the content of perception, and the associated arguments. The effect introduces the complication of determining the content of a perception which is itself contradictory: presumably content ought to be one thing or another, and certainly not contradictory (see Crane, 1988; Mellor, 1988; Craig, 1976). I need not go into these arguments here — I raise the example simply to demonstrate that the visual system is not internally optimal.<sup>16</sup> Quite clearly, we are seeing what is impossible, for the rock cannot be both moving and not moving. This is perhaps a starker example of a failure of a perceptual system than Akins' thermoreception examples — but in any event, the thermoreception system cannot be taken as an exception to a general rule that our perceptual apparatus provides us with a window on the world, presenting the world as it is.

I opened this chapter on perception with this point about perceptual processes being non-optimal solutions, that we are not an assemblage of various interacting optimal parts, because I think it offers an importantly realistic perspective. I will develop the point in subsequent sections, where I will demonstrate that at least the visual and auditory processes are not independent systems, but are aspects of an indivisible whole — and that it seems indeed all of our perceptual processes are aspects of an indivisible whole. We did not develop separate visual, olfactory, gustatory and haptic systems: we developed, rather, an overall system by which we are able to gain sufficient information about the state of affairs, in an appropriate form, to allow us to survive (and thrive). I will extend this further: from the same perspective, perceptual processes do not constitute a system operating in isolation from other systems, but are indeed aspects of an indivisible whole — that includes emotion. Perceptual processes do not hold up a Shape Only View of the state of affairs to emotion processes for their reaction: there is one single system operating, in which perceptual and emotion processes work inseparably to gain information on and interpret the state of affairs in a manner that

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<sup>16</sup> I use the term 'internally' to distinguish the illusion from illusions such as the Muller-Lyer illusion, the Necker Cube and the Rabbit/Duck image, to highlight that there is a conflict within a single attitude, hence 'internally'.

promotes survival (and thriving). Contrary to the Shape Only View, perceptual and emotional processes will work together to produce a representation that serves individual interests of survival and thriving. From this perspective it is not difficult to see how emotion may influence the representation of the object: what is required is not a Shape Only View of an object, but a representation of that object that serves individual survival and thriving. That the representation may differ from a Shape Only View is unimportant — survival and thriving are all that is important.

With this perspective established, I will turn now to examine vision, and particularly relativism in vision — as much as Akin's example of thermoreception provides a useful reference, relativism in vision has the potential to cause very real practical problems.

## **6.0 The Practical Problem: Relativism in Vision**

The perspective I introduced and pressed in the previous section rejects the need for a Shape Only View in vision. This of course raises the spectre of relativism in vision, which raises its own potential problems: where beliefs, desires and the like can influence vision, vision may potentially be subject to whim or flights of fancy, which can be dangerous. Fodor, a strong opponent of relativism in vision, captures the idea, commenting that a fallible organism must see what is actually there, not what it expects or hopes will be there, because 'those that don't do so become deceased' (Fodor, 1983). This seems reasonable, at least at first. Recalling Ogden Nash's advice, 'when called by a panther, don't anther', Fodor also emphasises the need for both accuracy and speed in recognising hazard, which also seems true (ibid p. 70).

Does this exclude the involvement of emotion in the construction of an image? I think it does not, for two reasons. As to the first, recall the signalling function of emotions I described in Chapter Two — emotions can sound a warning to us, very crudely put, 'Less of this!' for negative emotions, or 'More of this!' for positive emotions. I will show how the involvement of emotions in image building accelerates the signalling function, making it

more efficient, and hence the reaction quicker. We will be able to recognise the panther and react to it more quickly.

Secondly, although what I propose is both that perception does not present a Shape Only View and that it is potentially relativistic, I do not propose an extreme form of relativism — there are major factors that confine how much my personal image of an object may differ from another's. The differences I suggest are marginal and will generally go unmarked: I think no matter how different the backgrounds and emotional profiles of two individuals are, they will see and be able to discuss plants, trees, vehicles, buildings and so forth and be talking about sufficiently similar objects. As I said in the introduction, I think there are situations in which differences will be marked: situations demanding discourse at a fine level of granularity and specificity between people from completely disparate cultural backgrounds. They will be rare. I will elaborate in the coming sections.

## **7.0 The Relativistic Approach**

### **7.1 Relativism Generally**

The case against relativism is captured by a number of theorists, that 'the function of perception is to deliver to thought a representation of the world' (Fodor, *ibid.*), and because 'this representation is supposed to inform belief and action (about or in response to the here-and-now), it should track not what the agent believes, wants, or otherwise thinks about the non-present; it should instead track the present environment, here-and-now' (Stokes, 2015, p. 88). As Lyons has it, 'The whole point of perception is to put us in touch with the world as it actually is.' The notion is that once beliefs, wants and the like enter perceptual processes, the objectivity of perceptual representations may be called into question. This objectivity is preserved, they conclude, by the Shape Only View.

Relativism as reflected in the quotes recognises the requirement for some form of objectivity, yet leaves that requirement curiously unmotivated and unjustified, because it seems clear that less than a Shape Only View in perception is sufficient to inform action in the here and now, as Stokes has it. All that is required is a minimal connection with the

here and now, just sufficient a relation to allow appropriate action. A Shape Only View of perception, of the world 'as it actually is', is far from the minimum needed. To take Fodor's example: we need to react to the danger inherent in the presence of a panther, but this does not entail our perceiving some objective and universal form of a panther. There is every reason to believe that our perceptual apparatus developed not to represent such a form of panther, or anything else, but to address our own concerns in our own environment (a dangerous beast), to allow us to survive and to thrive — and nothing more.

My suggestion is, then, that perception needs to track nothing more than the present environment as it concerns the individual, in order for her to survive and to thrive. Not having to represent some form of objective reality confines perception's task considerably, lessens its load, and it is easy to see how perception would develop in this confined manner: survival and thriving are evolutionary goals, whereas it is difficult to see how an accurate representation of 'what is out there' is necessarily a goal. If it turns out that what is presented by our senses and some objective reality are identical, this will be a matter of coincidence, not necessity — and in the following sections I will demonstrate why this is the case.

## **7.2 Practical Constraints on Relativism**

To commence, it seems true to say that if my belief prevents me from seeing a panther, I am likely, as Fodor puts it, to get deceased. Bringing the example to a more mundane level, if only by reason of belief I do not see an obstacle in front of me, I am still going to walk into it; if only by reason of belief I see an artefact on the wall, I will be unable to discuss the artefact with anyone else. In these two simple examples lies the practical point: we all need to exist in our environment, navigate its hazards and access its benefits, and we must be able to communicate with others about that environment. This requires a commonality in how that environment is perceived — and those requirements serve to exclude relativism. Simply put, I have a great disincentive to see things materially

or even slightly differently from others — the discrepancies would prevent me from functioning in society. The training I have received since I was an infant in the use of my visual faculty in order to thrive in this society means I am able to take in visual stimuli, and use them to produce a world that is to a vast extent similar to everyone else's world. This training is thorough and deeply embedded, and I am unable to choose to change it. In this light, the concern that we may be perceptually susceptible to flights of fancy or whimsy seem empty — they would leave us unable to function in the world.

Lyons supports the need for a Shape Only View by questioning what would happen if he fell in with the 'wrong crowd': whilst they might, he says, convince him to believe and desire all manner of crazy things, it would be hard for them to convince him to see and to hear crazy things (Lyons, 2015, p. 119). Lyons uses this example to defend the notion that we do not wish to have perception 'endogenously determined'. I think it is precisely endogenous determination that will prevent him from seeing and hearing crazy things. He may at a suggestion construct a mental image of a zebra in his living room, but any attempt to interact with the animal would be doomed to failure — all his other senses and everyone around him would be telling him that the zebra does not exist. It is difficult to see how he could maintain the zebra as existing in any shared reality. He may similarly convince himself he can hear rap music emanating from a cloud, but any attempt to communicate with others about any features of the music would also be doomed to failure. He would have every incentive to drop any belief in the music. We cannot be convinced to see or hear crazy things because our perception is endogenously determined, and multiply so — we use all our senses to establish the form of the environment that fits with our concerns, and that includes both moving around a physical space (not occupied by a zebra), and sharing experiences with others in society. The image of the zebra does not withstand investigation with any other sense (it cannot be touched, smelled, or heard), and neither the zebra nor the music from the cloud can be shared with anyone else. Neither phenomenon may be taken to exist.

It is as well to observe that this notion meshes well with the perspective I am pressing: our perceptual processes operate as a whole, its various aspects (visual, auditory, haptic) work together to produce a representation of the state of affairs. I will have more to say on this in a later section.

Dretske's (2015) 'Goldilocks Test' is also intended to demonstrate that top-down effects cannot influence vision. It is not so much a test, its creator says, as a way of thinking about whether vision is penetrated by top-down effects. The test involves a professional forester and a keen amateur woods person each painting their perception of a pine tree, and the professional critiquing the other's depiction. The question is whether in the professional's opinion the other's depiction will have too much accurate detail, too little accurate detail, or will the detail be just right? Dretske says the third is the only plausible answer. The forester may have a greater eye for detail by reason of experience and expertise and may be able to point out aspects of the tree that the amateur missed by including or excluding aspects from the painting, but even given this, the amateur would still have painted what everyone would agree is a pine tree. Dretske suggests the amateur would not have missed an essential 'pine-tree-ness' in her painting.

Dretske also claims that if top-down influences had any effect, then inevitably either alternative one or two would result, that the amateur's painting would have too much or too little in it. Whilst I agree with Dretske's conclusion that the third alternative, 'just right', is the only plausible response (our reasons of course are different), I cannot agree with this claim. The key to my position does not lie in perceptual processes or representation, but in communication.

Dretske's claim assumes the top-down influences that enrich the forester's perception of the tree will necessarily dictate his social reaction to another's depiction of it, how he communicates with others. I think this assumption is baseless. First, the forester well knows how to distinguish what everyone agrees is a pine tree, having learned it at a very early age. There has never been any incentive and always considerable disincentive for the forester to claim to see the pine tree any differently. Because of her expertise and

knowledge, she will have considerably more information concerning the pine tree than the amateur, but there is no incentive for her to abandon the shared notion of a pine tree — she does so at the peril of becoming incomprehensible to everyone other than peers with the same level of expertise. Second, there is no reason to believe that having more detailed knowledge and hence detailed perception of pine trees will deprive the forester of social communication skills, and of how to tailor answers to fit the context.

To illustrate my point, consider a philosopher walking in the countryside with a friend, who says to her, 'Look at the sheep. There're six sheep over there in that field.' There is nothing compelling the philosopher to correct her friend, and say that she probably does not know how many sheep there are in that field, nor to tell her she probably has no basis for ever making a statement such as the one she has. There is, on the other hand, the need to communicate with others, the need to retain friends, that compel the philosopher simply to agree, and to admire the view of the sheep. The philosopher is no more obliged to criticise her friend than the forester is to criticise the amateur's lack of detail in her image of the pine tree. There are sheep in the field, that is a pine tree.

Putting these two reasons together, it is not inevitable that top-down influences will mean the forester will give answers one or two. She is most likely, if she has social skills, to give answer three, that the picture is 'just right'.

I see the Goldilocks test as equivocal on encapsulation and the question of top-down influences — it tells us nothing about a Shape Only View of perception. It does however raise the question of the visual essence of a percept: Dretske identifies 'pine-tree-ness' as something essential that will be recognised by observers. Do objects have a visual essence? And does that essence subsist in the object as some sort of objective truth we perceive, or in the mind of the beholder?

### 7.3 Essential Relativism and Essential Perception

In an early section, I briefly touched on the relationship between naive realism and metaphysical realism: they both postulate the existence of mind independent objects, with naive realism focussing on their detection in perception. But there remains an issue for the Shape Only View concerning the nature of what is captured in the perception of these mind-independent objects. In an oblique way echoing the problems that I touched on in Chapter Three concerning Prinz's theory of concepts, there must be an essential recognisable set of features, an essential form that we must capture in order for these objects to become recognisable without cognitive assistance. In the previous section, I described Dretske's 'pine-tree-ness', which seems to embrace just such a notion, that which is essential to make a pine tree recognisable — what I might call recognisable essence.<sup>17</sup> The nature of this visual essence is unclear, other than it is something we will recognise in the form of that object without cognitive assistance. It is also unclear how we come to recognise the essence of the plethora of new objects we encounter through life.

Raftopoulos describes something akin to affordances that may play the role I accord to visual essence, as something that emerges from the earliest form of useful image. He illustrates with the example of a frog and a fly, arguing that the fly will not be represented in the frog's brain as a fly, but as a target for the tongue, a non-conceptual representation of what the fly affords the frog. The initial images formed in early vision, he argues, will be similar non-conceptual representations of affordances, or potentialities for further action — on this basis, to the frog, the visual essence of the fly is of a morsel to be captured with the tongue. The scope of such affordances or potentialities, according to Raftopoulos, will be hard-wired, representing all of the possible actions that might be taken in interaction with the object (Raftopoulos, 2001). This approach does not produce

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<sup>17</sup> I am using the term 'essence' here in a specific Lockean sense, as referring to 'the very being of any thing, whereby it is, what it is' — the internal constitution which is the cause of the thing's essence. I add the word 'recognisable' to emphasise Lockean knowable essence (not atomic constitution), that which allows us to classify by recognition. See Lowe, 2011; Vienne, 1993 for detailed discussion.

a representation of the world as it is, a Shape Only View of the world, but a representation of what objects within the world mean to the observer. Adapting the vocabulary, in this way the visual essence of any object for a human would be the affordances of that object to the human — and according to Raftopoulos that is arrived through innate knowledge, without any top-down influences. The extent of this innate knowledge is unclear, although Raftopoulos does allow that the scope of recognised affordances could be increased through slow perceptual learning.

I do not think that looking at human affordances as the basis of visual essence assists the argument for encapsulation or a Shape Only View of human vision. (For these purposes, I will take it that Raftopoulos is correct about slow perceptual learning in this context, because it does not affect my argument.<sup>18</sup>) Affordances are however not as obvious as they may seem. Imagine a designer espresso cup, barely enough to take one shot of coffee. Its base is round, but its sides gradually form into planes so that its top is in the shape of a square. The sides have been twisted 20° anti-clockwise, and one of these sides has a tiny hook for a handle. In addition, the sides of the cup look as if they have been crushed slightly by too tight a grip. To someone unacquainted with drinking a single shot of coffee, this cup (a gift to me from a friend) does not appear to offer much in the way of affordances. For this person, it is too small a cup for tea or coffee, being ceramic it is inappropriate for an alcoholic shot, and it is (just) too large to be a thimble (and oddly shaped for that purpose). For her, the cup has no essence. To go further, imagine a member of a desert-dwelling nomadic tribe such as the San confronting this espresso cup for the first time. Her experience of drinking vessels is (I stipulate) gourds of some half-litre capacity. She is unlikely to see the espresso cup as affording her the chance of a drink — and further (although it may amuse her), she could learn that

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<sup>18</sup> Fodor was concerned that the diachronic top-down effects of learning within the primary visual cortex may mean encapsulation is 'less than cast-iron'. Raftopoulos offers a solution: learning, he allows, constitutes a diachronic top-down effect, but it is not an information effect. Rather, it changes the structure of early vision processes — encapsulation is preserved and processes remain informationally isolated. This is a matter of 'slow learning' in that it takes place over repetitions (Karni, 1996; Raftopoulos, 2001).

affordance in a moment, and would not need slow perceptual learning to do so. This is a relativism problem — three individuals with exactly the same visual apparatus, but each with a completely different affordances (or visual essence) for the same object.

Affordances, it seems, do not solve the problem of relativism, and do not indicate what it is that we need to extract from the earliest image that must necessarily be isolated from top-down signalling.<sup>19</sup>

If not affordances, what is visual essence: what is essential in an object that we must capture in early vision? What is 'pine-tree-ness?' Clearly, what the amateur forester painted was recognisable, but that is a matter of object recognition — what is required here is not something everyone recognises as a pine tree, whether from personal experience or from pictures of northern hemisphere Christmases, but something prior to recognition. Something like what Raftopoulos proposes the frog detected in the fly. Is there indeed any visual essence in an object?

Churchland's notion of rule-based perception captures the idea that there is nothing essential in an object, and that the form objects take in our perception is a direct product of our senses. According to Churchland, there is no such thing as pre-theoretic vision: perceptual beliefs are roughly 'singular theoretical beliefs acquired as spontaneous non-inferential responses to sensory states of the perceiver,' (Churchland, 1979 p. 2), and that '[i]n large measure we learn, from others, to perceive the world as everyone else perceives it' (ibid. p. 7). Churchland supports his position with what he terms the 'argument from transposed modalities', a thought experiment designed to demonstrate that perception is not a 'window to the world', but consists rather in a (limited) information gathering system, and a theoretic interpretation system that provides meaning to that information.

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<sup>19</sup> Raftopoulos (2001a) was not specifically suggesting affordances would solve the problem of relativism, but rather was responding to Churchland's comment that initial images are 'useless' until supplemented with top-down information. This does, however, seem to be an appropriate application of his idea, and something of a test.

He invites us to imagine a society identical in all ways to us, save that, first, its members have no vocabulary for colour, second, that their visual capabilities include being able to see temperature, and third, that they lack any tactile sense of temperature, just as we lack any tactile sense of colour. Members of this society describe temperature as they see it — for them, objects are not variously coloured, but variously heated. Colder objects appear lighter, warmer objects appear darker. For a standard observer in our society there is a way white things and only white things look; conversely, for a standard observer in their society, there is a way cold things and only cold things look. Both perceptual sensations are accurate.

Although the perceptions are both accurate, the information contained in them is completely different — it is dependent upon perceptual apparatus. A child may learn to recognise the term 'white' and assign it to certain perceptual experiences, but that term will have no meaning until it comes to be used inferentially within a network of beliefs. In the experiment, the perceptual experience 'white' is empty of meaning until it is used inferentially within the network of beliefs of either society, and that meaning becomes a designator either of a colour or of a temperature. Thus does the sensation of 'white' become meaningful only by reason of the manner in which we think about 'white', how we use the term inferentially — our commonly held theory about what whiteness consists in.

Facing this thought experiment, the choice seems stark. Pushing back, is there something intrinsic in the colour white that entails a particular sensory experience? Is there something intrinsic in temperature that entails it being (directly) detectible only by touch, such that it is inconceivable that it could be detected visually? Alternatively, is the intuition Churchland invites accurate: there is something in our visual perception that results in a sensation, which we have chosen to call white, and which we have embedded in our network of beliefs? Churchland assists with an example of multimodal perception: a blind person may perceive roundness in an object by feeling it, and a sighted person without a sense of touch may perceive that roundness by looking at it. Given that the two

people agree on the meaning of 'round', 'roundness' cannot be a product of either tactile or visual sensations — that roundness must be a product of how we think about those sensations.

In the end, we need some basis on which to transform the edges, shades and surfaces of early vision into objects. The idea that these objects have some sort of absolute discoverable form innately and identically available to all of us is intuitively attractive, but the intuition seems baseless. I think Churchland is correct: there is a reality 'out there', but the form it has in our perception (and the meaning we assign to phenomena in that reality) is a combination of our perceptual abilities and the theories we have about them.<sup>20</sup> This may seem initially counter-intuitive, but there are real advantages inherent in a system such as this — a system that has as its base the concerns of the individual.

#### **7.4 Advantages of Relativism**

I have mentioned the signalling role of emotions, and it is relevant here. The Shape Only View idea is that a panther is simply and always a panther, and that it should be represented in early vision as such — and rapidly. Now, we know there is nothing intrinsically or absolutely dangerous about a panther — the extent of the danger it poses to another depends on the relation in which the panther stands to that other. It is not dangerous to its cub, or presumably generally to another panther. But, in general, it is dangerous to humans. Representing a panther as simply a panther, and without any information as to its nature, seems inefficient for the human, when compared with

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<sup>20</sup> There may be concerns that I am advocating a type of consensualism, in which the substance of reality is simply that which we agree upon, with no external point of reference (Goldman, 1987; Kusch, 2002), or that my position leaves perception 'ungrounded' (Müller, Vincent C. 2005). These are misplaced. The object is an external point of reference, and its perception forms a basis for a reliable belief in its existence. The recognition of its function (drinking vessel) and its labelling (coffee cup, tasse de cafe, and so on) are matters of mutual agreement i.e., the object has no essential existence qua coffee cup. It follows that grounding as described by Muller is provided in perception of the percept, not of its function or labelling. For a discussion rejecting any need for grounding, see Westerhoff, 2020, Chapter Three.

representing it as a hazard as early as possible. Such an early representation of danger and signalling that danger are an advantage. This is relativism, but it is not pernicious: people with no knowledge of the danger posed by panthers cannot represent the panther as a hazard (there are multiple cases of tourists in Africa leaving their vehicles to approach wild lions), but it is an advantage to those who can.

Ogilvie and Carruthers make a related point, saying that perception has to be alive to individual variations in context, that 'the statistical properties of one environment (within a building, say) can be quite unlike those of another (such as a forest)', so that inevitably perception must be able to call upon high-level information, such as where one is (Ogilvie & Carruthers, 2015 p. 726). The panther may be a hazard when encountered on a path, but not when encountered in captivity. This is salient information, which needs to be recognised as rapidly and efficiently as possible. Viewed in this light, relativism has advantages not recognised by Fodor.

Relativism does not, then, present significant problems, and does not seem to demand a Shape Only View of perception — or, in other words, it presents no obstacle to the idea that beliefs (and similar) may play a role in early vision. But the converse positive assertion, that beliefs do play a role in early vision, faces a potential problem in the persistence of visual illusions — their persistence over belief points to beliefs not playing such a role.

### **7.5 The Persistence of Visual Illusions**

If there are top-down influences in which beliefs and the like can alter perception, it seems sensible that we ought to be able to use those beliefs to override something we know to be a visual illusion. That in many cases we cannot is taken by some as evidence that there are no such top-down influences: the perceptual image, even if it turns out to have been an illusion, is always taken to be immutable. It turns out, however, that the matter is not quite so easily settled.

The Muller-Lyer illusion consists of two lines of identical length, which appear to be of different length by virtue of convex or concave arrowheads at their ends. The illusion persists even when the observer has physically measured the lines and believes them to be of equal length. It seems reasonably clear, then, that if belief is accessible to early vision, that belief should overrule the illusion, and the lines would then be made to appear of equal length — but the illusion persists. The easy conclusion to draw from the persistence is that early vision cannot be accessible to belief. Fodor says that the illusion demonstrates 'that how the world looks can be peculiarly unaffected by how one knows it to be' (Fodor, 1985 p. 8). This comment seems to be true, at least some of the time — but what does this actually tell us about the relationship between belief and perception, and about the naive realist's approach to perception?

Ogilvie and Carruthers suggest a possible reason for the persistence of the illusion. Endorsing a limited view of the role of prediction in image formation (a subject I will return to later), they point out that in some interpretations of this approach, the purpose of top-down signalling is to assist in the interpretation of bottom-up signalling in cases of ambiguity. In the case of the Muller-Lyer illusion, there is no ambiguity — the bottom-up signalling is clear and uncomplicated, and there are no ambiguous cues. There is no need for top-down signalling, and none ought to be expected — the bottom-up signalling is left intact, and the illusion persists. As attractive as it is, this explanation is problematical, assuming as it does that higher-level processing is called upon only when lower-level processes reveal uncertainty or ambiguity. This may indeed be assumed in some interpretations of the role of prediction in vision, but there is significant evidence that higher-level processing is not limited to cases of uncertainty or ambiguity — I will detail that evidence in Section 4.5 below.

Whatever the reason for the persistence of the illusion, Ogilvie and Carruthers urge caution on how much the persistence tells us. The phenomenon clearly demands an explanation, but care must be taken not to overreach in drawing conclusions, about either

encapsulation or Shape Only View perception. After all, Fodor said the illusion tells us only 'at least some perceptual processes are insensitive to at least some of one's beliefs' (Fodor, 1985, p. 2). Ogilvie and Carruthers, extending Fodor's approach, think not: they point out that the persistence shows only that that top-down influences do not dominate in these cases, that in these illusions belief is not able to update perception. It does not show that top-down influences cannot contribute to or otherwise have an effect on vision. Nor does it show that top-down influences cannot dominate in other cases. The type of situation in which top-down influences do not dominate would presumably be defined as those cases where the phenomenon occurs, pending some sort of explanation. This suggestion by Ogilvie and Carruthers gains some support from other illusions that persist through knowledge, such as the sound-induced flash illusion (which I discuss in more detail in Chapter Six). In this illusion, a single flash is persistently perceived as two flashes, when viewed simultaneously with hearing a click. This illusion also persists through belief: in these cases, top-down feedback to early visual processes from a knowledgeable participant cannot dominate intermodal feedback from auditory processes, thus weighing against a Shape Only View of perception. This intermodal feedback casts the Muller-Lyer illusion in a different light, as a phenomenon that requires explanation, but one that is neither helpful nor unhelpful to Fodor's case for encapsulation. It does the same in respect of Shape Only View perception.

The persistence of illusions of this type is an interesting phenomenon, one which cries out for an explanation, but whatever the explanation may turn out to be, it does not offer any support for a naive realist's approach to perception.

## **7.6 Other Arguments Against Relativism**

There are at least two other theoretical bases for an anti-relativism Shape Only View position, the first based on epistemological concerns, the second on issues of speed and efficiency. The epistemological concern is that unless perception presents a Shape

Only View, it cannot constitute a warrant for belief. The concern is also manifest where perception may be influenced by belief, where there is a possibility of circularity:

Belief -----> Perception -----> Belief

Where such a circularity occurs, the worry is that there is no proper justification for belief, and no knowledge can be forthcoming. The concern does need to be approached with some caution, as the notion that belief needs to be supported by a Shape Only View of perception can become too general: on a general application of the notion, belief that it is raining would have to be supported by a non-doxastic perception, which is clearly not the case. For this reason, Lyons (2015) says it is helpful to recognise a division between pernicious and non-pernicious top-down influences.

Recognising this distinction allows flexibility, and an avoidance of the epistemological problem. For instance, in a case such as I am proposing of affective or emotional signalling, the progression may not necessarily change the perception of an object. Encountering a panther would be just such a case:

Negative affect -----> Perception -----> Negative affect

Once again, this simply accelerates the negative emotional signalling that would inevitably be associated with an object — the earliest possible warning of the panther, for instance. I have already outlined how this would be beneficial, rather than pernicious. If the negative reaction turns out to be baseless (for instance, the panther turns out to be a dog), the error would simply be noted for later reference. No harm is done by this early signalling.

In any event, care must be taken not to place the cart before the horse: it is not the case that perception must present a Shape Only View, so that we may have warrant for our beliefs. Rather, it is the case that epistemological considerations will follow from

whether or not perception turns out to present a Shape Only View. Moreover, Fodor's position may be inverted: our emotions may be a basis for our beliefs (Brady, 2016; Prinz, 2006; Döring, 2003).

The second concern I raised related to speed and efficiency, is that early vision's access to cognitive resources needs to be limited, in order to avoid time-consuming searches of all resources in every perception. This concern seems to lean away from accuracy in favour of efficiency.<sup>21</sup> This concern is misplaced, assuming as it does that cognitive searches are exhaustive, involving a comprehensive search of resources. Such searches seem impractical as a support for general cognitive activity — and there is good reason to believe that cognitive searches in general are not exhaustive at all, but are optimised by the use of heuristics.<sup>22</sup> Regardless of the manner in which searches are carried out, Fodor's concerns about speed and efficiency, if they point anywhere, lean away from Shape Only View perception.

Epistemological considerations raised by Fodor and others, and those of speed and efficiency, offer little guidance in this matter. The first may reflect a desire that perception may warrant belief, and the second is likely to be misplaced — and in any event intuitively points away from the direction Fodor wishes to take.

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<sup>21</sup> Fodor describes this as a case of valuable 'bullheadedness' (Fodor, 2014, p. 70), in which speed is bought at the price of not having to consider all of the facts. As he succinctly puts it, 'I do not wish to have to consider everything I know in the course of perceptual panther identification.' (ibid. p. 71)

<sup>22</sup> There is good evidence that we habitually use heuristics to allow a search through 'stupendously large databases at breakneck speed' (Prinz, J. J. 2006b). Gigerenzer offers a number of simple heuristic tools to search for cues to discriminate between two possible answers. For example, using the 'take the best' heuristic, the cue is adopted which is considered the most likely to be successful — if this does not yield a discrimination, the next best cue is used. As an example, in choosing which of two cities have a larger population, a cue may be that large cities are likely to have a football team in a major league. If that cue yields a result, the search ends with the answer — if it does not, then another cue is selected, such as that large cities may have more than one airport. Other simple heuristic tools are 'take the last', in which the last cue is used, or 'minimalist' in which cues are simply guessed at. (Gigerenzer, G, 2000; see also Todd, 2000)

## 7.7 Objections to Relativism: A Conclusion

In this section I identified the common ground between two major anti-relativist approaches to perception, and identified it as the Shape Only View, and then I worked through motivations that are provided for the Shape Only View. I found no reason to support the Shape Only View, or to object to relativism in vision.

The Shape Only View looks to early visual processes to capture some sort of essence of the percept, unaffected by higher-level processes. I have expressed my concerns as to what that essence might be. I examined a practical and simple approach to vision, that we have a capacity to represent our environment in a manner which allows us to navigate and use it, and to communicate with others about it. In this approach, we learn to use that capacity in such a way as to act successfully within the environment, and it allows us to understand each other. The disincentive to flights of fancy and whimsy is that we would end up bumping into things, and we would not be able to communicate with others. This approach avoids the problems usually associated with relativism.

In the end, my position is that the manner in which the environment is visually represented, how it appears in that representation, is a product both of our visual apparatus and the environment. Objects do not have an essential objective form represented to us in vision, and the manner in which we represent our environment is the minimum that allows us to function in our environment. Churchland makes a similar point in relation to essential features: there is no essence of roundness in any percept, 'roundness' simply reflects the way in which we think about a percept. I think the best (and least complex) approach is that there is no essence of an espresso cup: there is simply a percept, and how it appears to the perceiver depends upon visual apparatus, and on its function and labelling.

The persistence of the Muller-Lyer illusion tells us little more than that in this and some similar situations, top-down signalling does not prevail over bottom-up signalling. It offers little help to the encapsulation theorist, and little help to the proponent of Shape

Only View perception. Much as it is a phenomenon that cries out for explanation, that explanation has yet to be given satisfactorily.

Nor do arguments from epistemology and from speed and efficiency offer any real assistance in the argument. The argument from epistemology places the cart before the horse, and perhaps more expresses a wish than an argument. The argument from speed and efficiency is lost to the fact in the normal course of events we process huge amounts of data, probably using simple search heuristics.

In the result, I do not think there are good theoretical reasons to believe that perception presents, or needs to present, a Shape Only View. This is borne out by empirical evidence, which clearly demonstrates that perception simply does not present a Shape Only View.

## **9.0 Summary and Conclusion**

In the first section of this chapter, I recognised a division between a 'Shape Only' view of vision and what I termed the Inseparability Thesis, that visual properties cannot properly be separated into low-level and high-level properties. I developed the notion of the Shape Only View, and re-framed the argument away from properties and to issues of cognitive penetration and naive realism.

I set out the need to take a view of the organism as an undivided unit, as I did in relation to emotions. This involves viewing the evolutionary development not of individual parts, integrated but separate, but rather the development of the whole — the whole, with various aspects that allow it to survive and thrive. Although it is helpful to study these processes separately, one must not lose sight of the fact that these processes are inescapably aspects of the whole organism. From this perspective, it is not difficult to see the limits of development (bounded by survival and thriving), and to see that a Shape Only View is not of itself a developmental goal for any individual perceptual process.

I will develop the perspective further in the next chapter, where I will present empirical evidence that at least visual and auditory processes are linked aspects of a

single whole — and that there is good reason to think that all perceptual processes comprise one system.

In the second section, I addressed the question of whether perception, and vision in particular, presents us with a Shape Only View representation of what is 'out there'. Anti-relativism concerns are that relativism may lead to perception based on flights of fancy, that perception demands speed and efficiency, and that there is no other explanation for the persistence of some illusions. I demonstrated that these concerns are addressed without the need for encapsulation, and that leaving aside the persistence of illusion, which does need to be reserved, the dangers of relativism are mitigated by practical considerations, and speed and efficiency come from use of heuristics.

In the end, practical considerations of evolutionary development point towards there being a degree of relativism in vision, and living in a society and needing to communicate give rise to practical considerations that mean the relativism will be limited. There are no pressures or conditions that give reason to think we may indeed enjoy a Shape Only View.

That being said, in the next chapter, I will test this proposition against empirical evidence.

## References

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- Akins, K. (1996). Of Sensory Systems and the "Aboutness" of Mental States. *Journal of Philosophy*, 93(7), 337–372. <https://doi.org/10.2307/2941125>
- Akins, K. A., & Hahn, M. (2014). More than Mere Colouring: The Role of Spectral Information in Human Vision. *The British Journal for the Philosophy of Science*, 65(1), 125–171. <https://doi.org/10.1093/bjps/axt060>
- Alston, William P. (2001). *A Sensible Metaphysical Realism*. Marquette University Press.
- Barrett, L. F., & Bar, M. (2009). See it with feeling: affective predictions during object perception. *Philosophical Transactions of the Royal Society B: Biological Sciences*, 364(1521), 1325–1334. <https://doi.org/10.1098/rstb.2008.0312>
- Brady, M. (2013a). *Emotional insight : the epistemic role of emotional experience*. Oxford, United Kingdom: Oxford University Press.
- Brady, M. (2013b). *Emotional insight : the epistemic role of emotional experience*. Oxford, United Kingdom: Oxford University Press.
- Brady, M. S. (2008). The irrationality of recalcitrant emotions. *Philosophical Studies*, 145(3), 413–430. <https://doi.org/10.1007/s11098-008-9241-1>
- Brewer, B. (2011). *Perception and its Objects*. Oxford Oxford University Press -03-01.
- Churchland, P. M. (1979). Introduction. In *Scientific Realism and the Plasticity of Mind* (p. 16). Cambridge University Press; Cambridge Core. <https://doi.org/DOI: 10.1017/CBO9780511625435.002>
- Cody, M. L. (1974). Optimization in Ecology. *Science*, 183(4130), 1156–1164. <https://doi.org/10.1126/science.183.4130.1156>
- Craig, E. (1976). Sensory experience and the foundations of knowledge. *Synthese*, 33(2-4), 1–24. <https://doi.org/10.1007/bf00484707>
- Crane, T. (1988). The Waterfall Illusion. *Analysis*, 48(3), 142–147. <https://doi.org/10.1093/analys/48.3.142>
- Döring, S. A. (2003). Explaining Action by Emotion. *The Philosophical Quarterly*, 53(211), 214–230. <https://doi.org/10.1111/1467-9213.00307>
- Dretske, F. (2015). Perception versus Conception. <https://doi.org/10.1093/acprof:oso/9780198738916.003.0007>
- Firestone, C., & Scholl, B. J. (2015). Cognition does not affect perception: Evaluating the evidence for "top-down" effects. *Behavioral and Brain Sciences*, 39. <https://doi.org/10.1017/s0140525x15000965>
- Fodor Jerry A. (1983). *The Modularity of Mind*. United States: Mit Press.
- Frijda, N. H. (2016). The evolutionary emergence of what we call "emotions." *Cognition and Emotion*, 30(4), 609–620. <https://doi.org/10.1080/02699931.2016.1145106>
- Gigerenzer, G. 2000, *ADAPTIVE THINKING: RATIONALITY IN THE REAL WORLD*, Oxford University Press, New York, 2000
- Goldman, A. I. (1987). Foundations of Social Epistemics. *Synthese (Dordrecht)*, 73(1), 109–144. <https://doi.org/10.1007/BF00485444>

- Gómez-Puerto, G., Munar, E., & Nadal, M. (2016). Preference for Curvature: A Historical and Conceptual Framework. *Frontiers in Human Neuroscience*, 9. <https://doi.org/10.3389/fnhum.2015.00712>
- Janetos, A. C., & Cole, B. J. (1981). Imperfectly optimal animals. *Behavioral Ecology and Sociobiology*, 9(3), 203–209. <https://doi.org/10.1007/bf00302939>
- John Emlen, 1987, *Evolutionary Ecology and the Optimality Assumption* in Dupré, J. *The Latest on the best : essays on evolution and optimality*. Mit Press.
- Karni, A. (1996). The acquisition of perceptual and motor skills: a memory system in the adult human cortex. *Brain Res Cogn Brain Res*, 5(1), 39–48. [https://doi.org/10.1016/S09266410\(96\)000390](https://doi.org/10.1016/S09266410(96)000390)
- Kastl, A. J., & Child, I. L. (1968). Emotional meaning of four typographical variables. *Journal of Applied Psychology*, 52(6, Pt.1), 440–446. <https://doi.org/10.1037/h0026506>
- Kusch, M. (2002). Consensualism and Interpretationalism. <https://doi.org/10.1093/0199251223.003.0011>
- Lowe, E. J. (2011). Locke on Real Essence and Water as a Natural Kind: a Qualified Defence. *Aristotelian Society Supplementary Volume*, 85(1), 1–19. <https://doi.org/10.1111/j.1467-8349.2011.00193.x>
- Lyons, J. (2005). Perceptual Belief and Nonexperiential Looks. *Philosophical Perspectives*, 19(1), 237–256. <https://doi.org/10.1111/j.1520-8583.2005.00061.x>
- Lyons, J. C. (2015). Unencapsulated Modules and Perceptual Judgment. <https://doi.org/10.1093/acprof:oso/9780198738916.003.0004>
- Macpherson, F., & Batty, C. (2016). Redefining Illusion and Hallucination in Light of New Cases. *Philosophical Issues*, 26(1), 263–296. <https://doi.org/10.1111/phis.12086>
- Martin, M. G. F. (2002). The Transparency of Experience. *Mind and Language*, 17(4), 376–425. <https://doi.org/10.1111/1468-0017.00205>
- Maturana, H. R. (1970). Biology of cognition. In H. R. Maturana, & F. J. Varela (Eds.), *Autopoiesis and cog- nition: The realization of the living* (pp. 2–58). Boston Studies in the Philosophy of Science, Vol. 43. Dordrecht: Reidel
- Mellor, D. H. (1988). Crane’s Waterfall Illusion. *Analysis*, 48(3), 147–150. <https://doi.org/10.1093/analys/48.3.147>
- Miller, J. T. M. (2022). Metaphysical Realism and Anti-Realism.
- Müller, Vincent C. (2005), ‘There must be encapsulated nonconceptual content in vision’, in Athanassios Raftopoulos (ed.), *Cognitive penetrability of perception: Attention, action, attention and bottom-up constraints* (Huntington: Nova Science)
- Ogilvie, R., & Carruthers, P. (2015). Opening Up Vision: The Case Against Encapsulation. *Rev.Phil.Psych*, 7(4), 721–742. <https://doi.org/10.1007/s1316401502948>
- Palumbo, L., Ruta, N., & Bertamini, M. (2015). Comparing Angular and Curved Shapes in Terms of Implicit Associations and Approach/Avoidance Responses. *PLOS ONE*, 10(10), e0140043. <https://doi.org/10.1371/journal.pone.0140043>
- Prinz, J. J. (2004). *Gut Reactions*. Oxford University Press.

- Pylyshyn, Z. W. (1980). Computation and cognition: issues in the foundations of cognitivescience. *Behavioral and Brain Sciences*, 3(1), 111–132. <https://doi.org/10.1017/s0140525x00002053>
- Raftopoulos, A. (2001a). Perceptual Learning Meets Philosophy: Cognitive Penetrability of Perception and its Philosophical Implications.
- RAFTOPOULOS, A. (2001). Reentrant Neural Pathways and the TheoryLadeness of Perception. *Philosophy of Science*, 68(3), S187–S199. <https://doi.org/10.1086/392908>
- Schmitz, O. J., Cohon, J. L., Rothley, K. D., & Beckerman, A. P. (1998). Reconciling variability and optimal behaviour using multiple criteria in optimization models. *Evolutionary Ecology*, 12(1), 73–94. <https://doi.org/10.1023/a:1006559007590>
- Siegel, S. (2006). Which properties are represented in perception. *Perceptual experience*, 1, 481-503.
- Siewert, C. (1998). *The Significance of Consciousness*. Princeton University Press.
- Stokes, D. (2015). Towards a Consequentialist Understanding of Cognitive Penetration. <https://doi.org/10.1093/acprof:oso/9780198738916.003.0003>
- Todd, P. M. (2000). The Ecological Rationality of Mechanisms Evolved to make up Minds. *American Behavioral Scientist*, 43(6), 940–956. <https://doi.org/10.1177/00027640021955685>
- Toribio, J. (2002). Modularity, Relativism, and Neural Constructivism.
- Vartanian, O., Navarrete, G., Chatterjee, A., Fich, L. B., Leder, H., Modroño, C., ... & Skov, M. (2013). Impact of contour on aesthetic judgments and approach-avoidance decisions in architecture. *Proceedings of the National Academy of Sciences*, 110(supplement\_2), 10446-10453.
- Vienne, J.-M. (1993). IX—Locke on Real Essence and Internal Constitution. *Proceedings of the Aristotelian Society*, 93(1), 139–154. <https://doi.org/10.1093/aristotelian/93.1.139>
- Westerhoff, J. (2020). *The non-existence of the real world*. Oxford University Press.

## CHAPTER SIX: RELATIVISM IN VISION: THE EMPIRICAL EVIDENCE

### 1.0 Introduction

I have been pressing a perspective which I think is helpful in thinking about the evolutionary development of human emotional, perceptual and other processes. To repeat it: we developed through forces operating on an indivisible whole, and the different aspects of that indivisible whole — including emotion (and the different aspects of emotion) and perception (visual, audio and so forth) — all developed gradually over evolutionary time, together, and indivisibly parts of the functioning whole. In this development, there is no reason to think any perfect processes will develop, no perfect emotion process (whatever that may entail), no perfect thermoreception or visual processes — developmental and selective conditions means that processes developed with the minimal capability of promoting survival and thriving.

There is no room for a Shape Only View as a goal in such developmental processes — there is room only for practical necessity. This practical necessity means we will identify panthers more efficiently, and understand the visual nature of such experiences as a letter S looking one way on one day and another the next. In Chapter Five I addressed theoretical objections to this position, showing them to be groundless, and showing the small degree of relativism that may possibly eventuate to be harmless to living in society.

It is now time to appeal to the empirical, to test whether the evidence supports the idea that we do not enjoy a Shape Only View. In this chapter, then, I will canvass that evidence and demonstrate that it does indeed support this position. And turning to the empirical serves another purpose, because in the final chapter, I will also have some recourse to the empirical to demonstrate the role emotion plays in the construction of a representation, such that the form of an object in that representation may be altered by emotional processes.

## 2.0 The General Case Against Relativism

A Shape Only View perception demands a limit to top-down influences on at least early vision (and some demand more), and a wealth of empirical evidence has been amassed from behavioural studies into the the topic, particularly relating to cognitive penetration. Being behavioural, this evidence has proven difficult and is plagued with accusations of poor methodology and over-liberal interpretation of evidence. Machery (2015) coins the term 'repligate' to describe the replication problems he says plagues these behavioural studies.

As I mentioned in Chapter Five, Firestone and Scholl (2015) defend the strong version of the impenetrability thesis, which will have the whole of the visual cortex impenetrable, or closed off to any top-down influences. They presented a meta study of this evidence: in all, they counted 175 relevant papers since 1995 (although they accept that may not have found all of the existing papers), and make the claim that they can find in them no proper evidence of top-down influences — each study is subject to one or more of five specific pitfalls. Inevitably, the claims in their paper were disputed, leaving the matter unsettled. The Firestone and Scholl paper was a target paper, and much of what they said about the papers was disputed — and indeed it may be that the researchers were themselves guilty of falling into the pitfalls they recognised. An example will illustrate just how this evidence is problematical.

Darkness, gloominess and similar words are often associated with negative emotions, the converse being that positive emotions are associated with brightness. Xie & Zhang set out to demonstrate that this linguistic convention reflects a physiological phenomenon, and claimed to have done so, using personal reports. Firestone and Scholl reject the evidence for methodological reasons, claiming that the personal reporting method led the respondents to an anticipated answer. Xie & Zhang (2016) repeated the experiment, using pupillary dilation detection rather than personal report, and confirmed their original findings: they demonstrated that valance can alter perceived brightness — when asked to bring to mind positively valanced thoughts, participants' pupillary dilation

showed that they were indeed seeing things more brightly. For whatever reason, the brightness of representations can be affected by emotions. A claim, disputed on seemingly good grounds, confirmed with different testing.

Firestone and Scholl's review is also plagued by the problem that remains a large number of studies that were not covered by their review, and which appear to provide substantial evidence of top-down influences, particularly on vision.

Taking the Firestone & Scholl paper in the context of the studies it includes, and the responses, it appears that there may be an impasse in the empirical evidence. Although I will lead further evidence that question whether there is indeed any impasse, I believe the apparent impasse is important, for it raises the matter of onus of proof: does the onus lie with those who oppose the encapsulation thesis, or with those who defend that thesis? The position adopted by Firestone and Scholl seems to be that the burden lies with the party who claims penetrability, and that their task is limited to denial — but can this be correct?

If burden of proof is taken to mean 'an allocation ... which sets a strength (weight) of argument required by one side to reasonably persuade the other side' (Walton, 2011), it seems Firestone and Scholl assume the weight of evidence lies with the impenetrability thesis. Recent developments in neuroscience, which I describe below, have however raised significant physiological and functional obstacles to the impenetrability thesis, which will have to be accommodated in the thesis. Although I think the evidence of behavioural studies weighs against the thesis, thesis proponents have an additional and difficult task 'to reasonably persuade the other side' that they can accommodate the physiological and functional obstacles. I think the additional requirements shift the burden to them.

Firstly, the strong version of encapsulation postulates a completely encapsulated visual system (without specifying the limits of that system): this is a very strong claim from a neuroanatomical perspective, given recent research showing the degree neuronal interconnectivity.

Markov *et al.* (2013) claim that each region of the brain is connected to 66% of the rest of the brain. These connections are mostly with neighbouring areas, but determining actual connectivity can only be done by considering the cascading nature of brain interconnectivity. A signal may originate in almost any area, and as a result of a cascade of interconnectivity between brain region, end up in virtually any other region. This interconnectivity is at the heart of intrinsic network theory, which I have touched on briefly. This evidence of widespread connectivity makes the strong encapsulation thesis strong to the point of being unlikely — it must fall to the impenetrability theorist to demonstrate that visual systems are isolated from this connectivity.

Secondly, there are functional problems for supporters of the strong impenetrability thesis: recent research has shown that there exist multiple neural feedforward and feedback structures between the visual cortex and other regions of the brains. It is for the impenetrability theorist to provide an alternative account of these structures — or to claim and justify their epiphenomenal nature (Gilbert & Li, 2013). Lacking an account of these features, she has not properly made her case, and the onus rests on her.

Thirdly, even the lesser claim of the weaker impenetrability thesis, first advocated by Plyshlyn, (that only early vision (V1) processes that are encapsulated or isolated), faces significant problems. Making any claim about the limits of V1 functioning seems bold, given how little is known about the region. Despite it being extensively studied, it is estimated that only 40% of its processing can be explained. Olshausen & Field have this to say about the challenge of understanding V1:

'Given the extensive feedback connections into V1, in addition to the projections from pulvinar and other sources, it seems unlikely that we will ever understand V1 in isolation. Thus, our investigations must also be guided by how V1 fits into the bigger picture of thalamo-cortical function.' (Olshausen & Field, 2005, p. 1691.)

Given the region's high connectivity, and given that we understand so little of its processing function, any claim about the limits of its functionality faces the danger of appearing wholly unmotivated — indeed, that its function is largely unknown undermines an impenetrability thesis, and it is for the impenetrability theorist to provide support for her claims. The onus lies not with the person who accepts that little is known of its functioning, but on the person who claims to know its limits.

Any apparent impasse on empirical evidence may now be viewed in a new light. Even leaving aside all of the arguments I presented in Chapter Five, Firestone and Scholl's claim of encapsulation needs to clear at least these anatomical and functional hurdles before the onus passes to others to disprove the encapsulation thesis. I think adding what I presented in Chapter Five makes the matter clearer. In short, the burden of proof is on impenetrability theorists such as Firestone & Scholl to make a case for their position. Their strategy of denying other's empirical evidence is insufficient, for if it succeeds, they are left still to prove their own positions against anatomical and functional hurdles.

With that principle established, I will now turn to the empirical evidence, starting with mental imagery: there is a wealth of evidence that visual imagery and perception share neural architecture, which has led Prinz to call it the most 'obvious' and Block 'dramatic' evidence against isolation or encapsulation of V1 (Prinz, J. 2006; Block, 2016). As I will show, however, although the evidence is there, the matter is not as straightforward as those descriptions may suggest. Shared neural architecture is insufficient to exclude encapsulation.

### **3.0 Mental Imagery**

If I say the words 'Eiffel Tower,' or 'The Queen of England', visual images are likely to appear in your mind, a sort of 'seeing in the mind's eye'. If these images can be shown to be visual images produced by V1, then early vision would seem not to be encapsulated — rather they appear to be open to signalling from non-visual stimuli.

Kosslyn offers a test which he describes as providing the strongest evidence of this position. Subjects were presented with and asked to memorise four boxes of around five inches square, set out in a quadrant. Each box contained an image of stripes or bars in a variety of widths, number and orientation (see Figure 5.1). After a period of memorisation, subjects were asked to close their eyes and visualise the entire image. They were then cued to visualise two of the quadrants, and to compare a feature common to both (such as length). PET neuroimaging showed that V1 was stimulated by the visualisation process exactly as if the stimulus had been visual — the exact position of the stimulus varied according to the size of the object visualised, in the same way it would have with visual stimulation (Kosslyn, 1999). This result was later replicated (Tootell et al., 1998). The conclusion that V1 is involved in mental imagery was further tested using a technique known as Transcranial Magnetic Stimulation (TMS), which can be used to test the involvement of a particular area by inhibiting it during testing: subjects found more difficulty in visual imagery when V1 is inhibited using TMS than otherwise. The same TMS inhibition also produced difficulty in vision (Kosslyn, 1999).

Much as this has been heralded as evidence against encapsulation, it seems insufficient. Arguments in favour of encapsulation are not motivated in principle against information entering V1 other than from perceptual sources, but from what that information may do — how it may influence perceptual imagery, so that we are not seeing 'what's out there'. Kosslyn et al.'s experiment certainly shows that the same neural architecture is utilised by both vision and mental imagery, but it does not show that perceptual imagery may be influenced by top-down signalling. In a real sense, the results are consistent with encapsulation.

Encapsulation is expected to preserve perceptual imagery from unwanted external influences (so we see 'what's out there'), and it requires two aspects to operate effectively: input must be selective and controlled, and processing must be isolated from external influences. An encapsulated process can be imagined as a pipe: encapsulation demands controls over what may enter the pipe at one end, as well as isolation of processes so that

nothing can affect what occurs within the pipe. With these covered, what emanates from the other end of the pipe is of a known type. The studies by Kosslyn et al. and others focus only on input (for other examples, see Brockmole et al., 2002; Lewis et al., 2010; Reddy et al., 2010) — they reveal that what may enter the pipe is not restricted to perceptual information, and may include visual stimuli from another source, but they reveal nothing about what goes on in the pipe. They show that V1 reacts to visual stimuli from two sources, but how it processes perceptual stimuli may be unaffected, and so it may still be considered encapsulated.

Kosslyn claims that the studies show 'our beliefs and expectations can (at least under some circumstances) modulate what we actually see during perception' (Kosslyn et al., 2001, p. 640). He does not expand on the circumstances or the nature of the modulation, nor is it clear what modulation might be expected, and his meaning is far from clear. I think he overstates the case: the simple fact that two different types of image are produced does not entail any modulation or interaction. Indeed, it seems reasonably clear that in the ordinary course of events, mental imagery and perceptual images are kept distinct, both synchronically (we know that we imagining the Eiffel Tower, not seeing it) and diachronically in memory (we remember we imagined it, and did not see it). A claim of modulation requires evidentiary support.

Brockmole et al. (p. 2002) conducted experiments from which they claim that mental and perceptual images may be integrated. In their experiments, participants were invited to form composite images from remembered and perceived images, by filling in dots missing from an array of dots, based on an array previously seen. That missing dots were accurately filled in was taken as the result of a merging of mental and perceived imagery, and was hailed by Block (2016) as 'dramatic' and demonstrating 'a direct content-specific effect of cognition on perception'. Much as I am seeking evidence against Shape Only View perception, I am sceptical that the experiments demonstrated that

images were actually merged. The results are also compatible with the simple use of memory to compare the current image with the previous. It is possibly satisfactory to describe my recognising my pen as my merging stored mental images of the pen with those of the percept, but recognition is not a matter of top-down influences on primary visual cortex processes. Top-down signalling uncontroversially meets bottom-up signalling in object recognition, but at levels subsequent to V1. I prefer to look for more solid evidence.

Dijkstra et al. (2021) produced results which they claim demonstrated that mental imagery and perceptual imagery can be confused. The researchers presented subjects with gratings at a threshold of vision, obscured by 'dynamic noise', both while subjects were imagining or not imagining those same gratings. They found that the perceptual image was more readily identified when it was also being imagined. This suggested to the researchers that mental imagery was being mistaken for perceptual imagery, which may be the case — on the other hand, it may simply be explained by anticipation: participants were primed to anticipate the grate by imagining it (see Section 4.5). But this is not on the face of it a case of modulation, and nor is it evidence against Shape Only View perception.

To summarise: showing that the early visual system has two potential sources of input (and that there is the possibility of confusion of resultant images) is insufficient to exclude encapsulation. It is this type of reasoning which appears to motivate Sam Clark, who suggests that vision consists of a number of encapsulated modules, each with input restrictions that may allow access by top-down information (Clarke, 2020). This would preserve the possibility of a Shape Only View perception.

To provide clear evidence against encapsulation, what is needed is evidence of processes themselves being subject to top-down influences i.e., that perceptual imagery is affected by these influences, so we may not be seeing 'what's out there' — that mental processes play a role that excludes a Shape Only View. Mechelli et al. (2004) appear to have found that evidence. Their research focused on category-specific activation: certain

regions had previously been identified as associated with particular categories of visual stimulus, and the question was whether the same associations would be apparent where the stimuli were visualised, not perceived. The three particular associations were the 'house-responsive' region, which displays greater effective connectivity when viewing house stimuli, 'face-responsive', which displays greater effective connectivity with face stimuli, and 'chair-responsive' with chair stimuli — all to the early visual cortex. Mechelli found the same connectivity results when houses, faces and chairs were visualised rather than perceived — the greater effective connectivity being with the pre-frontal cortex. O'Craven and Kanwisher (2000) produced similar evidence. This on its own is still insufficient and is consistent with Sam Clark's notion of there being a number of modules: conceivably, a 'category-specific' module is obtaining input from different sources. What is required is evidence of some form of modulation, some form of interaction between mental imagery and perceptual imagery.

The research goes further, indicating that processes may change depending on the stimulus. Where clear images (of houses, faces and chairs) are presented slowly, there is negligible effective connectivity with the pre-frontal cortex. But, when the pictures are masked and briefly presented, effective connectivity with the pre-frontal cortex increases. In other words, the process changes when the stimulus is inadequate — in this case, top-down signalling is called upon. This is not an input entering one end of the pipe: this is a process supposedly within the pipe that calls for information from an external source — the conclusion is that the pipe is not encapsulated. Top-down signalling is clearly influencing visual images at the earliest possible stages.

Esterman and Yantis (2009) offer some related evidence, demonstrating an increase in category-specific visual cortical activity in the absence of strong visual stimulation, which they put down to anticipation — expecting to see a chair will cause an increase in the chair-specific region of the visual cortex. Where Mechelli used short-duration exposure to images, Esterman and Yantis had images emerging from a scrambled background: recognition was quicker when the images matched the expectation.

In the end, then, there is evidence from mental imaging that points away from encapsulation — it is a little less obvious than may first appear, but there is clear evidence that mental imagery modulates perceptual imagery. It is not evidence that the top-down affect alters the perceptual image, so that we no longer are seeing 'what's out there', but the potential for such alteration is there.

There is also evidence elsewhere of this type of alteration: intermodal communication, for instance, where information from one sensory system is communicated to another, shows both substantial evidence against encapsulation, and evidence of alteration.

## **4.0 Intermodal Communication**

### **4.1 Generally**

The experience of intermodal communication, where the input of one sense is used to enhance another is familiar: imagine a crowded room with a high level of ambient sound — music, laughter and voices are making it difficult to hear exactly what your colleague is trying to describe to you. You quickly realise that only by watching her mouth can you hear what she is saying — Sumby and Pollack (1954) estimate that watching someone's mouth while they are talking makes us able to tolerate between ten and fifteen decibels more background noise. Conversely, hearing can be adversely affected if combined with incongruent visual speech (McGurk & MacDonald, 1976 — according to MacDonald (2018), this paper has been cited more than 8,000 times. Interaction between vision and hearing can both hinder and help.

Cases of intermodal communication are diverse: the ventriloquist effect is familiar, and is not confined to active ventriloquism — we experience it in cinemas and watching television, when voices seem to come from actor's mouths rather than from speaker equipment. Here audio spatial information is integrated with visual information (or, audio signalling is 'captured' by visual signalling). In the so-called sound-induced flash illusion, participants report seeing two flashes when a single flash is presented close in time with

two beeps (Shams et al., 2000); the primary visual cortex appears to be linked to the accuracy of reading Braille by early-blind individuals (Cohen et al., 1997; Sadato et al., 1996).

There is substantial evidence of intrinsic coupling between senses, particularly between primary visual and primary auditory cortices, where the evidence is sufficiently strong to point to there being a network between the two senses, controlled by a central controller (Eckert et al., 2008; see also Clavagnier et al.; 2004, Murray et al., 2016). There is also some indication of a sensory network combining all senses, marshalled under separate, centralised control. The idea of such a combined network is attractive: if we consider that what is evolving is the organism as an integrated whole, rather than small units within that organism, a combined sensory array would seem the ideal platform for gaining the maximum in sensory information (Cohen & Burnston, 2015). The existence of such a network would raise a number of different questions about isolation of processes (such as whether each sense might be isolated, or the whole network; if the latter, would that preserve perceptual images as being a Shape Only View). That being said, the question for now is whether the evidence of coupling between the primary visual cortex and primary auditory cortex (and associated evidence) weighs against encapsulation. The case of mental imagery demonstrated that the primary visual cortex is capable of receiving input from imagination, which was insufficient to weigh against encapsulation: another input to produce mental visual imagery by itself will not violate the encapsulation. Visual/auditory information sharing is somewhat different, as it contributes not to vision, but to multisensory processing (Murray et al., 2016). This would only become a problem (from an encapsulation viewpoint) if the result were to interfere with visual perception, so that we may no longer be seeing 'what's out there' — the issue changes from a matter of input only to a matter of interference in processing. And there is evidence that this interference does occur.

## 4.2 Sound-induced Flash Illusion and the Ventriloquist Effect

I have mentioned the sound-induced flash illusion, but more detail will be useful here. The experiment consists in simultaneous visual and auditory stimuli: in Shams et al.'s original test, a single white disk was flashed onto a black background at intervals of 50 milliseconds, and each flash was accompanied by a variable number of beeps, each 57 milliseconds apart. Participants were asked to judge the number of flashes. Consistently, participants judged there to have been two flashes when a single flash was accompanied by more than one beep (Shams et al., 2000; Watkins et al., 2007). Auditory information is interfering in visual processing, and the result is that we are not seeing 'what's out there' — we are not enjoying a Shape Only View. The conclusion is then that V1 is not encapsulated.<sup>23</sup>

The results Shams et al. and Watkins et al. found have been extensively confirmed over 20 years, with neuroimaging and behavioural experiments (for a review see Hirst et al., 2020). As I have mentioned briefly before, the illusion appears robust, in that it is resistant to training. Rosenthal et al. (2009) conducted sound-induced flash illusion experiments, but provided feedback, allowing participants the opportunity to learn what was happening, so they may override the illusion. Feedback and learning had no impact on the illusion.<sup>24</sup>

The sound-induced flash illusion, replicated as it has been over years offers strong evidence of intermodal interference — but interference is not necessarily communication. Interference may be the result of a simple wiring glitch, one that manifests only in given rare circumstances, and offers no significant threat to survival — it may simply be evidence that we are unable to process these two specific types of signalling

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<sup>23</sup> The result will be the same if it turns out that there is a single common sensory network: whatever value this network might add, visual perception is affected so that we do not always see what is out there.

<sup>24</sup> Feedback produced a difference when participants were offered a financial incentive, but participants who answered 'correctly' for their reward later admitted to having lied about their experience.

simultaneously. For there to be evidence of communication, there must be evidence of something like a variable selection process, in which for instance the visual signal is selected over the auditory in one situation, and the auditory over the visual in another. This evidence can be found in the ventriloquism effect, in which either visual signals capture auditory signals or auditory signals capture visual signals (Slutsky & Recanzone, 2001).

Alais and Burr (2004) presented participants an image of a blob simultaneously with a click, and asked them to imagine them as representing a single event, such as a ball hitting the screen. In one set of stimuli, the blob and click were offset from each other, whilst in the other, they coincided — participants were required to identify where the single event occurred. The test was repeated over different sizes and intensities of the blob, and different volumes of the click. Results showed that the visual and auditory stimuli were weighted against one another, so that the stronger stimulus would be used to identify where the event took place. This appears to be a case of intermodal communication, and one showing that visual information may be ignored in favour of other information in building an image, in this case, where the event took place. The notion here is that visual information generally has higher acuity than auditory information, and is thus generally selected over the latter, causing the usual ventriloquism effect. Where visual information is judged as having lower acuity of the two, auditory information will be selected (Callan et al., 2015). In this case, we may indeed not be seeing 'what's out there'. Once again, however, this may not constitute evidence of true selection — it may simply be that the stronger signal prevails: it may be that the signal with higher spatial resolution always overpowers the one with lower, which is a matter of brute force rather than selection (visual images usually have higher spatial resolution than auditory representations (Bruns et al., 2014)). True selection and thus true communication demands more than either a glitch or brute force.

Berger and Ehrsson (2013, 2018) were able to induce a ventriloquism effect using mental imagery of the source of a sound: participants were asked to visualise the source

of a sound, and the ventriloquism effect produced was the same as when participants actually saw the supposed source of the sound. This is a mixed result for my purposes. On the one hand, it demonstrates a top-down affect on perception: something we imagine can affect perception, can alter the representation of the state of affairs. On the other hand, it does not help with the brute force problem: it may be that the mental image retains the high spacial resolution of a representation from perception, leaving it able to dominate the auditory signalling: the imagined image simply has sufficient force for it to prevail.

There is, however, evidence that top-down influences can affect the ventriloquism effect in a manner excluding the brute force option. Bruns et al. (2014) devised a reward-based experiment, in which participants were offered a reward for producing precise and accurate spacial localisations of tones — something which would require them to ignore any ventriloquism effect. The goal of achieving the reward was thus put into conflict with reliance on visual signalling — participants were incentivised to overcome the ventriloquism effect produced by dominant visual signalling. As it turned out, the ventriloquism effect was modulated by the size of the reward.

Alais and Burr (2003) also conducted intermodal interference in the 'flash-lag' effect, in which a flash shown on a screen at the same time and space as a moving light source is viewed as lagging behind the moving source. The researchers found this effect also occurred intermodally. They presented participants with either a moving sound source intersecting spatially with a stationary flash, or a moving light source intersecting spatially with a stationary burst of sound. In each case, the flash or burst was perceived as appearing behind the moving source. Again, auditory information is overriding visual information, and we are not seeing a Shape Only View.<sup>25</sup>

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<sup>25</sup> The visual-only flash-lag effect produced some intriguing results for Noguchi and Kakigi. They found the effect was diminished when the moving and flashed elements consisted of comprehensible kanji symbols, but not when pseudo-kanji symbols were used. The researchers speculate this showed some involvement of, and a rapid response from, knowledge-based perceptual pathways (Noguchi & Kakigi, 2008). Its impact on the encapsulation debate is unclear.

The ventriloquist affect initially looked like it could be the product of a simple glitch, and then a matter of brute force; it turns out that the ventriloquist effect is an effect that can be modulated by top-down affects. This modulation points towards proper intermodal communication. Where there is a conflict between two signals, there is an active process by which the conflict may be resolved, prior to production of the representation. This in turn points towards visual and auditory processes being part of one single system — and is groundwork for further thinking that the all perceptual processes form part of one system. This accords with the perspective I am urging. The modulation leads us to another conclusion — that top-down affects have an impact on the representation produced.

It is worth pausing here for a moment to emphasise this conclusion, for it is significant. The evidence of intermodal communication is clear, sufficiently clear to indicate a network operation between primary visual and auditory circuits. This communication has been shown to maximise the usefulness of all available sensory information (Ernst & Banks, 2002; Gingras et al. 2009; Cohen et al., 1997; Newell et al., 2001). Feedback pathways to V1 are being utilised to this end. Once again, this points towards perceptual processes being linked, and towards the perspective I have been urging: that we developed as a single whole, and developed various interlinked processes to serve our survival and our thriving. Survival and thriving are the driving forces behind this whole-organism evolutionary development — a Shape Only View simply does not enter into consideration.

### **4.3 Synaesthesia**

There is another reasonably rare type of intermodal communication: seeing music as colours, experiencing a letter as a colour, or experiencing taste when reading or listening — synaesthesia results from intermodal communication. It can manifest in a variety of ways (Simner (2011) counted 61 variants), but all variants will involve a stimulus to one sense causing a response in another sense. Music–colour synaesthesia involves

seeing colour when hearing sounds (Ward et al., 2006) for instance, and lexical–gustatory synaesthesia involves the experience of taste in the mouth when reading or speaking (Ward & Simner, 2003).

Two theories have been put forward for the phenomenon of synaesthesia, first, that in those with the condition, there is an overabundance of connections between brain regions in synaesthesia, which produces a 'spillover' (Hubbard et al., 2011), and, second, that the usual inhibitions that prevent 'spillover' between regions are absent in synaesthesia (Tomson et al., 2011). Tests carried on by Fassnidge et al. on audio-visual synaesthesia were consistent with both theories (Fassnidge et al., 2019). There is evidence, however, that synaesthesia can be learned, both by children and adults, and that its development may play an important part in childhood learning (Watson et al., 2014). That it can be learned seems to point towards existing pathways usually being inhibited — the learning process will involve reduction of that inhibition.

In either event, audio-visual synaesthesia provides evidence of cross-modal information flow, so synaesthesia seems an ideal candidate as evidence against encapsulation. I do not think this is correct, for two reasons. First, encapsulation focus is on the primary visual cortex, on object detection, and not on later visual processes, and it is not clear to what extent V1 is involved in synaesthesia.<sup>26</sup> Second, and perhaps more significantly, there is no indication that synaesthesia experiences either modulate perceptual visual experiences or otherwise affect them — as Simner puts it, '...

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<sup>26</sup> The evidence is mixed. In a single-patient study in 2001, Aleman found significant V1 activity during synaesthesia (Aleman et al., 2001), and Terhune demonstrated in 2011 that synaesthesia can be augmented by excitation of the primary visual cortex (Terhune et al., 2011). Sadato found V1 was stimulated in blind people while reading braille (and later visual areas), but this evidence is of more general intermodal connectivity (Sadato et al., 1996). But, there is significant evidence to the contrary. Paulesu concluded that colour/hearing synaesthesia appeared not to involve V1 at all (Paulesu et al., 1995), while Nunn et al. (2002) found that cortical areas thought to be involved specifically in colour analysis (V4/V8) were involved in colour/hearing synaesthesia, and thought V1 was not involved (Nunn et al., 2002). Eagleman and Goodale are inclusive in their conclusions: because the synaesthesia experience is complex, involving at least awareness of the percept, an affective reaction, and memory, there will be a number of different regions involved, possibly including V1 and higher visual levels (Eagleman & Goodale, 2009).

synaesthetic sensations supplement, but do not replace, the usual modality-specific perceptions.' Even if there is V1 involvement, then, the matter of synaesthesia becomes a matter of input only, and not of processes. As in the case of mental imagery, where there are two types of image, the argument for encapsulation stands as long as there is no modulation of perceptual imagery. There is no evidence of such modulation in the case of synaesthesia, and the phenomenon is therefore consistent with encapsulation.<sup>27</sup>

#### **4.4 Conclusion on Intermodal Communication**

Inter-modular communication does, then, offer material evidence against encapsulation, and against Shape Only View perception, but synaesthesia seems to have no impact on visual perceptual. On the other hand, general inter-modular communication, through a visual/auditory network and possibly a larger network incorporating other senses, offers plentiful evidence against both encapsulation and Shape Only View perception.

Gathering more evidence, I will now turn to task-related effects on vision. Here I will present evidence of top-down influences that affect which aspects of the external world we attend to — the evidence does not go directly to the question of Shape Only View perception, but obliquely builds my case by demonstrating that perception is about individual concerns, rather than about 'what's out there'.

#### **5.0 Task-related Effects**

When given a task, our attention will be directed towards elements of that task, including its visual aspects — if we are instructed to judge the distance between two objects, for instance, we will attend to those objects visually, and this attention will be the

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<sup>27</sup> There is an additional complication — in some cases of synaesthesia, the input is of the same type, but the result is different. For instance, perception of a written letter may produce the visual experience of a colour: there is no alteration of the input into the pipe, but processes within the pipe must have changed. This type of case must fall outside the question of encapsulation (Grossenbacher & Lovelace, 2001).

result of top-down influences (the instructions). Attentional effects are akin to turning your head, or opening your eyes, and they reflect top-down influences on perception — but they do not reflect influences on primary visual cortex processes, or indeed on any part of the visual process. As ever, what is of interest to us are those influences that do affect processes — non-attentional top-down influences. Much of the research into task-related effects focusses on attention (for an overview, see Gilbert & Li, 2013), but there is one non-attentional task-related effect that does affect processes: top-down influences can 'tune' neurones to receive a particular type of stimulus. In brief, top-down signalling determines which aspects of the world are of interest — 'what's out there' or a Shape Only View, is less of a concern than what it is that may affect individual concerns.

Ramalingam et al. (Ramalingam et al., 2013) describe these top-down influences on V1 in strong terms, how it turns the neurone into 'an "adaptive processor" that runs different computational programs as dictated by feedback from higher-order areas.' Gilbert and Li describe the 'tuning' of visual neurones: a visual neurone's functioning is characterised by its tuning to different types of stimuli, such as line direction or orientation — it is a type of stimulus sensitivity. They also describe neurones as adaptive processors, which can change their tuning according to the task at hand. Gilbert and Li are clear: such changes can be produced by top-down influences, to enable greater reactivity to stimuli salient to that task — and there is a 'varied array' of potential top-down influences. They make a much broader claim: tracing feedback paths to the primary visual cortex, they claim that there are large parts of the cerebral cortex that can exert influences over the functioning of individual neurones, making each neurone potentially a 'microcosm of the brain as a whole'.

Very clearly, neuronal tuning influences are not a matter of input into the pipe, but rather of direct influence on what goes on in the pipe. This is evidence against encapsulation, and it comes with some forceful comments from Gilbert and Li about feedback paths and top-down influences generally. This top-down influence does not necessarily affect the form of individual objects but it is nonetheless significant in my

thesis, as it shows a clear top-down neural pathway to V1. It also demonstrates that individual concerns and not 'what's out there' are the driving force behind visual perception.

Top-down effects associated with expectation and prediction take this position further and offer further evidence for my position — but importantly they also offer an early glimpse of elements of image building that I will be using later.

## **6.0 Expectation (and Prediction)**

Our physical world is a largely regular and predictable physical world, in which much is stable and change takes place slowly: my office, home, and the mountains surrounding me constitute a scene that is largely fixed. This predictability allows us to take short cuts, to build models of what it is that we are likely to see around us (and so free up resources), and not need to attend to every detail in the visual field. We may resort to prediction in the place of pure perception — we predict that what we think is there is actually there. But here I must pause to make the same distinction that Ogilvie and Carruthers make and I referred to in Chapter Four: the distinction is between full error-signal driven predictive processing of the kind endorsed by Andy Clark (2019) and a more modest predictive model restricted to vision. I am referring only to the latter. Summerfield (2011) expresses the limited version in the phrase 'aspects of the environment that are constant (and thus conform to previously formed expectations) do not have to be processed in depth repeatedly'.

In other words, expectation can be used to guide the construction of an image — I know and may predict what my office looks like, the view from my window and so forth. Expectation may also be used where visual information is ambiguous (as is often the case) — Summerfield's example is that the question 'Is that a post box or a bread box?' will be answered not by close visual examination, but by the context ('Am I in the street or the kitchen?'). The mechanism by which expectation guides image building was investigated

by Bar: his findings, and other findings following his research, offer neuroimaging evidence of the precise type needed for my thesis to succeed.

Traditional models of object recognition recognised only feedforward processes from early vision, essentially object detection, to object recognition. Recognising, however, that these traditional models of exclusively bottom-up processing were being called into question, Bar tested a specific model for top-down (orbitofrontal cortex) influences on visual cortex activity (Bar, 2003, 2007; Bar et al., 2006; see also Ghuman et al., 2005; Kveraga et al., 2010). Targeting object recognition, Bar and his team postulated that for the orbito-frontal cortex (OFC) to assist in this task, early low spacial frequency signalling (LFS) from V1 to OFC would be necessary. They further thought this signalling would commence before recognition processes began in the temporal (later vision) regions, and would have the effect of triggering top-down signalling from the OFC. In other words, they envisaged a feedforward-feedback loop between V1 and OFC being established extremely early, with imagery in very low resolution and independently of any similar loops with later visual regions, in order to facilitate object recognition.

In the first experiment, participants were required to recognise images of familiar objects displayed between two masking images. The same familiar images were presented up to five times, in differing orders, and interspersed with other images. Results showed that familiar objects that had not been recognised in initial exposures were nonetheless recognised in later, identical, exposures. The results were taken to confirm that there is interaction between the early vision regions and the OFC, and that functional connectivity is stronger where images contained principally LSF than those that contained principally HSF. This balance towards LSF images pointed researchers to postulate the sequence:

1. initial perception in V1; leading to
2. low spacial frequency (LSF) feedforward signalling to the orbito-frontal cortex(OFC) from V1; triggering
3. OFC feedback signalling of an image to V1 as a 'predictive initial guess'.

Importantly, although Bar was examining object recognition, as is evident, his

theorising necessarily related to the earliest stages of processing in V1. And his theorising was confirmed by their experiments. This is important in the case against encapsulation, because it clearly demonstrates top-down effects in V1 processes. But it will also be important in the next chapter, as it provides insight into an image-building model in which top-down influences play a major part. What I will present there, and what I am building towards, is a feedforward-feedback loop in which more and more information relating to image building is gathered from top-down signalling, including information on affect.

Kok et al. (2013) produced similar findings to Bar et al. concerning feedforward and feedback, but in this case participants' expectations were primed with subconscious cueing. Their experiments required participants to identify the direction in which a set of dots was moving, with expectation primed with a non-obvious (and hence possibly subconscious) cue. Each repetition of the exercise commenced with an audio signal, the tone of which, unbeknownst to the participants, was correlated to the direction the dots would take. Of twenty-one participants, just three noticed some type of correlation between audio tone and direction, and only one of those accurately. The balance of eighteen did not notice any correlation. This notwithstanding, participants showed the same expectation-related results as Bar found. The researchers considered that expectation produced signalling to early vision that affected not only amplitude and sharpness of the image, but the form of the image itself (this is Bar's 'initial guess', that dictates future image construction.

Kok et al. suggest their findings are consistent with a predictive model of perception, in which each cortical area develops its best solution through a combination of bottom-up and top-down signalling, and passes that solution both upwards and downwards (feedforward and feedback) ultimately to produce the best image. Recent research by Aitken et al. (2020) produced similar results to those of Bar and Kok et al., but Aitken et al. make a reservation it is worth repeating here. They draw the same distinction drawn earlier, and which is drawn by Ogilvie and Carruthers: their findings, they said, supported the notion that 'predictive feedback plays a crucial role in sensory processing',

but it does not necessarily support predictive coding generally. In particular, they suggest that further research is needed to test the hypothesis of error signalling that is central to most predictive processing models (Friston, 2005; Rao & Ballard, 1999). I am intent on confining myself to the more limited theory of prediction and feedback, without entering the wider field of predictive processing.

Leaving aside the predictive processing model, then, the evidence gathered from Bar, Kok et al. and other's experiments is clear: there is feedforward of LFS signals from V1 to the OCF, and it precipitates a feedback which is instrumental in image formation. Very early low resolution images are fed forward to the OCF for assistance in both image building and object identification. The OFC provides feedback of its best guess as to the nature of the image, to assist in object identification.

What is abundantly clear from this is that the primary visual cortex is not encapsulated. Input from the OFC quite clearly constitutes an influence on early vision's processes of image building. This is influence on processes within the pipe, and not simply on input into that pipe. Images are not built using only external perceptual data, but with information from other cognitive resources.

## **7.0 Summary and Conclusion**

In this chapter, I have set out empirical evidence against encapsulation, against the argument that (at least) object recognition and identification reflect a Shape Only View position. The evidence is that top-down influences are prevalent even at the earliest stages of vision. This empirical case sits comfortably with the theories I discussed in Chapter Five, in which I made the case that the fears of relativism in perception are misplaced, and cannot justify a theoretical need for Shape Only View perception. Mental imagery, intermodal communication, and task-related 'tuning' of the retina are all evidence of how top-down affects influence visual representations, and exclude the notion of Shape Only View perception.

I also presented evidence of feedforward and feedback pathways, used in the earliest stages of vision to gather data from general cognitive resources: these data assist in the building of a representation. This is significant evidence. Taking the perspective I am urging, it is important for the individual to be presented with a representation that contains as much relevant information as is possible, so she may react rapidly and appropriately. There is no reason to think that a Shape Only View of the state of affairs is formed by perceptual processes and then presented to other processes for reaction, and sound reasons to think otherwise, based on evolutionary considerations of survival and thriving. I argued this position on a theoretical basis in Chapter Four, and in this chapter I presented evidence that the processes involved in image building involve an exchange of information between early visual processes and other cognitive processes. Finally, I presented evidence on the pathways that are used in this information exchange. On the evidence I have presented so far, the information exchange takes place to prioritise the concerns of the individual: the question to be abstracted from the process is not 'What is the Shape Only View of the state of affairs?', but, rather, 'How is this state of affairs likely to affect me, and in what way?'

I will develop this theme in my next, final chapter, taking up the question and showing how information relevant to its answer becomes incorporated in the representation. There I will take up research by Bar and Kok and their associates as to the nature of the information drawn upon in formation of a representation, and I will apply it specifically to emotion. In the result, I will demonstrate how emotion plays its part as a top-down influence on image building, and, more specifically, how emotion can shape the form of objects in a representation.

## References

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- Aitken, F., Menelaou, G., Warrington, O., Koolschijn, R. S., Corbin, N., Callaghan, M. F., & Kok, P. (2020). Prior expectations evoke stimulus-specific activity in the deep layers of the primary visual cortex. *PLOS Biology*, 18(12), e3001023. <https://doi.org/10.1371/journal.pbio.3001023>
- Alais, D., & Burr, D. (2003). The “Flash-Lag” Effect Occurs in Audition and Cross-Modally. *Current Biology*, 13(1), 59–63. [https://doi.org/10.1016/S0960-9822\(02\)01402-1](https://doi.org/10.1016/S0960-9822(02)01402-1)
- Aleman, A., Rutten, G.-J. M., Sitskoorn, M. M., Dautzenberg, G., & Ramsey, N. F. (2001). Activation of striate cortex in the absence of visual stimulation: an fMRI study of synesthesia. *Neuroreport*, 12(13), 2827–2830. <https://doi.org/10.1097/00001756-200109170-00015>
- Bar, M. (2003). A Cortical Mechanism for Triggering Top-Down Facilitation in Visual Object Recognition. *Journal of Cognitive Neuroscience*, 15(4), 600–609. <https://doi.org/10.1162/089892903321662976>
- Bar, M. (2007). The proactive brain: using analogies and associations to generate predictions. *Trends in Cognitive Sciences*, 11(7), 280–289. <https://doi.org/10.1016/j.tics.2007.05.005>
- Bar, M., Kassam, K. S., Ghuman, A. S., Boshyan, J., Schmid, A. M., Dale, A. M., ... Halgren, E. (2006). Top-down facilitation of visual recognition. *Proceedings of the National Academy of Sciences*, 103(2), 449–454. <https://doi.org/10.1073/pnas.0507062103>
- Berger, C. C., & Ehrsson, H. H. (2018). Mental Imagery Induces Cross-Modal Sensory Plasticity and Changes Future Auditory Perception. *Psychological Science*, 29(6), 926–935. <https://doi.org/10.1177/0956797617748959>
- Berger, Christopher C., & Ehrsson, H. Henrik. (2013). Mental Imagery Changes Multisensory Perception. *Current Biology*, 23(14), 1367–1372. <https://doi.org/10.1016/j.cub.2013.06.012>
- Block, N. (2016). Tweaking the concepts of perception and cognition. *Behav Brain Sci*, 39, e232–e232. <https://doi.org/10.1017/S0140525X15002733>
- Brockmole, J. R., Wang, Ranxiao Frances, & Irwin, D. E. (2002). Temporal Integration Between Visual Images and Visual Percepts. *Journal of Experimental Psychology. Human Perception and Performance*, 28(2), 315–334. <https://doi.org/10.1037/00961523.28.2.315>
- Bruns, P., Maiworm, M., & Röder, B. (2014). Reward expectation influences audiovisual spatial integration. *Attention, Perception, & Psychophysics*, 76(6), 1815–1827. <https://doi.org/10.3758/s13414-014-0699-y>
- Callan, A., Callan, D., & Ando, H. (2015). An fMRI Study of the Ventriloquism Effect. *Cerebral Cortex*, 25(11), 4248–4258. <https://doi.org/10.1093/cercor/bhu306>
- Clark, A. (2019). *Surfing uncertainty : prediction, action, and the embodied mind*. Oxford University Press.

- Clarke, S. (2020). Cognitive penetration and informational encapsulation: Have we been failing the module? *Philosophical Studies*. <https://doi.org/10.1007/s11098-020-01565-1>
- CLAVAGNIER, S., FALCHIER, A., & KENNEDY, H. (2004). Long-distance feedback projections to area V1: Implications for multisensory integration, spatial awareness, and visual consciousness. *Cognitive, Affective, & Behavioral Neuroscience*, 4(2), 117–126. <https://doi.org/10.3758/cabn.4.2.117>
- Cohen, J., & Burnston, D. C. (2015). Perceptual Integration, Modularity, and Cognitive Penetration. <https://doi.org/10.1093/acprof:oso/9780198738916.003.0005>
- Cohen, L. G., Celnik, P., Pascual-Leone, A., Corwell, B., Faiz, L., Dambrosia, J., Honda, M., Sadato, N., Gerloff, C., Catala´, M. D., & Hallett, M. (1997). Functional relevance of cross-modal plasticity in blind humans. *Nature*, 389(6647), 180–183. <https://doi.org/10.1038/38278>
- Dijkstra, N., Mazor, M., Kok, P., & Fleming, S. (2021). Mistaking imagination for reality: Congruent mental imagery leads to more liberal perceptual detection. *Cognition*, 212, 104719. <https://doi.org/10.1016/j.cognition.2021.104719>
- Eagleman, D. M., & Goodale, M. A. (2009). Why color synesthesia involves more than color. *Trends in Cognitive Sciences*, 13(7), 288–292. <https://doi.org/10.1016/j.tics.2009.03.009>
- Eckert, M. A., Kamdar, N. V., Chang, C. E., Beckmann, C. F., Greicius, M. D., & Menon, V. (2008). A cross-modal system linking primary auditory and visual cortices: Evidence from intrinsic fMRI connectivity analysis. *Human Brain Mapping*, 29(7), 848–857. <https://doi.org/10.1002/hbm.20560>
- Ernst, M. O., & Banks, M. S. (2002). Humans integrate visual and haptic information in a statistically optimal fashion. *Nature*, 415(6870), 429–433. <https://doi.org/10.1038/415429a>
- Esterman, M., & Yantis, S. (2009). Perceptual Expectation Evokes Category-Selective Cortical Activity. *Cerebral Cortex*, 20(5), 1245–1253. <https://doi.org/10.1093/cercor/bhp188>
- Fassnidge, C., Ball, D., Kazaz, Z., Knudsen, S., Spicer, A., Tipple, A., & Freeman, E. (2019). Hearing through Your Eyes: Neural Basis of Audiovisual Cross-activation, Revealed by Transcranial Alternating Current Stimulation. *Journal of Cognitive Neuroscience*, 31(6), 922–935. [https://doi.org/10.1162/jocn\\_a\\_01395](https://doi.org/10.1162/jocn_a_01395)
- Firestone, C., & Scholl, B. J. (2015). Cognition does not affect perception: Evaluating the evidence for “top-down” effects. *Behavioral and Brain Sciences*, 39. <https://doi.org/10.1017/s0140525x15000965>
- Friston, K. (2005). A theory of cortical responses. *Philosophical Transactions of the Royal Society B: Biological Sciences*, 360(1456), 815–836. <https://doi.org/10.1098/rstb.2005.1622>

- Ghuman, A. S., Kassam, K. S., Boshyan, H., & Bar, M. (2005). Cortical interactions in top-down facilitation of visual object recognition through low spatial frequencies. *Journal of Vision*, 5(8), 89–89. <https://doi.org/10.1167/5.8.89>
- Gilbert, C. D., & Li, W. (2013). Top-down influences on visual processing. *Nature Reviews Neuroscience*, 14(5), 350–363. <https://doi.org/10.1038/nrn3476>
- Gingras, G., Rowland, B. A., & Stein, B. E. (2009). The Differing Impact of Multisensory and Unisensory Integration on Behavior. *Journal of Neuroscience*, 29(15), 4897–4902. <https://doi.org/10.1523/jneurosci.4120-08.2009>
- Grossenbacher, P. G., & Lovelace, C. T. (2001). Mechanisms of synesthesia: cognitive and physiological constraints. *Trends in Cognitive Sciences*, 5(1), 36–41. [https://doi.org/10.1016/s1364-6613\(00\)01571-0](https://doi.org/10.1016/s1364-6613(00)01571-0)
- Hirst, R. J., McGovern, D. P., Setti, A., Shams, L., & Newell, F. N. (2020). What you see is what you hear: Twenty years of research using the Sound-Induced Flash Illusion. *Neuroscience & Biobehavioral Reviews*, 118, 759–774. <https://doi.org/10.1016/j.neubiorev.2020.09.006>
- Hubbard, E. M., Brang, D., & Ramachandran, V. S. (2011). The cross-activation theory at 10. *Journal of Neuropsychology*, 5(2), 152–177. <https://doi.org/10.1111/j.1748-6653.2011.02014.x>
- Kok, P., Brouwer, G. J., van Gerven, M. A. J., & de Lange, F. P. (2013). Prior Expectations Bias Sensory Representations in Visual Cortex. *Journal of Neuroscience*, 33(41), 16275–16284. <https://doi.org/10.1523/jneurosci.0742-13.2013>
- Kveraga, K., Boshyan, J., & Bar, M. (2010). Magnocellular contributions to top-down-facilitation of object recognition. *Journal of Vision*, 6(6), 813–813. <https://doi.org/10.1167/6.6.813>
- Lewis, K. J. S., Borst, G., & Kosslyn, S. M. (2010). Integrating visual mental images and visual percepts: new evidence for depictive representations. *Psychological Research*, 75(4), 259–271. <https://doi.org/10.1007/s00426-010-0304-5>
- MacDonald, J. (2018). Hearing Lips and Seeing Voices: the Origins and Development of the “McGurk Effect” and Reflections on Audio–Visual Speech Perception Over the Last 40 Years. *Multisensory Research*, 31(1-2), 7–18. <https://doi.org/10.1163/22134808-00002548>
- Machery, E. (2015). Cognitive penetrability: A no-progress report. *The cognitive penetrability of perception: New philosophical perspectives*, 59-74
- Markov, N. T., Ercsey-Ravasz, M., Van Essen, D. C., Knoblauch, K., Toroczkai, Z., & Kennedy, H. (2013). Cortical high-density counterstream architectures. *Science*, 342(6158), 1238406.
- MCGURK, H., & MACDONALD, J. (1976). Hearing lips and seeing voices. *Nature*, 264(5588), 746–748. <https://doi.org/10.1038/264746a0>
- Mechelli, A. (2004). Where Bottom-up Meets Top-down: Neuronal Interactions during Perception and Imagery. *Cerebral Cortex*, 14(11), 1256–1265. <https://doi.org/10.1093/cercor/bhh087>

- Murray, M. M., Thelen, A., Thut, G., Romei, V., Martuzzi, R., & Matusz, P. J. (2016). The multisensory function of the human primary visual cortex. *Neuropsychologia*, 83, 161–169. <https://doi.org/10.1016/j.neuropsychologia.2015.08.011>
- Newell, F. N., Ernst, M. O., Tjan, B. S., & Bühlhoff, H. H. (2001). Viewpoint Dependence in Visual and Haptic Object Recognition. *Psychological Science*, 12(1), 37–42. <https://doi.org/10.1111/1467-9280.00307>
- Noguchi, Y., & Kakigi, R. (2008). Knowledge-based Correction of Flash-lag Illusion. *Journal of Cognitive Neuroscience*, 20(3), 513–525. <https://doi.org/10.1162/jocn.2008.20033>
- Nunn, J. A., Gregory, L. J., Brammer, M., Williams, S. C. R., Parslow, D. M., Morgan, M. J., Morris, R. G., Bullmore, E. T., Baron-Cohen, S., & Gray, J. A. (2002). Functional magnetic resonance imaging of synesthesia: activation of V4/V8 by spoken words. *Nature Neuroscience*, 5(4), 371–375. <https://doi.org/10.1038/nn818>
- O'Craven, K. M., & Kanwisher, N. (2000). Mental imagery of faces and places activates corresponding stimulus-specific brain regions. *Journal of cognitive neuroscience*, 12(6), 1013-1023.
- Olshausen, B. A., & Field, D. J. (2005). How Close Are We to Understanding V1? *Neural Computation*, 17(8), 1665–1699. <https://doi.org/10.1162/0899766054026639>
- Paulesu, E., Harrison, J., Baron-Cohen, S., Watson, J. D. G., Goldstein, L., Heather, J., Frackowiak, R. S. J., & Frith, C. D. (1995). The physiology of coloured hearing A PET activation study of colour-word synaesthesia. *Brain*, 118(3), 661–676. <https://doi.org/10.1093/brain/118.3.661>
- Prinz, J. J. (2004). *Gut Reactions*. Oxford University Press.
- Ramalingam, N., McManus, J. N. J., Li, W., & Gilbert, C. D. (2013). Top-Down Modulation of Lateral Interactions in Visual Cortex. *Journal of Neuroscience*, 33(5), 1773–1789. <https://doi.org/10.1523/jneurosci.3825-12.2013>
- Rao, R. P. N., & Ballard, D. H. (1999). Predictive coding in the visual cortex: a functional interpretation of some extra-classical receptive-field effects. *Nature Neuroscience*, 2(1), 79–87. <https://doi.org/10.1038/4580>
- Reddy, L., Tsuchiya, N., & Serre, T. (2010). Reading the mind's eye: Decoding category information during mental imagery. *NeuroImage*, 50(2), 818–825. <https://doi.org/10.1016/j.neuroimage.2009.11.084>
- Rosenthal, O., Shimojo, S., & Shams, L. (2009). Sound-Induced Flash Illusion is Resistant to Feedback Training. *Brain Topography*, 21(3-4), 185–192. <https://doi.org/10.1007/s10548-009-0090-9>
- Sadato, N., Pascual-Leone, A., Grafman, J., Ibañez, V., Deiber, M.-P., Dold, G., & Hallett, M. (1996). Activation of the primary visual cortex by Braille reading in blind subjects. *Nature*, 380(6574), 526–528. <https://doi.org/10.1038/380526a0>
- Shams, L., Kamitani, Y., & Shimojo, S. (2000). What you see is what you hear. *Nature*, 408(6814), 788–788. <https://doi.org/10.1038/35048669>
- Simner, J. (2011). Defining synaesthesia. *British Journal of Psychology*, 103(1), 1–15. <https://doi.org/10.1348/000712610x528305>

- Slutsky, D. A., & Recanzone, G. H. (2001). Temporal and spatial dependency of the ventriloquism effect. *Neuroreport*, 12(1), 7–10. <https://doi.org/10.1097/00001756-200101220-00009>
- Sumbly, W. H., & Pollack, I. (1954). Visual Contribution to Speech Intelligibility in Noise. *The Journal of the Acoustical Society of America*, 26(2), 212–215. <https://doi.org/10.1121/1.1907309>
- Summerfield, C. (2011). Expectation and attention in visual cognition: neural and computational approaches. *Frontiers in Human Neuroscience*, 5. <https://doi.org/10.3389/conf.fnhum.2011.207.00036>
- Terhune, D., Tai, S., Cowey, A., Popescu, T., & Cohen Kadosh, R. (2011). Enhanced Cortical Excitability in Grapheme-Color Synesthesia and Its Modulation. *Current Biology*, 21(23), 2006–2009. <https://doi.org/10.1016/j.cub.2011.10.032>
- Tomson, S. N., Avidan, N., Lee, K., Sarma, A. K., Tushe, R., Milewicz, D. M., Bray, M., Leal, S. M., & Eagleman, D. M. (2011). The genetics of colored sequence synesthesia: Suggestive evidence of linkage to 16q and genetic heterogeneity for the condition. *Behavioural*
- Tootell, R. B. H., Hadjikhani, N. K., Mendola, J. D., Marrett, S., & Dale, A. M. (1998). From retinotopy to recognition: fMRI in human visual cortex. *Trends in Cognitive Sciences*, 2(5), 174–183. [https://doi.org/10.1016/s1364-6613\(98\)01171-1](https://doi.org/10.1016/s1364-6613(98)01171-1)
- Walton, D. (2011). Metadialogues for Resolving Burden of Proof Disputes. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.1760402>
- Ward, J., & Simner, J. (2003). Lexicalgustatory synaesthesia: linguistic and conceptual factors. *Cognition*, 89(3), 237–261. [https://doi.org/10.1016/S00100277\(03\)001227](https://doi.org/10.1016/S00100277(03)001227)
- Ward, J., Huckstep, B., & Tsakanikos, E. (2006). SoundColour Synaesthesia: to What Extent Does it Use CrossModal Mechanisms Common to us All? *Cortex*, 42(2), 264–280. [https://doi.org/10.1016/S00109452\(08\)703526](https://doi.org/10.1016/S00109452(08)703526)
- Watkins, S., Shams, L., Josephs, O., & Rees, G. (2007). Activity in human V1 follows multisensory perception. *NeuroImage*, 37(2), 572–578. <https://doi.org/10.1016/j.neuroimage.2007.05.027>
- Watson, M. R., Akins, K. A., Spiker, C., Crawford, L., & Enns, J. T. (2014). Synesthesia and learning: a critical review and novel theory. *Frontiers in Human Neuroscience*, 8. <https://doi.org/10.3389/fnhum.2014.00098>
- Xie, W., & Zhang, W. (2016). The El Greco fallacy and pupillometry: Pupillary evidence for top-down effects on perception. *Behavioral and Brain Sciences*, 39. <https://doi.org/10.1017/s0140525x15002654>

## CHAPTER SEVEN: EMOTIONS IN REPRESENTATIONS

### 1.0 Introduction

I opened Chapter Five with a discussion of how the simplest forms such as the letter S may evoke an affective reaction, and went on to describe how in my view that affective reaction will change the representation of the letter. I discussed Susannah Siegel's approach to the question of whether higher-level visual properties may be represented in perception, and developed the Inseparability Thesis, and then re-framed the argument and addressed theoretical matters relating to cognitive penetration and to relativism in vision. In Chapter Six, I presented empirical evidence in support of my conclusions — that relativism in vision is not only benign, it is efficient and helpful.

The outcome of all of this is that we do not enjoy a Shape Only View of the state of affairs, that our visual systems do not function to present a non-relative view to other systems for their reaction.

Representations are not determined wholly by external factors, but by a combination of external and internal factors, some of which may be cultural or individual. Taking the evolutionary developmental perspective I have been urging, this ought not come as a surprise. Human development is a product of survival by surviving — we developed as a single functioning unit simply because through various adaptations we survived (and thrived). It follows, then, that (absent serendipitous changes that were not specifically selected for) all of our processes have survival (and thriving) as their objective — survival and thriving solutions, not perfect solutions. As Fodor points out, we need to react quickly to the panther, at the risk of becoming dead — it follows, then, that the most efficient course for the identification of the panther is likely to be selected for. For this we do not need to represent a Shape Only View of a panther — we need urgently to represent danger and a form of that danger (a fast-moving predator), to allow appropriate action to be selected.

This is survival at its highest level: life or death. But, encountering panthers or bears is not the norm: on a day-to-day basis, we need not only to survive, but to thrive, and to thrive in a community. For this we need to agree on the state of affairs in the community (including its environment), and our perceptual processes have developed to facilitate this as well. Once again, as I demonstrated in Chapter Five, for this we do not need a Shape Only View; all we need is a sufficient coincidence in our perceptions to allow communication — zebras in living rooms, rap music from clouds and other flights of fancy will be excluded simply because they inhibit thriving in a community.

In this chapter I will show how this coincidence does not necessarily exist between people from completely diverse cultures. Indeed, there seems little reason to believe that it would. It seems odd that individuals from a culture that shares little in common with the Western world would perceive their environment and states of affairs in the same way as an individual from a Western, urbanised society — and indeed the Muller-Lyer illusion, for example, is not significantly experienced within 'non-carpentered' cultures (Pedersen & Wheeler, 1983). As I said in the introduction, my suggestion is that what is generally taken in Western philosophy to make up the Shape Only View is not an Shape Only View at all, but is, rather, a WEIRD Eye view, in the sense of being one that is determined in part by societies that are Western, educated, industrialised, rich, and democratic. The influences and selective pressures faced by, for instance, the Australian Aboriginal culture, generally taken to have been in continuous isolated cultural development over some 50,000 years, are unlikely to be the same as those faced by the various cultures that have existed in France's Perigord region over that same period. The differences in influences and selective pressures are manifest in the cultures that were produced: the one essentially a built and highly technical environment, the other non-built, non technical, but highly attuned to nature and natural forces.

The differences between these two cultures run deeper than technology and attunement to nature — and I will present a significant deeper difference in the next section — and differences will be reflected in the values of each culture, importantly the

entrenched and foundational values. A culture that exists in an unbuilt environment closely attuned to nature will not, for instance, have entrenched or foundational values concerning the need to provide built housing for all. And a culture in a built environment with little attunement to nature will not have entrenched and foundation values relating to preservation of nature (although, these values may develop). I discussed in Chapter One that emotions are based in values, so it follows inevitably that the two cultures under discussion will have different emotional profiles. This goes to the heart of my thesis: I have discussed general differences in perception (a particular letter S may look more or less pleasing to me, depending on my core affect), but inter-cultural differences have a potentially greater impact.

I will set this up by outlining how on some accounts the traditional Australian Aboriginal conceptualises time: it is a very different approach to that adopted in WEIRD cultures, and accordingly may have significant impact on values, and hence emotion and perception.

## **2.0 An Australian Aboriginal Concept of Time**

We generally think of the passage of time, in very rough outline, in terms of the present, the future, and the past. The present is the moment we are experiencing now (however thinly sliced), and it has real existence for us by reason of that experience. The future does not exist: it is a notion of what form or content successive moments will take. The past is something that has no real existence of itself for us — it exists in memory and loosely in the effects of which its events are a cause.<sup>28</sup> The past fades in significance as time passes — Beri Maruši ponders why the effluxion of time reduces his grief, but not his reasons for grief (Maruši, 2018). We may ponder in this way, but we recognise that it is so — 'time heals all'.

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<sup>28</sup> There are other conceptualisations of time, such as C.D. Broad's 'Block Theory' in which the past and the present both exist (Broad, C. D. 1921), and that time is an abstract concept derived from observation of change (for instance, Mellor, 2002). These do not materially alter my argument.

Thinking of time in this manner seems a matter of common sense. After all, it reflects a logical progression of cause and effect (A causes B, B then causes C and so on) and appears to manifest in any system's tendency to maximum entropy — and events do lose their significance as time passes. We get over tragedy, perhaps simply because so many other events take place, reducing their significance by sheer weight of combined significance. Genghis Kahn may have killed a greater percentage of the world's population than any other individual in history, but we still feel keenly the more temporally proximate holocaust. Genghis Kahn is simply not that important any more. For this way of thinking, time exists as a framework, existing outside of the individual, into which the individual fits.

This manner of thinking of time, however, only makes sense if this is the way you think about time. There may be other ways to think about time, ones that do not regard it in a linear fashion. According to Janca & Bullen (2003), for instance, the Australian Aboriginal thinks of time in a completely different manner: for her, time is not a framework within which she must work, but as something that simply exists all around, a 'pond you can swim through' (ibid, p. 41). She does not think of time in linear terms of past, present and future, but in circular terms. For her, an individual exists in various 'time circles', and events are placed in those circles according to their importance. In her personal time circle, events of great personal importance to her will exist closer in time than insignificant events, and the same will apply to other time circles of which she is a part. What we would call the present, the 'here and now time', is a mixture of important events past and present — so, although the traditional Aboriginal may live in the 'here and now', in doing so she is also experiencing her past. The cosmos of Aboriginal tradition, 'Dreamtime', is not a mythology in the sense of an ancient story retold, but is a lived reality, a feature of this 'here and now time' (Morphy, 1999).<sup>29</sup>

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<sup>29</sup> Swain (1997) makes the claim that Australian Aboriginal ontology is grounded in space and not time: all that exists is a product of space, and time has little significance. He contrasts that with a European ontology, based in time. He also argues that changes were forced on Aboriginal ontology after the arrival of Europeans.

If this is correct, that Aboriginal Australians conceive of time in a completely different way from the Western world, it illustrates clearly that diverse cultures may operate using fundamentally different concepts.<sup>30</sup> Time seems to us to have a particular character, its passing a simple fact, and that events recede into greater and greater insignificance with the passage of time seems sensible. As things recede in this way, they become less and less important to us — they become less valuable. And, hence, they become increasingly less likely to cause an affective or emotional reaction.

But, this is not the case for the Australian Aboriginal who thinks of time in this manner — for her, important matters things do not recede into greater and greater insignificance (or, if they do, they do so other than by passage of time), and they do not recede in value. They remain, then, a potential source of affective or emotional reaction — and I will demonstrate how this would occur, picking up the connection between cultural values and emotions.

But before that, I will touch once again on the neuroscience. In the last chapter, I described work by Bar and others on feedforward and feedback processes in early vision: I will present further developments of that work by Barrett and Bar, which show how affect and emotion may participate in the building of a representation. This evidence cannot of course stand on its own: what it does is provide support for the phenomenological analysis, demonstrating that there are (at least) no neuroscientific obstacles to what is presented.

I will then leave neuroscience, to describe the manner in which emotion may be embedded in an image, using both images that are well-known in Western culture, and images which have startlingly different emotional content across cultures. I will show how

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<sup>30</sup> Whether the matter is quite as clear-cut as Janca & Bullen suggest is uncertain, but there is a clear line of thinking that many indigenous peoples do incorporate their histories into their present in a sense that makes them part of their immediate experience. Ballard (2014) speaks about 'lived histories, [as] public forms of presenting —and making present — the past'. The Australian Aboriginal concept described by Janca & Bullen seems to incorporate a strong version of these types of lived histories. Palmié (2013b) suggests the notion that the past and present are separate 'smuggles in' a 'North Atlantic Universal': a category that originates in Western experience but has come to be regarded as standards of universal human relevance.

different cultural emotional profiles are manifest in representations. I will then go on to discuss the impact of this manifestation — essentially, that it represents a stumbling block to effect communication.

### 3.0 Barrett and Bar

In Chapter Six, I described Bar's prediction of a feedforward-feedback loop at the earliest stages of vision, a prediction confirmed in the laboratory by Bar and by others (Bar, 2003; Bar et al, 2006; Peyrin et al., 2010; Kok, Brouwer, van Gerven, & de Lange, 2013; Aitken et al., 2020). To recap in summary, the process uncovered is:

1. initial perception in V1; leading to
2. low spacial frequency (LSF) feedforward signalling to the orbito-frontal cortex(OFC) from V1; triggering
3. OFC feedback signalling of an image to V1 as a 'predictive initial guess'.

This process occurs in a continuous, iterative loop: the predictive initial guess becomes the basis for further LSF feedforward to the OFC, precipitating more feedback. Barrett and Bar (2009) subsequently targeted specifically neural pathways that are known to be involved in affective and emotional functioning to determine the involvement of affect on visual processes. The feedforward of affective information allows a prediction to be made on the likely affective impact of the perceived state of affairs:

"We suggest that the brain's prediction about the meaning of visual sensations of the present includes some representation of the affective impact of those (or similar) sensations in the past. An effective prediction, in effect allows the brain to anticipate and prepare to act on those sensations in the future. Furthermore, affective predictions are made quickly and efficiently, only milliseconds after visual sensations register on the retina." (p. 1326)

The process is not limited to feedforward: affective information is also fed back to visual processes together with other information that contributes to production of the representation. The affective information contained in the feedback (including a

representation of the affective impact of those (or similar) sensations in the past) is incorporated into the representation itself, in the same way as object-recognition information. The result is:

"a contextually sensitive, multimodal representation of the world and its value to the person at a particular moment in time." (p. 1328)

That a representation of this nature is not of a Shape Only View is unsurprising, given the discussion in previous chapters. What is important here is that the representation contains affective information. Barrett and Bar describe two distinct pathways for that affective information within the orbitofrontal cortex (OFC), the ventral 'what is it?' stream, and the dorsal 'where is it?' stream. Lateral parts of the OFC integrate feedback from other senses, while medial parts send signals to other control centres to modify bodily states.

At very early stages, the ventral 'what is it?' stream and the dorsal 'where is it?' stream produce very general, low-level or gist information about the object, which is passed to the medial portion, whose function it is to prepare the body for possible reactions. A round, red object may lead to a prediction 'apple', and if it would enhance wellbeing to eat an apple at that moment, the body must be prepared to reach for it: the medial OFC will then send signals to the hypothalamic, midbrain, brainstem and spinal column control centres, so that action (bodily changes) can be prepared. In its turn, lateral portions of the OFC will take the signalling that preparations are underway, and will incorporate that information into information concerning the object, received from all other senses.

In short, information is being gathered and shared, co-ordinated by the OFC, to recreate the body's affective state when it last encountered the object that is being predicted. Barrett and Bar describe what is being prepared as 'an experience-dependent representation of an object in context.' This process continues in the feedforward, feedback process, until a high-level representation of the object is achieved — and that

high-level representation is created by drawing not only on stored physical and contextual information relating to the object, but on stored affective information.

In the result, we do not wait to react affectively to the state of affairs until we have a high-level representation of that state of affairs: we react in advance, in preparation, based on predictions of what that state of affairs is likely to turn out to be, and our history with similar states. We build a representation of the state of affairs before us that is dependent upon huge amounts of data collected through all of our life experiences. These will include data relating to bodily states over which we have little or no control (such as hunger), data relating to personal decisions, and data relating to our cultural background.

The data are largely individual, although it may be recognisably cultural as well — and this data influence the representation we produce.

#### **4.0 Individuality in Representations**

Barrett and Bar provide the example of a small, round object that may well turn out to be an apple, and they describe how prior information about apples is used to move from low-level to high-level representation, including information that the individual loves apples. What I will do now is increase the level of sophistication of elements making up case affect, including the values involved (recollecting the role of values as antecedents to core affect and then emotion).

Take, then, as a further example Olivia going on a drive through the countryside and encountering a scene of the rural idyll: a soft, green field in which cows are grazing, in the background a farmer leading a horse into a barn. She finds this a pleasing and attractive scene, it reminds her of visits to her grandparents' farm in the Cotswolds, happy, peaceful days under the summer sky. In building her representation, her values and her concepts allow a pleasantly nostalgic experience.

Now imagine the same scene unfolding in front of a committed moral vegan: her commitment makes her vegan values entrenched, and they will be to some extent

foundational, in that she will have a series of values based on her moral stand. They will accordingly not be easily dislodged, and will have a reasonably wide impact. Her values dictate that for her, this rural idyll is a scene of enslavement, of exploitation, of torture, of sadly abused animals ending their lives in terror-filled slaughter. She is not mollified by the possibility that the farm is a dairy farm, for she recalls hearing that the meat of ex-dairy cows is highly prized by some gourmet chefs. This is not the image of the rural idyll that it is to Olivia, but an image of darkness and horror: she recoils from the image and its dreadful associations.

This is a highly unpleasant scene to the moral vegan, and I have stated my position that it will be represented as such in her visual perception — I discussed Siegel's approach to this problem in section 3.2 of Chapter Three. What I am adding now is a mechanism by which the unpleasantness comes to be represented. The moral vegan's entrenched and somewhat foundational values will result in an early affective reaction to the scene, and that affective reaction will become part of the Barrett & Bar process given above: her negative affective reaction will become part of the representation. Subsequent to her affective reaction will come her emotional reaction, which will be consistent: she will match her affective reaction with an appropriate emotion concept (perhaps horror or disgust). She will go on to match her representation with other concepts such as enslavement and so forth.

The difference between Olivia's reaction and the moral vegan's has its roots at the individual level. Differences may also occur at a cultural level, and potentially in a much more significant manner. I may see a chameleon and consider it cute, if somewhat bizarre with its slow-motion and independent eyes, and I may recollect from my African childhood that if I place the creature on my arm, it will grip with a strength and a strange stickiness that is oddly pleasing. Like Olivia with the rural idyll, I become pleasantly nostalgic about the chameleon, and the image of the creature will be vaguely positively valenced. On the other hand, an individual steeped in the traditions of the Shona people in Zimbabwe is likely to recoil from the chameleon with horror: it is part of the Shona

cultural heritage that the chameleon portends death. The chameleon is a creature associated with dread, and it will be represented as such.<sup>31</sup> Because of our entrenched cultural values, the Shona individual and I have two completely different representations.

The important point is that intrinsic in Barrett and Bar's position is that affective and emotional information is available to the image or representation. Despite this and what they say about 'a contextually sensitive, multimodal representation' they stop short of the claim that the affective information is actually included in the representation — this notwithstanding that they specifically identify the feedback pathways by which this would occur. I think they do not go far enough: for the reasons I provided, particularly in Chapter Five, I think there is reason to make the claim. The neural pathways are there, they are utilised, and the result seems inevitable: affect and emotion come to be represented. How affect comes to be represented I discuss in detail in section 5.0 below — for now, suffice it to say that the feedback pathways have been identified, and that their function is to provide image building with affective information.

Recapping slightly, on a conventional and perhaps intuitive view, both the Shona and I would be thought to be presented with exactly the same image, a Shape Only View. We would each be thought to react to identical representations of the same scene, doing so in our own way. This is the view that a visual system isolated from (at least) affective information produces a representation for other systems to utilise as they will. On this basis, my disagreement with the Shona is not a disagreement on perception at all, but a disagreement concerning the manner in which we think about chameleons, one step removed from perception. In this case the Shona would not say, 'I see a scary chameleon,' but, rather, 'I feel scared of the chameleon I see.' Once we see that affective information is available to the visual system at the earliest stages, however, we have reason to rethink this position. We may recognise that my representation of the chameleon is a product of my background (a white boy in Africa, still steeped in his parent's Anglo-European culture

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<sup>31</sup> The chameleon features in folklore of many Bantu cultures, with the lizard, as responsible for ending humanity's immortality. In traditional settings in my native Zimbabwe, individuals are generally terrified when confronted by a chameleon.

and values), and that the Shona's representation is a product of her own cultural and value heritage. The difference between us becomes one of perception, of representation, so that the Shona will be able to say, 'I see a scary chameleon'.

It seems reasonable (if not imperative) to assume that the feedback of affective information to visual processes occurs for a purpose, that the information is not delivered only to be ignored. Affective information that is gathered following feedforward is compiled with information from other senses, according to Barrett and Bar, from interoception, from memory and so forth, to produce their 'multimodal, polysensory, contextually relevant representation of the object'. This is used to prepare for appropriate reaction to the perceived state of affairs. But as I have said, this is not the end of the story, it is not the only use to which the affective and other information is put: it is also fed back into the visual cortex, and there it is used in creation of the representation.

The disagreement between the Shona and me then becomes a disagreement on perception, in a real sense not dissimilar to a disagreement between two individuals about what a particular Rorschach test-type inkblot looks like to them. Ignoring problems associated with using the Rorschach test in a clinical situation<sup>32</sup>, it is clear that the image that each individual sees in each case is a product of information relating to prior experience and history — the same type of information that is the basis of the difference between the Shona and me about the chameleon. The inkblot dispute is settled by moving from the absolute to the individual, from 'This is what the image is,' to 'This is what it looks like to me.' Adopting a similar approach to the chameleon image, it seems the simplest answer that, by reason of affective information being incorporated into the image, the chameleon image is intrinsically scary to the Shona. The difference is between, 'I am frightened by this image' for the traditional view, and 'This is a frightening image'.

This much seems simple. What may be a little less intuitive is how affective information can be included in a representation, in a visual image. We are perhaps more used to the idea that we are presented with an image to which we react than with the

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<sup>32</sup> See Cariola (2014) for a brief review of criticism of Rorschach tests.

idea that an image may itself contain emotion. Edvard Munch's painting 'The Scream', reproduced in Figure 6.1. offers some insight into the matter.

## 5.0 Representing Emotion in Images:

### 5.1 Edvard Munch

The issue I am confronting here is how an emotion may be represented in an image. To tease this out, I will look at how artists represent emotion in their work — in particular, artists who are emotionally troubled and who regard those difficulties as essential to their art. What I am suggesting is that such artists can and do represent emotion in their images because their emotions inform the construction of their paintings, their representations, down to individual brush strokes. And in the same way as such artists' emotions inform the construction of their representations, down to their brush strokes, so too do our emotions inform the construction of our representations, down to the finest detail.

Edvard Munch (1863-1944), most famous for *The Scream*, avowed himself to be one such artist: he himself considered emotion to be a part of his art, and his work demonstrably contains a representation of his emotional state. He was much troubled throughout his life with mental health and emotional problems, including anxiety, depression and bipolar disorder (Azeem, H, 2015). He considered these problems intrinsic to himself, without which he may 'run aground'. He wrote in his private journal:

'Life-angst has raved inside me ever since I caught the idea — like an illness— since I was born — doubly inherited. It has lain like a curse which has haunted me. Still I often feel that I must have this life-angst — it is essential to me — and that I would not exist without it. Often I feel that just as an illness has been necessary — In periods without this life-angst and illness I have felt like a ship sailing before a strong wind without a rudder — and asked myself where? where will I run aground?' (Munch, Edvard, 2005, p 18)

He also considered his mental health problems essential to his art, and to his paintings, his attitude to his mental and emotional difficulties being captured in this quote:

'They are part of me and my art. They are indistinguishable from me, and [being rid of them] would destroy my art. I want to keep those sufferings.' (Ragna Thiis Stang, 1979)

The quote is telling: he considers his emotional problems to be intrinsic not only to him, but to his art — they are in his paintings. And it seems that his intention was to portray his feelings in his paintings, explicitly saying in his private journals that a painter cannot 'catch nature', and that it is better for him 'to give the feeling':

'In the mornings I painted *The Dance of Life*. Now I stuck mostly to decorative pictures. I would like to say something — that there my heart lay. To copy nature. We certainly could not catch nature anyway — better to give the feeling — in oneself.' (Munch, Edvard, 2005, p 89)

*The Scream* is part of a series of images produced, it is thought, following a scene which Munch describes in his diary:

'I was walking along the road with two friends — then the Sun set — all at once the sky became blood red — and I felt overcome with melancholy. I stood still and leaned against the railing, dead tired — clouds like blood and tongues of fire hung above the blue-black fjord and the city. My friends went on, and I stood alone, trembling with anxiety. I felt a great, unending scream piercing through nature.' (Olson, D. W., Doescher, R. L., & Olson, M. S., 2004).

According to a friend, Christian Skredsvik, Munch wished to paint, 'a sunset of coagulated blood', and 'Munch had talked himself sick about that sunset and how it had filled him with great anxiety.' (Bassie & Ingles, 2018, p 70).

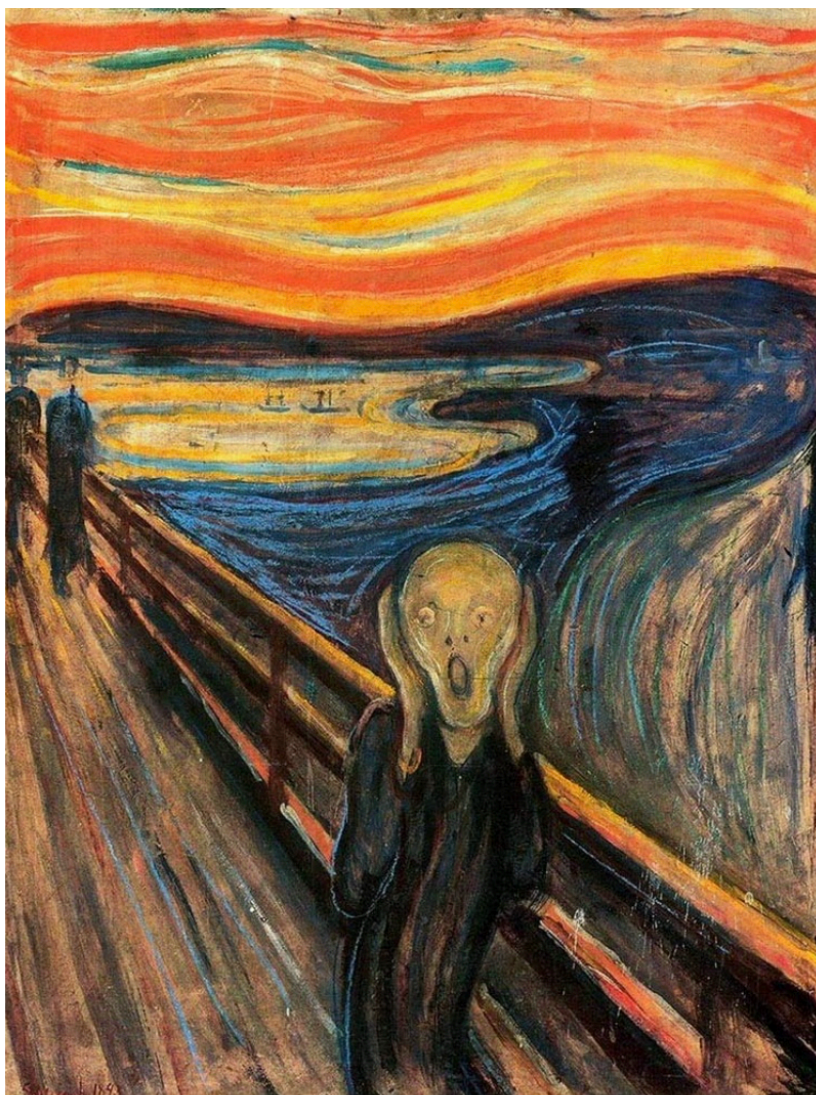


Figure 6.1: 'The Scream'

Of the painting, Munch himself said:

'You know my picture The Scream? Was being stretched to the limit — nature was screaming in my blood — I was at breaking point.... You know my pictures, you know it all — you know how I felt it all.'

That he succeeded in portraying a deep negative emotion seems in little doubt: the painting has achieved something of a cult status as a representation of anxiety. Of course, we cannot know the exact nature of the emotion Munch was attempting to portray. Munch may indeed not have had anxiety in mind at all, as there is another very different painting in the series which is entitled 'Anxiety'. It may simply be that his own experience was a powerful set of negative emotions which he was incapable of

recognising or categorising but which he could represent in a painting: he could 'give the feeling' with his painting.

It does seem, however, that this was not simply a portrayal of negative emotions generally — the series shows that he was trying through the series to depict specific emotional experiences. In addition to 'Anxiety', there is 'Despair', reproduced in Figure 6.2. Munch seems to be differentiating what he is depicting in 'The Scream' from anxiety and despair.



Figure 6.2: 'Despair'

'Despair' is particularly interesting in this context because the scene depicted is substantially the same as that in 'The Scream' in its setting and context: the road, the lake in the background, on which two boats are floating; two companions having walked on are shown, and the identity of the main figure is indeterminate — there are all common features ('Anxiety' contains additional people, standing close to the main figure; the main figure, of indeterminate gender, has recognisable features). The two images, then, are of the same scene, but they have completely different emotional content — and clearly so, even without knowing the latter's title is 'Despair', its image is immediately melancholic, reflective, depressive, none of which is featured in 'The Scream'.

The point I am driving at here is that Munch is clearly representing an emotion in each of these paintings, and the emotion in each is different. Taking them as paintings of the same scene, as they usually are taken, there is a very real sense in which a specific powerful negative emotion is partly constitutive of 'The Scream'. In the same way, the emotion despair is partly constitutive of 'Despair'. Although they are paintings of the same scene, a depiction of Munch's physical experience, they represent completely different emotional experiences, and there is little doubt that these emotions are partly constitutive of the paintings.

Munch eventually suffered a breakdown, and spent some time in treatment. The treatment seems to have been effective, in that his depression and anxiety was reduced. 'Unsurprisingly', according to Bassie *et al*, this more settled emotional state is reflected in his later work, from which sadness had retreated, and optimism became apparent. Recall the quote from Munch's journal that in his art he seeks to 'give the feeling' — the feeling he is giving in his later work is markedly different from his early work. The observation by Bassie *et al* is also significant at a different level, for it reflects an inarticulate assumption on the part of the biographer that emotions are indeed reflected in the artist's work: what I am endeavouring to demonstrate here seems to be assumed by Bassie *et al*.

I come back to the point of the artist's emotions informing his image creation, his creation of a representation. The result is a representation replete with emotion. In the

same way, I see affective feedback information being utilised in image building in human vision: the result is a representation replete with emotion.

It is impossibly implausible to think Munch intended to produce emotionless images to which everyone may react as they will. This would be analogous to the traditional view of human visual system, that it produces an emotionless image to present to other systems to do with as they will. It is far more believable that the artist imbued the images with the intended emotional content, and that this intended emotional content is inseparably a part of the images. In the same way, the visual system produces images — representations — imbued with emotion.

In other words, Munch's emotional experience of when the sky turned red and he heard the scream of nature informed every brush stroke as he painted 'The Scream' and 'Despair', and hence the ultimate form those paintings took. I have spent some time on Munch and I think it is reasonably clear that he is depicting emotion in his paintings, and that he anticipated that people would see the emotions in this pictures seems clear from his various comments. I do not think this is a controversial position, and I think it can be applied to other artists.

It is a small move to see that in the same way as the artist's emotions informed his brush strokes, our emotions can inform our image-forming process.

## **5.2 Human Mental Imagery**

What I have established since first introducing the idea that the letter S will appear (slightly) different to me depending on my core affective state, is how this comes to be: I have provided the evidence that the phenomenon is real, and shown the neurological circuits by which it may be effected. I have demonstrated that the ability to produce images that contain affective information offers the advantages of speed and efficiency.

I may still encounter resistance from some who would adhere to the Shape Only View. They face a difficult task in establishing a prima facie case theoretical case against relativism in vision, and then for impenetrability; and they will have to explain the

apparent epiphenomenal neural feedforward and feed back circuitry, before having to tackle the empirical evidence — both the evidence I have led, and the evidence I present in the next section specifically about the use of affective feedback in vision.

Steeped as we (mostly) are in the notion of non-relativistic vision, in the notion of Shape Only View, this immediately seems wrong. Surely, we imagine, what we see is what is really 'out there,' and even if in some way it is not, how can something as subjective as emotion affect the look of a real object? I discussed the objections to this approach in some length in Chapter Five, and although I will not repeat them here, I will highlight two aspects. The first is the general principle that we evolved to survive by surviving: having important information on the state of affairs (danger, for instance) available as efficiently and as unmistakably as possible seems to aid survival. Incorporation of affective information into a representation ensures efficiency. The second is that affective content will not cause great variances in representations, it will not cause us to bump into anything, nor to see zebras in our living rooms. In the general course of events, affect-based differences are easily explained away without referring to differences in representation at all: 'he likes that chameleon because it brings back pleasant memories', or on the other hand 'he is scared of chameleons because of their place in his mythology.' An explanation of this nature may well be accurate, but it misses out the simple fact that the form of the chameleon differs in each individual representation.

The general principle is we survived by surviving. Much as we would like to believe that what is represented to us in vision represents exactly Shape Only View, we have little or no reason to believe that it is so — and good reason to believe it is not so. If we have reason, then, do we also have emotion-specific evidence beyond the neuroscience?

## **6.0 Evidence of the Use of Affective Feedback**

That affective and emotion feedback is provided to early visual processes gives us good reason to believe that the information it contains is used, and a series of experiments gives us empirical evidence to back up this reason. Fear can alter perception

in a number of ways — height and distance, for instance (Stefanucci, Gagnon, Tompkins, & Bullock, 2012; Geuss, McCardell, & Stefanucci, 2016; Xiao & Van Bavel, 2012). It can also influence evaluation of tasks.

Geuss, McCardell, and Stefanucci used a virtual environment to test how both state and trait fear can alter perception of gap widths and the difficulty of stepping over those gap widths at various heights. Wearing virtual reality headsets, participants were presented with a virtual environment featuring a gap in a floor suspended over a courtyard — both the width of the gap and the height of the floor above the courtyard were to be altered in two different experiments. In the first experiment, at various heights and gaps widths, participants were asked to make estimations of their fear. Participants were also provided with two virtual cones which they placed at a distance apart equal to how they perceived the gap in the virtual floor. In the second experiment, participants were also asked to make estimates of their fear, and then to evaluate whether they could step over the gap — if they thought they could, they were to take the step. The results for the first experiment showed that fear influences not only perception of height, but of spaces around the height — the gap in the floor — and those of the second, that fear influences action: participants who rated their fear highly also thought themselves unable to step across the gap. Those with moderate fear often overstepped, take a 'safe' option. Consistent with the general principle that we developed to survive, these experiments and others like it suggest that emotion can affect representations, in order to modulate action. It is not only negatively-valenced emotions such as fear that have this affect: positive valence can make an object seem more attainable.

Balcetis & Dunning (2009) showed in five experiments that individuals perceive desirable objects as physically closer to them than undesirable ones. In a series of real-life and virtual reaching experiments Valdeés-Conroy and her team found similar results, that positively-valenced items were perceived to be closer than negatively valenced or neutral items (Valdeés- Conroy, Román, Hinojosa, & Shorkey, 2012).

The phenomenon appears to play a role in sport as well: Taylor, Witt and Sugovic (2011) showed that experienced parkour participants perceived walls as lower than non-experienced participants, while Witt and others showed that golfers who were putting well perceived the hole as larger than those playing badly (Witt, Linkenauger, Bakdash, & Proffitt, 2008). Witt & Dorsch (2009) looked at goal kicking in American football, and found that successfully kickers perceived the bar as lower and the posts as wider apart — they also found that a series of poor kicks can alter perception so the task seems more difficult. These sport-related studies did not specifically focus on emotion, and here I am admittedly taking a step: I think it reasonable to associate good performance in an athlete with positive valence and emotion, poor performance with negative valence and emotion.

Although survival offers an obvious reason for emotion affecting a representation, reasons are not always clear. Darkness, gloominess and similar words are often associated with negative emotions, the converse being that positive emotions are associated with brightness. As I have mentioned, Xie & Zhang (2016) demonstrate that this linguistic convention reflects a physiological phenomenon. Using pupillary dilation detection, they demonstrated that valence can alter perceived brightness — when asked to bring to mind positively valenced thoughts, participants' pupillary dilation showed that they were indeed seeing things more brightly. For whatever reason, the brightness of representations can be affected by emotions.

There is, then, substantial evidence that emotion may affect a representation, but there is room for an objection — all of the evidence may be thought to be relevant to the representation of an overall scene, where I have been talking of emotion changing the form of an object as represented.

## **7.0 Scene and Object**

Although the objection I have in mind does seem intuitively to have substance, it is practically difficult to establish how the overall scene can be represented with emotional content, while stipulating that the form of individual objects may not be altered.

Again, intuitively it seems this would involve the overall scene being processed with affective information, with the form of objects being left intact. First of all, and leaving aside for the moment that the scene eventually consists of objects, although overall scene processing and object processing are separate, the two processes are not independent. They utilise the same resources and the same feedforward and feedback processes (Malcolm, Nuthmann, & Schyns, 2014), and objects both inform and interfere with scene processing — the appearance of incongruent objects slows overall scene processing (Joubert, Rousselet, Fize, & Fabre-Thorpe, 2007; Truman & Mudrik, 2018). Affective information available to scene processing in this objection would somehow have to be excluded from object processing. This seems a possibility, but it would involve complex pinpoint filtering, and the development of such complex filtering seems unlikely — after all, as I showed in Chapter Four, there is no threat to survival or thriving if affective information is incorporated into objects.

And now taking up what I left aside, that scenes consist of objects is a problem for this objection: a forest scene consists of trees, individual peaks form part of a mountain scene, and walls form part of a street scene. Scene and object processing merge in the final representation, as objects are recognised and integrated into the scene. How then is affective information applied separately to objects and scenes?

One of the intuitive bases of the objection may be a variety of the Shape Only View position — after all, we do seem to agree on the form of objects: we do not argue about what a chameleon looks like, or what a pine tree looks like. Whilst at first brush this approach seems attractive, I do not think it stands up to scrutiny, simply because it is not unusual for one individual to describe an object as scary, with another disagreeing. The chameleon simply is a scary object to some, and it is represented with as much convincing negative emotional content as Munch presents in 'The Scream.' To another, it may be neutral or attractive. A gap over a high chasm simply is wider for someone frightened of heights, and is represented as such. However, whilst we accept this type of difference, we intuitively take the Shape Only View: we assume we are seeing the identical object, and

simply cannot understand why a chameleon or a gap looks so scary. We may discuss it later, and, again from the same Shape Only View, we assume that the scariness is superimposed on the image after it is fully formed. But we do so without reason.

Once we know that processes have developed to provide affective information to object processing, and that there is no reality in a Shape Only View, we are able to draw the simpler conclusion: that information is made available to object processing for a purpose, and that purpose is reflected in the ultimate representation of the object. In other words, the form of objects represented will alter according to affective status.

So, what are the implications of the changes?

## **8.0 Implications: The Problem of Communication**

### **8.1 Generally**

I have said that the changes to the form of an object that emotion will make will be subtle, which is to say for instance that the chameleon will still be recognisably a chameleon for all. But this does not mean the changes will be unnoticeable, and I think they are noticed regularly, but they are explained away.

An individual's representation will be noticeably different from others' when the emotional content in a representation is high. Olivia and the moral vegan will know that they are each experiencing the scene of the rural idyll in different ways, and the Shona and I each will know we are experiencing the encounter with the chameleon in different ways. I have already suggested that all parties will attribute this difference not to perception, but to how they each are thinking about what they are saying — in effect, they will consider that an affectively neutral image has been produced by their visual processes, and it is for them to step back and consider that image. For all the reasons given, I think this is wrong. The disagreements about the rural idyll and the chameleon are properly considered disagreements about perception.

Coming back to the letter S — I have said that the changes are likely to be very small, and unnoticeable, but it is possible to imagine culture-specific situations in which

the differences may be marked. The Rainbow Serpent is said to be a powerful image in Australian Aboriginal lore, a symbol of prosperity, of rain, of water and of food. The serpent-like letter S could conceivably evoke images of the Rainbow Serpent for an Australian Aboriginal, and this could be the basis for a number of affective reactions: on some occasions, she may have a negative reaction, and feel homesick, whilst on others she may feel proud of her heritage, and in others still she may feel positive about the plenty that the Rainbow Serpent portends. On the position I defend, on each occasion the letter S will appear differently. Similarly, snake-related folk-lore in sub-Saharan Africa is thought to be complex, but the snake may sometimes be associated with occult practices aimed at both good and evil, and must in any event be propitiated. An individual steeped in these traditions may well also experience affective reactions to the letter S in virtue of its snake-like shape, and given the variety of purposes to which the occult purposes may be put, the reactions may be positive or negative.

Equally in the case of the letter S, the visual experience may well be dismissed by individuals in favour of a post-perceptual reaction as an explanation, in keeping with the more familiar Shape Only View of perception. Again, I think this is wrong, for the reasons given.

But what turns on the distinction? Whether a chameleon is represented as a scary creature or the Shona reacts to a neutral image has no material impact on the reaction. But there is importance in the distinction, and it lies in communication: here I will turn again to the differences between Australian Aboriginal culture and the Anglo-European culture with which it brushes shoulders in Australia. Most particularly, I will highlight mental health, and the delivery of mental health services such as psychotherapy. The incidence of mental health problems amongst members of the Australian Aboriginal community is significantly higher than amongst members of the Anglo-European culture, and treatments have a low level of success (Calma et al., 2017). Indeed, mental health is the second greatest health problem facing the Australian Aboriginal community (Isaacs et

al., 2010). Communication difficulties have been recognised as a significant difficulty in addressing these problems.

In the next section, I will highlight the communication problems that have been identified in delivery of mental health services. I will go on to detail how the widely different emotional profiles may contribute to the problem: how the unique emotional profile of the individual from the Aboriginal culture may have an impact on the form of objects she perceives — on the form of her environment. At a subtle level, she may experience an environment subtly unique to her culture. On this basis, when she communicates her world experiences to someone from another culture, there is a level of granularity in this communication at which the subtle differences in her environment will impede communication. This will normally be encountered in a therapy situation. As I will show the problem is potentially deeper.

I will start with some background on the underlying societal problem.

## **8.2 An Outline of the Patient/Healthcare Worker Problem**

Mobbs (1986) conducted specific research into communication problems encountered by Anglo-European Resident Medical Officers (RMOs) working with Australian Aboriginal patients, particularly in gathering patient histories. Patients were reported as being generally unresponsive, and occasionally RMOs formed the suspicion that patients were providing answers they thought would please. All of the RMOs expressed frustration and 'considerable distress' at this problem. Interestingly, given my earlier comments on conceptualisation of time, eliciting confirmation of symptoms existing at the time of consultation, rather than at some time previously, was said to be difficult. One RMO reported:

'I can say, "Have you got tummy pain?" In some ways, if they say 'Yes', ... [t]hey don't seem to appreciate the fact that you are asking them about the symptoms now .... I find that they had a tummy pain six months ago.'

This problem with time conceptualisation is at the base of a different, perhaps larger communication problem, which I address in its own section a little later.

Cass and his team undertook research on communication between critical Australian Aboriginal renal patients from the Yolngu community and their healthcare workers. They found a number of factors that were barriers to communication, including different modes of discourse (the Yolngu patients were unfamiliar with direct question- and-answer discourse), and the extent of 'the cultural and linguistic distance' between patient and healthcare worker (Cass et al., 2002). Like Mobbs, they also found that patients seemed to be giving answers they thought would please, or were required, rather than 'correct' responses. Often, neither patient nor healthcare worker was aware that miscommunication had occurred, and expressed surprise when researchers pointed it out.

The need for communication specifically in a mental health environment is also well recognised (Priebe et al., 2011; Thompson & McCabe, 2012; Del Piccolo & Goss, 2012). Importantly in this context, specific emphasis has been placed on gathering a full patient history in dealing with Australian Aboriginal mental healthcare (Sheldon, 2001; Parker 2010). Given the difficulties my RMOs expressed concerning gathering patient histories, this aspect appears challenging.

There are undoubtedly a number of factors contributing to these difficulties in communication, some of which have been recognised in the research I have drawn upon. Importantly, emphasis has been placed on cultural knowledge, and the need to acknowledge the different perspective and world view of patients from the Australian Aboriginal culture (Morgan et al., 1997; Saethre, 2007). I have no doubt that this is an essential step. But as essential as it is, I think that simply learning a culture does not allow the acquisition of a sufficiently complete suite of emotion concepts to allow a full experience of the phenomenology to culture-specific emotions. There is a gulf between knowing about and understanding an emotion on the one hand and being able to experience it on the other, and this will lead to a communication gap.

### 8.3 The Problem of Emotion Phenomenology

What I call the emotion communication gap has its basis in phenomenology — the phenomenology of being an adult member of a culture depends upon having assumed a huge amount of culturally-specific information from an early age. I have already discussed how emotion concepts are embedded in a holistic nexus of cultural concepts, and how this forms a barrier (of more or less penetrability) to the experience of culture-specific emotions. The less the exposure of an individual to culturally-specific information, the less complete that individual's grasp of the, holistic nexus of cultural concepts, and the lesser her absorption into the culture. Being reared in the cultural traditions of that culture, having first carers, friends, family, and early socialising all embedded in this culture; to have all aspects of development from an early age to be subject to the language, norms, traditions, mythology and so forth of that culture, offers the greatest opportunity to absorb the culture, to gain all of the required information. With this sort of upbringing, an individual will know what it is like, for instance, to be a Shona.

I may engage, then, in a period of intensive study of Shona culture; I may study its language traditions, its mythology, its norms, its mores; I may live in a remote traditional village in Mashonaland for years; and I may become laughingly referred to as the white Shona. But whilst I will possess all of that knowledge, I am still unlikely to look at a chameleon and be genuinely frightened. Whilst I will understand why the Shona looks at a chameleon and sees a frightening beast, I very likely lack a complete suite of all aspects of the Shona culture (the holistic nexus of cultural concepts) — I have the facade, as it were, but not the substance of being a true Shona. I am unlikely truly have absorbed all that is needed of the sophisticated holistic Shona network of social and emotional concepts. My substance, my foundations, are a product of my upbringing in an Anglo-European culture. There is an almost impenetrable barrier to me experiencing the genuine phenomenology of the fear of a chameleon. (As I said in Chapter Three, there are no absolutes here: the barrier is only 'all-but' impenetrable, and there is a point, with sufficient exposure, at which the barrier may be penetrated.)

Similarly, I am unlikely ever genuinely to experience *ligit*, the emotion experienced by Llongot people of the Philippines that I mentioned in Chapter Three, associated with decapitating someone and hurling her head a great distance. I may try to understand it in terms of the vanquishment of an enemy, of the triumph of self over others, perhaps in some esoteric terms concerning the absorption of an enemy's life forces — but all of these are attempts to understand, to intellectualise a phenomenology. To properly experience *ligit*, I need to be a member of the Lingot people, to have been brought up in their traditions and mythology and norms and the rest — or to have something very close to that. Study is unlikely to suffice.

Examples abound: I may understand why some Muslims react with horror at a depiction of the prophet's image, but I will not easily experience that horror; a Chinese tourist may understand that Australians are disgusted by her spitting in the street, but she is unlikely to experience that disgust; I may understand the deep offence caused to a Japanese by leaving my chopsticks standing up in my rice, but I will not easily experience that offence.

I am pointing here to the nature of emotion concepts and their acquisition, and the values which they reflect. As I suggested in Chapter Three, there are values that are both entrenched and foundational, and there will be cultural values that will be almost immovably entrenched and radically foundational. These cultural values will be reflected in that culture's emotion concepts, deeply embedded in a host of other cultural concepts and other cultural artefacts acquired over time simply by existing in that culture. So embedded in the cultural landscape, including language, behavioural norms and so forth, they become part of a rich, complex, and inter-dependent set of concepts, relating to the emotional, the behavioural, the mythological, to time (and so forth), that form the

foundation for that culture (Ojalehto & Medin, 2015; Medin DL, Ojalehto B, Marin A, Bang M. 2013; Lakoff & Johnson, 1980)<sup>33</sup>.

Culture, I am saying, may be studied and understood to a greater or lesser extent, but no amount of study will allow acquisition of interdependent concepts to the same level or degree that growing up in that culture will provide: the holistic nexus of cultural concepts is vast. And it is only with a more or less complete set of a culture's concept that an individual can experience the complete phenomenology of being a member of that culture. I say 'more or less', because I accept that extended immersion or rigorous study may allow sufficient a grasp of the nexus of cultural concepts to allow one to function within the society. There may be easy concepts or interlinked groups of concepts that are easily acquired, and to that limited extent the phenomenology of being a member of that society may be experienced. But there may be ones that are more difficult to acquire, or by reason of being fundamental or foundational require more rigour in their application, and the experience may be less easily achieved.

I suggest, for instance, that real felt terror of a chameleon is too culturally specific — without growing up from an early age in the Shona culture, I am very likely not to have sufficient a set of concepts to allow me to experience a chameleon as a frightening beast (and that experience of *ligit* is similar). I may feign fear of the sight of a chameleon (in order to fit in, to be 'more Shona'), but, then, we do not call that emotion, we call that acting.

#### **8.4 The Communication Gap**

When taken with what I have said about the contribution of emotion to mental representation, particularly the form of objects within representations, the preceding sets out the basis for a communication gap between individuals from disparate cultural

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<sup>33</sup> To be clear, I am not making any commitment to any one specific role for concepts in the development of language or culture, nor to any specific relationship between concepts, culture and language. I am acknowledging only that concepts have a role in how culture is acquired by the individual, and that that role is fundamental.

groups, one that cannot be bridged by a study of culture alone. Given that proper communication is possible between patient and health care worker (that problems such as those experienced by the RMOs in Mobbs' (1986) study can be overcome), unless the health care worker is able to experience the emotions of her patient, the two will always be speaking of subtly different worlds. Their respective emotional profiles will mean that their representations of 'what's out there' will not coincide.

The chameleon example comes from Africa and not Australia, but it will serve here: it may seem that the representation of a single object, that a chameleon is represented as a scary object, is a minor impediment to communication. But my point is that the chameleon would be one of a myriad of objects that make up a scene at any given time, and it is not only the chameleon that is potentially (or probably) represented differently in the scene. A myriad of objects represented differently will mean that the whole of the scene will end up represented differently — the Shona is looking out at a world that is different from mine.

These differences are subtle, as I have said, and the Shona and I will agree on the presence or otherwise of zebras and the absence of rap music from clouds, but if we are engaged in intense dialogue attempting to describe the minutia of personal psychological experiences, the fine-grained nature of this dialogue will expose the differences. Our minds will not meet, simply because in a very real sense, they are existing on two worlds, in two different places.

I present the Australian Aboriginal example as a very real illustrative example of how emotional profiles affect perception and hence communication. This is a stumbling block to inter-cultural communication. It only presents a problem in extreme circumstances (such as intense psychotherapy), and in most instances inter-cultural communication is sufficient for its purposes. But I think its recognition is an important step in understanding why gaps remain between cultures.

There is however a potentially larger problem, one that relates to the Australian Aboriginal conceptualisation of time that I have mentioned already: the extent to which

the traditional conceptualisation remains dominant in modern Aboriginal culture, but the problem remains.

### **8.5 Re-introducing Time: the Larger Problem**

I have mentioned the Australian Aboriginal conceptualisation of time a number of times, in particular the manner in which important events that occurred in what we consider the past are experienced 'in the now time'. This has potential to cause a significant barrier to communication.

Consider Kirra, a young Australian Aboriginal woman we encountered before, who has been brought up in a remote community, immersed in her own culture. Her practical exposure to Anglo-European culture is limited, let us stipulate, to the occasional visit to the doctor, where she struggles to make the RMO understand what ails her. Her educational exposure to the Anglo-European culture, however, is specific: she is taught by her elders of how her ancestors were driven from their ancestral lands by pastoralists, how an invading culture overran their way of life, deprived them of their identity, forced them into confined areas, and offered them a hybrid life, neither the life of their ancestors nor the life of the invading culture (which generally scorned them).

By virtue of their own approach to time, a Western approach to time, Australian government officials will urge Kirra and her community that all of that dreadful history is in the past — it is not to be forgotten, of course, and reparations will be made, but it is something that must be consigned to history. We must move on, having learned from history, and make better lives for everyone. The government apologises (for something it may consider it really did not do, it was done by others, in the past), and offers a whole brand new way of life, offering billions of dollars in development funding for infrastructure, schools, hospitals. Let bygones be bygones, is the message — let us forgive and learn to put this behind us and go on to work together to a brighter future.

But, this is simply not Kirra's day-to-day experience. All that I have set out about the destruction of her culture is of such importance to her that it is not in the past for her

at all — she is experiencing it 'in the now time'. Her daily experience is of the dispossession of her people, the destruction of their culture and their way of life. She is existing in a nightmare of cultural annihilation, and understandably, she reacts badly to it — she is probably experiencing a mixture of anger, resentment, sadness, regret and disgust. Whatever her mixture of emotions, they are negative, and those negative emotions are going to have an influence on how she represents the world. What her RMO may consider to be a neutral object or scene, or perhaps a positive scene, she may well be seeing as dark and empty, full of the tones of despair captured by Munch.

When government officials visit the community to announce a new initiative for the area — a brand-new hospital with state-of-the-art equipment, perhaps, a project that offers jobs both in construction and later in functioning, as well as facilities for Kirra and others to train as healthcare workers — she will represent this project according to her day-to-day experience. For Kirra, it is not a grand project to revitalise a community after a dreadful history and years of neglect, but simply another part of her daily experience of the destruction of her culture. The project is represented as a threat, a danger.

The heart of this problem lies in its intractability. In the face of perceived resentment, government officials would go to great lengths to demonstrate the benefits of the project: they would offer painstaking explanations of the health and employment opportunities, the infrastructure it will provide; they would present optimistic estimations and predictions, glossy photographs and colourful graphs and charts. Herein lies the intractability, for the solution is not addressing the problem. And the problem is an emotional one: no matter how many people tell her the hospital is wonderful, Kirra and her community will continue to represent it with emotional content, and it will continue to be represented negatively.

This illustrates an extreme, however, and caution is needed: I have described a situation in which a traditional Australian Aboriginal conceptualisation of time is Kirra's dominant if not sole tool in thinking about time. Swain (1997) suggests, however, that traditional concepts may have become diluted over time, as Aboriginal thinking adjusted

to accommodate the new paradigm, so it may be that Kirra's experience is less intense than I have described. And the experience of others who have had less traditional an upbringing may be commensurately lower.

Although it is beyond the scope of this work to suggest how to solve issues of the type I have identified, clearly the first step is to recognise that this is a matter of emotion. A government official, or a psychologist or psychotherapist, who does not understand what it is that is underlying the perceived negative attitude to the project that Kirra and her community are experiencing will not be able to assist. The problem is not her intellectual attitude to the project, but her emotional state. She will never be made to understand intellectually that something is good when it is felt to be bad: it is the emotional problem that needs to be addressed.

## **9.0 Summary and Conclusion**

The first sections of this chapter were devoted to Barrett and Bar's position that representations draw upon stored information, including emotion information, and then its application to different situations, showing how a vegan may represent a scene differently from a non-vegan, and a Shona would represent an object differently from me. I then went on to establish how emotion may appear in a representation by examining two of Edvard Munch's paintings. I demonstrated that there are distinct differences in the emotions represented in each of the paintings, notwithstanding that the paintings are of very much the same scene. These emotions are intrinsic to the paintings, they are contained in the image. In the same way as Munch's emotions informed what he represented in his paintings, our emotions inform how we represent our environment — utilising the feedforward and feedback mechanisms that are at the core the Barrett and Bar position.

This is a position of relativism in vision, one that is dependent on emotion — but, as I have maintained throughout, the differences in representation will usually be slight. In the final sections of this chapter, I went on to describe how the differences could present

difficulties: in the first instance, I described how communication may prove difficult between people with significantly different emotional profiles, where it is needed at a highly detailed, fine-grained level, in psychotherapy and similar situations. I found these two in the provision of mental health care to Aboriginal Australians.

I also identified what may be a more widespread and significant problem, in the manner in which a traditional conceptualisation of time will have an emotional impact, and hence an impact on how the Australian Aboriginal may perceive the entirety of her existence.

There are undoubtedly a number of factors that contribute to communication problems between disparate cultures, but my thesis is that one of the factors is that individuals from such disparate cultures do not share the same representation of the environment.

They are literally worlds apart.

## References

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- Aitken, F., Menelaou, G., Warrington, O., Koolschijn, R. S., Corbin, N., Callaghan, M. F., & Kok, P. (2020). Prior expectations evoke stimulus-specific activity in the deep layers of the primary visual cortex. *PLOS Biology*, 18(12), e3001023. <https://doi.org/10.1371/journal.pbio.3001023>
- Azeem, H. (2015). The art of Edvard Munch: a window onto a mind. *BJPsych Advances*, 21(1), 51–53. <https://doi.org/10.1192/apt.bp.114.012963>
- Balcetis, E., & Dunning, D. (2009). Wishful Seeing. *Psychological Science*, 21(1), 147–152. <https://doi.org/10.1177/0956797609356283>
- Bar, M. (2003). A Cortical Mechanism for Triggering Top-Down Facilitation in Visual Object Recognition. *Journal of Cognitive Neuroscience*, 15(4), 600–609. <https://doi.org/10.1162/089892903321662976>
- Bar, M. (2007). The proactive brain: using analogies and associations to generate predictions. *Trends in Cognitive Sciences*, 11(7), 280–289. <https://doi.org/10.1016/j.tics.2007.05.005>
- Bar, M., Kassam, K. S., Ghuman, A. S., Boshyan, J., Schmid, A. M., Dale, A. M., ... Halgren, E. (2006). Top-down facilitation of visual recognition. *Proceedings of the National Academy of Sciences*, 103(2), 449–454. <https://doi.org/10.1073/pnas.0507062103>
- Barrett, L. F., & Bar, M. (2009). See it with feeling: affective predictions during object perception. *Philosophical Transactions of the Royal Society B: Biological Sciences*, 364(1521), 1325–1334. <https://doi.org/10.1098/rstb.2008.0312>
- Bassie, A., & Ingles, E. (2018). *Edvard Munch*. Parkstone International.
- Broad, C. D. 1921a, "Time," in J. Hastings (ed.) *Encyclopedia of Ethics and Religion*, Vol. XII (Edinburgh: Charles Scribner's Sons)
- Calma, T., Dudgeon, P., & Bray, A. (2017). Aboriginal and Torres Strait Islander Social and Emotional Wellbeing and Mental Health. *Australian Psychologist*, 52(4), 255–260. <https://doi.org/10.1111/ap.12299>
- Cass, A., Lowell, A., Christie, M., Snelling, P. L., Flack, M., Marrnganyin, B., & Brown, I. (2002). Sharing the true stories: improving communication between Aboriginal patients and healthcare workers. *Medical Journal of Australia*, 176(10), 466–470. <https://doi.org/10.5694/j.1326-5377.2002.tb04517.x>
- Del Piccolo, L., & Goss, C. (2012). People-centred care: new research needs and methods in doctor–patient communication. *Challenges in mental health. Epidemiology and Psychiatric Sciences*, 21(2), 145–149. <https://doi.org/10.1017/s2045796012000091>
- Fulkerson, M. (2019). Emotional Perception. *Australasian Journal of Philosophy*, 98(1), 16–30. <https://doi.org/10.1080/00048402.2019.1579848>
- Geuss, M. N., McCardell, M. J., & Stefanucci, J. K. (2016). Fear Similarly Alters Perceptual Estimates of and Actions over Gaps. *PLOS ONE*, 11(7), e0158610. <https://doi.org/10.1371/journal.pone.0158610>
- Isaacs, Pyett, P., Oakley-Browne, M. A., Gruis, H., & Waples-Crowe, P. (2010). Barriers and facilitators to the utilization of adult mental health services by Australia's

- Indigenous people: Seeking a way forward. *International Journal of Mental Health Nursing*, 19(2), 75–82. <https://doi.org/10.1111/j.1447-0349.2009.00647.x>
- Janca, A., & Bullen, C. (2003). The Aboriginal Concept of Time and its Mental Health Implications. *Australasian Psychiatry*, 11(1\_suppl), S40–S44. <https://doi.org/10.1046/j.1038-5282.2003.02009.x>
- Joubert, O. R., Rousselet, G. A., Fize, D., & Fabre-Thorpe, M. (2007). Processing scene context: Fast categorization and object interference. *Vision Research*, 47(26), 3286–3297. <https://doi.org/10.1016/j.visres.2007.09.013>
- Kok, P., Brouwer, G. J., van Gerven, M. A. J., & de Lange, F. P. (2013). Prior Expectations Bias Sensory Representations in Visual Cortex. *Journal of Neuroscience*, 33(41), 16275–16284. <https://doi.org/10.1523/jneurosci.0742-13.2013>
- Malcolm, G. L., Nuthmann, A., & Schyns, P. G. (2012). Beyond Gist: Diagnostic Information Changes with Level of Scene Categorization. *Journal of Vision*, 12(9), 800–800. <https://doi.org/10.1167/12.9.800>
- Maruši, B 2018, 'Do reasons expire? An essay on grief', *Philosophers' Imprint*, vol. 18, no. 25, pp. 1-21.
- Medin DL, Ojalehto B, Marin A, Bang M. 2013. Culture and epistemologies: putting culture back into theecosystem. In *Advances in Culture and Psychology*, ed. M Gelfand, C Chiu, Y-Y Hong, pp. 177–217. Oxford,UK: Oxford Univ. Press
- Mellor, D. H. (2002). *The Facts of Causation*. Routledge.
- Mobbs, R. (1986). But I do care! Communication difficulties affecting the quality of care delivered to Aborigines. *Medical Journal of Australia*, 144(S2). <https://doi.org/10.5694/j.1326-5377.1986.tb115952.x>
- Morgan, D. L., Slade, M. D., & Morgan, C. M. A. (1997). Aboriginal philosophy and its impact on health care outcomes. *Australian and New Zealand Journal of Public Health*, 21(6), 597–601. <https://doi.org/10.1111/j.1467-842x.1997.tb01762.x>
- Morphy, H. (1999). Australian Aboriginal concepts of time. *The story of time*, 264-267.
- Munch, Edvard, 2005. *The Private Journals of Edvard Munch : We Are Flames Which Pour Out of the Earth*, edited by J. Gill Holland, University of Wisconsin Press, 2005.
- Ojalehto, & Medin, D. L. (2015). Perspectives on Culture and Concepts. *Annual Review of Psychology*, 66(1), 249–275. <https://doi.org/10.1146/annurev-psych-010814-015120>
- Olson, M. S., Olson, D. W., & Doescher, R. L. (2007). Marilyn S. Olson, Donald W. Olson, and Russell L. Doescher on the Blood-Red Sky of Munch's the Scream.
- Palmié S. 2013b. The trouble with history. *Small Axe* 17:193–202
- Parker, R. (2010). Australia's Aboriginal Population and Mental Health. *The Journal of Nervous and Mental Disease*, 198(1), 3–7. <https://doi.org/10.1097/nmd.0b013e3181c7e7bc>
- Peyrin, C., Michel, C. M., Schwartz, S., Thut, G., Seghier, M., Landis, T., ... Vuilleumier, P. (2010). The Neural Substrates and Timing of Top–Down Processes during Coarse-to-Fine Categorization of Visual Scenes: A Combined fMRI and ERP Study. *Journal*

- of Cognitive Neuroscience, 22(12), 2768–2780. <https://doi.org/10.1162/jocn.2010.21424>
- Priebe, S., Dimic, S., Wildgrube, C., Jankovic, J., Cushing, A., & McCabe, R. (2011). Good communication in psychiatry – a conceptual review. *European Psychiatry*, 26(7), 403–407. <https://doi.org/10.1016/j.eurpsy.2010.07.010>
- Ragna Thiis Stang. (1979). *Edvard Munch, the man and his art* : translated from the Norwegian by Geoffrey Culverwell. New York: Abbeville Press.
- Saethre, E. J. (2007). Conflicting Traditions, Concurrent Treatment: Medical Pluralism in Remote Aboriginal Australia. *Oceania*, 77(1), 95–110. <https://doi.org/10.1002/j.1834-4461.2007.tb00007.x>
- Sheldon, M. (2001). Psychiatric Assessment in Remote Aboriginal Communities. *Australian & New Zealand Journal of Psychiatry*, 35(4), 435–442. <https://doi.org/10.1046/j.1440-1614.2001.00920.x>
- Stefanucci, J. K., Gagnon, K. T., Tompkins, C. L., & Bullock, K. E. (2012). Plunging into the Pool of Death: Imagining a Dangerous Outcome Influences Distance Perception. *Perception*, 41(1), 1–11. <https://doi.org/10.1068/p7131>
- Swain, T. (1997). *A place for strangers* : towards a history of Australian Aboriginal being. Cambridge: Cambridge University Press.
- Taylor, J. E. T., Witt, J. K., & Sugovic, M. (2011). When Walls are No Longer Barriers: Perception of Wall Height in Parkour. *Perception*, 40(6), 757–760. <https://doi.org/10.1068/p6855>
- Thompson, L., & McCabe, R. (2012). The effect of clinician-patient alliance and communication on treatment adherence in mental health care: a systematic review. *BMC Psychiatry*, 12(1). <https://doi.org/10.1186/1471-244x-12-87>
- Truman, A., & Mudrik, L. (2018). Are incongruent objects harder to identify? The functional significance of the N300 component. *Neuropsychologia*, 117, 222–232. <https://doi.org/10.1016/j.neuropsychologia.2018.06.004>
- Valdés-Conroy, B., Román, F. J., Hinojosa, J. A., & Shorkey, S. P. (2012). So Far So Good: Emotion in the Peripersonal/Extrapersonal Space. *PLoS ONE*, 7(11), e49162. <https://doi.org/10.1371/journal.pone.0049162>
- Witt, J. K., & Dorsch, T. E. (2009). Kicking to Bigger Uprights: Field Goal Kicking Performance Influences Perceived Size. *Perception*, 38(9), 1328–1340. <https://doi.org/10.1068/p6325>
- WITT, J. K., LINKENAUER, S. A., BAKDASH, J. Z., & PROFFITT, D. R. (2008). Putting to a bigger hole: Golf performance relates to perceived size. *Psychonomic Bulletin & Review*, 15(3), 581–585. <https://doi.org/10.3758/pbr.15.3.581>
- Xiao, Y. J., & Van Bavel, J. J. (2012). See Your Friends Close and Your Enemies Closer. *Personality and Social Psychology Bulletin*, 38(7), 959–972. <https://doi.org/10.1177/0146167212442228>
- Xie, W., & Zhang, W. (2016). The El Greco fallacy and pupillometry: Pupillary evidence for top-down effects on perception. *Behavioral and Brain Sciences*, 39. <https://doi.org/10.1017/s0140525x15002654>

## Afterword

I have set out in this thesis what I think is a reasonably simple progression of ideas, starting from the construction of emotions and their function as alerts, to call our attention to important features of the environment, and ending with the incorporation of affective and emotional information in a visual representation. The result, relativism in vision, may be considered counterintuitive, but on reflection it offers us more than some intuitive approaches. That there is affective and emotional content in our visual representations serves both simplicity and efficiency, and there are sufficient non-visual checks on how differently we may see objects to ensure that we can communicate, that our lives in society can go smoothly. There is no harm in relativism in vision, and there are advantages.

The non-visual checks on this type of relativism are societal — whim and flights of fancy will be eliminated simply because they serve no practical purpose. Variations in perception that come from affect and emotion will be limited, simply because who we are and how we live means we share very broadly similar basic values. From these broadly shared set of values emerges a very broadly identifiable set of emotions, and variation in representations will be confined by the limits of this set. That is, if by 'we' I limit myself to the ever-expanding sphere of WEIRD culture.

Cultures from outside this sphere may not share the same broad values, and accordingly, despite attempts to co-opt the values of such cultures into a WEIRD framework, they may not share the broadly identifiable set of WEIRD emotions. *Liget* is not WEIRD anger, it is a product of cultural values unknown in WEIRD society, a relic of a culture overwhelmed by WEIRD expansion. The Llongot headhunter of yesteryear will have had a visual experience of the various headhunting rituals very different from that of her modern counterpart, who does not share the relevant values.

An ongoing example of the clash of WEIRD culture with other cultures occurs in Australia, where the traditional Australian Aboriginal comes into contact with her Anglo-

European counterpart. Communication between the two is an ongoing problem, a problem which I think is exacerbated by differences in emotional profiles, which carry through to vision. Two individuals talking about two different objects (or environments, or states of affairs) thinking they are talking of the same object are doomed to talk past each other. At a fine-grained level of communication, such as is demanded in the provision of mental health services, the emotion-based difference in representations will mean just that: practitioner and patient will be talking about two different objects and their place in the environment or state of affairs, and they will forever talk past each other.