

SYMPOSIUM

# The epistemic role of early vision: Cognitive penetration and attentional selection\*

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**Abstract** In this article I discuss Athanasios Raftopoulos' view on the epistemic role of attention and early vision, as outlined in his most recent book. I start by examining his view on attention, which he illustrates during his discussion of structured cognitive contents and their interactions with perceptual contents, as well as during his discussion of selection effects. According to Raftopoulos, attention not only operates pre-perceptual input selection, but also influences perceptual processing during late vision biasing the sampling of the iconic image for perceptual hypotheses-testing. Afterwards, I critically assess Raftopoulos' conclusions about the epistemic role of early vision, which are based on his view about the role of attention. From this assessment, I raise a potential concern for his proposal in the form of a new problem of selection: the interesting epistemic consequences of cognitive penetrability either follow or do not follow from selection effects, depending on how these selection effects are construed, but regardless of the stage of visual processing in which they take place.

**KEYWORDS:** Cognitive Penetration; Attention; Constructivism; Selection Effects; Perceptual Epistemology

**Riassunto** *Il ruolo epistemico della visione primaria: penetrazione cognitiva e selezione attentiva* – In questo articolo discuto la proposta di Athanasios Raftopoulos riguardo al ruolo epistemico dell'attenzione e della *early vision*, contenuta nella sua recente monografia. La mia discussione comincia da un esame delle sue idee riguardo all'attenzione, che illustra sia durante la sua discussione dei contenuti cognitivi strutturati e delle loro interazioni con i contenuti percettivi, sia durante la sua discussione degli effetti di selezione. Secondo Raftopoulos, l'attenzione non opera solamente una selezione pre-percettiva degli input, ma influenza anche i processi percettivi di *late vision* orientando il processo di valutazione delle ipotesi percettive sulla base dell'immagine iconica. Successivamente, valuto criticamente le conclusioni di Raftopoulos riguardo al ruolo epistemico di *early vision*, fondate sulla sua concezione del ruolo dell'attenzione. Da questo esame, evidenzio una potenziale criticità nella sua proposta costituita da un nuovo problema della selezione: le conseguenze epistemiche della penetrabilità cognitiva seguono o non seguono dai processi di selezione, a seconda di come tali effetti sono concepiti, ma indipendentemente dal livello nella serie dei processi visivi nel quale si verificano.

**PAROLE CHIAVE:** Penetrabilità cognitiva; Attenzione; Costruttivismo; Effetti di Selezione; Epistemologia percettiva

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## 1 Introduction

IN HIS BOOK *COGNITIVE PENETRABILITY and the epistemic role of perception* Athanasios Raftopoulos wants to secure a theory-neutral ground for perception and belief. He develops an empirically informed theory which allows for close interaction between perception and cognition, while avoiding the dangers of epistemological constructivism. In so doing, he provides the longstanding debate about cognitive penetrability and theory-ladenness of empirical observation with two distinct and valuable contributions. On the one hand he offers an exhaustive and much needed synopsis of a nuanced debate which spans over Philosophy, Cognitive Psychology, and Cognitive Neuroscience. In this respect his work could be seen as a textbook for those who are interested in having a comprehensive and up-to date overview of this intricate interdisciplinary debate. On the other hand, Raftopoulos proposes and argues for his own view on the interactions between perception and cognition, which is deeply anchored in current knowledge about the internal working of the perceptual system in the brain. This aspect of the book builds on a critical intake of the work of other main voices in the debate but aims to move forward. He devises a picture of perception which is flexible enough to allow for direct influence of cognitive processes, such as those underlying beliefs and categorization, with the perceptual system. In his view, however, such influence is not so pervasive as to threaten the epistemic role of perception and sever the reliable connection between the subject and the world that we want perception to establish, in order to avoid the pernicious consequences of epistemological constructivism. The key to understanding this proposal is the neat division of perception into two separate stages, *early* and *late* vision. While he argues that the former is cognitively impenetrable and that it reliably and accurately delivers information retrieved from the world, he offers reasons to believe that

the latter interacts with cognition and concepts, while not having conceptual and propositional contents itself.

Raftopoulos<sup>1</sup> offers a novel definition of cognitive penetration (henceforth CP) that builds upon extant accounts while avoiding many of the shortcomings of available definitions. He focusses on the directness of a cognitive influence on perception<sup>2</sup> as well as on its consequences for the epistemic role of the supposedly penetrated perceptual processing stages.<sup>3</sup> He convincingly highlights that even if all other conditions for CP are met, but the cognitive perceptual interaction is such that it does neither undermine nor enhance a given perceptual process' epistemic role, than that process fails to be cognitively penetrated. Importantly, he is careful in excluding selection effects from being instances of CP from the get-go. In so doing he follows the received view in the debate<sup>4</sup> that if a cognitive influence of perception merely selects, through attention, the input to perception, i.e. it affects what perception processes and not the way perceptual processing unfolds, than this is not an interesting case of CP because the epistemic role of perception in delivering reliable information about the world on which to ground perceptual beliefs is not altered in any way.

Raftopoulos' discussion is so wide and detailed that presenting a critical assessment of the whole scope of his proposal goes far beyond the possibilities of a short commentary. Instead, in what follows I shall focus, at first, on two aspects of the book that I find of particular interest concerning its role as a synopsis of the whole debate. These are his discussion of the ideas of Daniel Burnston<sup>5</sup> and Susanna Siegel.<sup>6</sup> While I think that he does an excellent job at reporting and sharply criticising some aspects of these authors' work, there are some important points that I wish to raise about his discussion of each of these authors respectively (§2 and §3). These individual discussions serve as building blocks for my final assessment of one of the main theses advanced in Raftopoulos book (§4).

More specifically, I will raise a potential problem for his account of the epistemic role of early vision in the light of his view on attentional selection effects, which is partly adopted from his own previous work and Siegel's.

## ■ 2 Structured cognitive contents and conceptual spaces

I would like to start this commentary by discussing Raftopoulos' defence against some powerful objections raised by Burnston.<sup>7</sup> For reasons of conciseness I shall not report the bulk of Burnston's arguments, which Raftopoulos carefully and adequately covers in the book. I shall focus on his counterarguments instead. While I have some remarks on Raftopoulos' discussion of Burnston, which I report below, this section also serves the purpose of introducing some of Raftopoulos' ideas that shall become relevant for my discussion in the following sections.

In a nutshell, Burnston claims that cognition and perception cannot interact in the way that a proponent of CP wants them to, namely through a direct influence of cognition on the contents of perception, because their respective contents have different formats (corresponding to Dretske's analog and digital formats).<sup>8</sup> Cognitive contents are not specific enough to determine the nuanced effect that they supposedly exert on perception.<sup>9</sup> Raftopoulos explicitly recognizes the import of this argument and initially highlights how, in his view, processes in late vision have hybrid content and that one could argue that cognition interacts with the subset of contents in late vision that have the adequate format. However, Raftopoulos also writes:

I may hold that late vision has hybrid states and contents, but I also think that cognitive effects in late vision modulate the phenomenology of the visual scene, which means that cognition modifies perceptual processing itself. In addition, I have argued that

the cognitive effects are mediated through cognitively driven attention, which means that there is a mechanism that mediates the cognitive effects on perception and Burnston rejects this possibility.<sup>10</sup>

For the moment, let me focus on why Burnston rejects the possibility of an intervening mechanism. The bulk of Burnston's objection rests on the assumption that such an intervening mechanism would have to operate by translating the digital contents of the cognitive states and processes into perceptually structured contents in order for cognition to have a direct and deterministic effect on perception. However, cognitive contents lack the adequate informational richness for such a translation to obtain. Since cognitive contents lack perceptual structure the translation mechanism cannot decide in a principled way which specific perceptual changes should follow the translation of the cognitive content.

To this objection, Raftopoulos replies in a very interesting way. Firstly, he argues that attentional mechanisms active in late vision operate by biasing perceptual competition in favor of those representations that are more compatible with the currently entertained hypotheses. These hypotheses in turn may themselves be determined by cognition, and this constitutes a direct effect of cognition onto perceptual processing itself, mediated by attention, that does not require any dedicated translation mechanism:

In late vision, the cognitive information transmitted top-down concerns the core characteristics of the object(s) that are hypothesized to exist in a perceived visual scene, or the relevant locations where most likely such information may exist. [...] the perceptual neuronal assemblies that encode the spatial or featural relevant information receive an extra activation boost or have their responses sharpened and this biases the competition against neuronal assemblies that encode different information. This is how cogni-

tively driven attention affects the activation values of the neurons in the relevant neuronal assemblies. This boost or sharpening occurs in the course of perceptual processing and is not just an offline increase in the baseline activation, as is the case in pre-cueing that affects neuronal activations before stimulus onset. Attention, by biasing the competition affects directly the perceptual computations.<sup>11</sup>

Secondly, Raftopoulos insists that even if Burnston is right in saying that cognitive contents have analog symbolic format, this does not entail that they lack any perceptually relevant structure. They can have an internal structure that maps onto a phenomenal similarity space.<sup>12</sup> In the case of color, the activation of a color concept does not trigger any perceptual process associated with that concept. The type of process that is triggered depends on the task at hand and the concept itself has an internal structure described as a set of values (in the case of color: hue, saturation and brightness) which may be directly used by the perceptual system to bias perceptual competition in favor of the region in the phenomenal space corresponding to that set of values, thus altering perceptual processing in a direct way.

In summary, Raftopoulos responds to the claim that there must be an intervening translation mechanism to mediate the interactions between perception and cognition in late vision by attributing internal structure to symbolic conceptual representation and describing a direct attentional biasing mechanism through which such cognitive structure is mapped directly onto ongoing perceptual processes.

I believe that Raftopoulos' reply to the problems raised by Burnston is on the right track and need only be supplemented by one further claim. According to Raftopoulos<sup>13</sup> the activation of a concept like "heart" activates semantic information about the typical color of hearts which corresponds to a region in the color space and is fed top-down and lat-

erally to the visual system where it biases perceptual competition, through attentional modulation, in favor of a more compatible percept. This mechanism can explain color matching tasks where subject adjust the color of a background in the direction of the typical color rather than the objective color of a stimulus.<sup>14</sup>

However, it is not clear how, in this mechanism, the *typical color* may be determined, especially since one might expect graded variations between the adjustments of different subjects. In this respect, one might push Burnston objection one step further and say that even if one accepts that a structured color concept can activate only the relevant color information due to the nature of the task and the corresponding region of the color space in the perceptual system, by biasing the competition toward that region during percept formation, one still lacks an explanation of the determinate adjustments that each individual makes. In order to solve this problem one needs a specific point in the color space rather than a region. Luckily, I think this problem may be readily solved by introducing a historical idiosyncratic component into the picture. Namely that a subject previous experience with red hearts specifies the typical color of hearts for that subject as a point in the "red" region of the color space and this is the information that is recruited upon activation of the concept rather than the regions itself. This helps explain why the perceived hue upon concept activation may vary between perceivers, even though there is a common tendency toward the overall typical color region of stimuli associated with that concept.

However, regardless of this further direction in which one may take Raftopoulos' reply to Burnston, the discussion above shows how Raftopoulos believes attention to be the main mechanism responsible for the interface between perceptual and cognitive processes in late vision.

This is extremely relevant for the next sections of my commentary.

### 3 Selection effects, perceptual evidence and cognitive penetration

In this section I discuss Raftopoulos' treatment of the recent proposal by Siegel.<sup>15</sup> The purpose of this discussion is to highlight a potential problem for Raftopoulos' treatment of the epistemic role of early vision and the role of attention in CP, which I will discuss in the next section. Before beginning, I would like to point out that this section is dense with quotations. This is because the points I raise, here and in the next section, rely on some nuances of Raftopoulos' and Siegel's view on attention, perceptual evidence and selection effects. In order to avoid potential misunderstandings of these views I thought it would be helpful to report them with these Author's own words.

I think Raftopoulos does an excellent job in situating a condensed review of Siegel's proposal in the context of his own extensive discussion of the interactions between perception and cognition. One of the aspects on which Raftopoulos focusses is the distinction between the *selective* and the *responsive* mode<sup>16</sup> in which cognition may affect perception. According to Raftopoulos, the first mode corresponds to attention selecting the inputs to perception from the distal scene, while the second mode corresponds to attention selecting among the contents of the iconic image, which is delivered by early vision, those that are better suited to test the hypotheses currently entertained by the system to form the percept during late vision.<sup>17</sup>

These two ways roughly correspond to Siegel's distinction between the selective and the responsive mode in which cognitive states may affect perception. In the selective mode, the cognitive states select the distal stimuli that will be perceptually processed and, hence, which evidence perception will use to form a perceptual belief, a selection that takes place through the effects of cognitively driven spatial or object/feature-centered attention. It is

widely acknowledged that this sort of effects is not a case of CP; CP purports to cover cases in which cognition affects the formation of the percept given the same input. In the responsive mode, the cognitive states control which beliefs a perceiver forms in response to a body of evidence. In perception, this means that the cognitive states controlling the formation of the percept do so by controlling the way the evidence, in the form of low-level perceptual input, is handled; this is a typical case of CP.<sup>18</sup>

This will become important during my discussion of the epistemic role of early vision in § 4. For the time being let me focus on one specific claim made by Raftopoulos while reviewing Siegel's position, namely that Siegel excludes all selection effects from being cases of CP:

Selection effects that merely select the input to be perceptually processed, on the other hand, should be excluded from being instances of CP and since selection effects are the hallmark of the attentional effects on perception, attentional effects should not be considered cases of CP. In general, throughout her work, Siegel maintains that attention in any of its forms affects perception only indirectly, which means that attention affects pre-perceptual or post-perceptual stages but not perceptual processing itself and, thus, it is not a case of CP. [...] In other words, perceptual processing is independent of attention, which acts externally to perception.<sup>19</sup>

In contrast to this position Raftopoulos argues that the processes of late vision inherently involve attention and that the effect of attention on late vision are indeed internal and direct and that they correspond to Siegel's responsive mode.

Herein lies a problem afflicting Siegel's account because this selection may very

well take place in late vision, where attention guides perceptual processes in order to test hypotheses concerning the identity of the distal object(s) by revisiting information contained in the iconic image. In this case, the information selected is not in the environment but in a set of perceptual mental states and the selection is effectuated by cognitively driven attention, which means that the link from cognition to perception is internal, causal, and purely mental. In addition, the cognitive states affect perceptual processes and the contents of the affected perceptual states; they do not merely select the input before perceptual processing begins, as Siegel seems to suppose. It follows that these attentional effects meet Siegel's own criteria for CP and, thus, should be seemed cases of genuine CP.<sup>20</sup>

Since these selection effects that happen in late vision are internal and direct, they count, contra Siegel, as genuine cases of CP. However, a few sentences below Raftopoulos seems to adopt the following view from Siegel:

In the selective mode, therefore, attention selects from the environment which evidence the perceptual system will use (it handpicks the evidence) but does not determine the content of the evidence thus selected. It selects, for example, some features of pairs of scissors that mimic features of guns without changing these features.<sup>21</sup>

This echoes Siegel's metaphor of the tribunal of experience recruited in her previous work:

In general, visual experience purports to tell you what the world is like, allowing you to check your beliefs against reality. But if behind the scenes, the penetrating states are stacking the tribunal of experience in their own favor, then while experience will seem to let you check your beliefs against the world – to you, this will

be just what's happening – really you'll just be checking your beliefs against your beliefs. The tribunal will be corrupted.<sup>22</sup>

The idea of this metaphor is that an unbiased jury that has to work with independently biased or poorly acquired evidence may still arrive at a reasonable verdict, given the evidence that it has. However, a biased jury may reach an unreasonable verdict even if it has all the evidence available. This is why selection effect do not count, according to Siegel, as cases of CP. Selections effects corresponds to what Raftopoulos and Siegel appropriately label *handpicking of evidence*. Whereas, keeping the metaphor going, for genuine CP to be the case one would need a direct influence on the jury's judgments.

Despite this initial recognition of the connection between selection effects that are not CP and evidence handpicking, later on Raftopoulos characterizes both the attentional selection effects that concern the distal scene, and that happen prior to early vision, and those that concern the iconic image, which happen after early vision and during late vision as effects of evidence selection:

[...] searching for relevant information in the distal scene, or in the iconic image, respectively correspond to a certain extent to Siegel's distinction between the selective mode and the responsive mode in which cognitive states may affect perception. The main difference between the way cognition affects perception by selecting the input before the perceptual processing starts, and the way cognition affects perception during late vision is not that the one but not the other involves attention because, as we saw, cognitively driven attention operates both when the environmental input is selected and during late vision when it guides the hypothesis testing. The main difference consists in the nature of the selected evidence. In the former case the evidence is in the environment, whereas in the latter it is

stored in the perceptual circuits of the viewer and is, thus, the content of some mental perceptual states.<sup>23</sup>

This passage creates some tension between Raftopoulos' apparent agreement with Siegel that cases of evidence handpicking are not genuine cases of CP and his insisting that attentional effects in late vision are. If attention also operates evidence selection from the iconic image in late vision, how does this differ from pre-perceptual evidence selection in such a way that the former constitutes a case of CP while the latter does not? I now have all the elements in place to rise, in the next section, my final worry for the theory of CP of late vision and the epistemic role of early vision advanced by Raftopoulos.

#### ■ 4 The epistemic role of early vision a new problem of selection?

In the previous section, while discussing Raftopoulos' take on the views advanced by Burnston and Siegel, I highlighted how, for Raftopoulos, the key mechanism for the interaction between cognitive processes and the perceptual processes of late vision is that of attentional biasing. Such a mechanism is direct, internal to the subject's mind, and does not require any translation of digital or symbolic conceptual contents into analog perceptual ones. For these reasons he claims that it constitutes a genuine case of CP. On top of that Raftopoulos extensively argues that early vision is immune to such effects and, by being cognitively impenetrable, it anchors the perceptual system to the world in a way that preserves the epistemic role of perception in grounding perceptual beliefs. In this section I outline a potential problem that I can envisage for Raftopoulos' view in the light of the aforementioned tenets of his theory.

Let me start by elaborating on the epistemic role that Raftopoulos assigns to early vision:

The epistemic role of early vision is constrained by the fact that early vision re-

trieves from the visual scene information that is fed to late vision and is used for the construction of the percept, in the formation of which the semantic information made available by cognition also plays a crucial role. Thus, the epistemic role of early vision consists in providing the input to late vision [...].<sup>24</sup>

So far Raftopoulos is just telling us that early vision has the role of feeding late vision the information it needs to form the percept. This passage, taken in isolation, is silent about the possibility that the mechanism of early vision may be biased or otherwise fail to perform their information delivery task in an epistemically appropriate way. However, Raftopoulos clarifies these aspects in subsequent passages on the same topic. In particular he argues that early vision is affected by cognition only indirectly and that such indirect effects do not threaten early vision's epistemic role. Thus, early vision is cognitively impenetrable. I shall grant this point, but let us examine what Raftopoulos means by saying that the epistemic role of early vision is not threatened by cognition.

In arguing that pre-cueing effects do not threaten the epistemic role of early vision Raftopoulos writes:

Since the epistemic role of early vision consists in providing late vision with iconic information concerning the visual scene that late vision will use to construct the percept, and since this information is retrieved by early vision from the environment, the epistemic role of early vision would be affected by pre-cueing if pre-cueing effects could influence the processes of information retrieval during early vision. If they could, they would affect, either by diminishing or enhancing, the sensitivity of early vision in particular and of perception in general to the environmental data.<sup>25</sup>

This passage seems to suggest that early

vision could be considered as a fallible process, suitable to having enhanced or decreased sensibility in its information retrieving task. However, one of the book's main purposes is precisely to argue that this is not the case. Early vision is not sensitive in such a way and the information it delivers to late vision, in the form of the iconic image, is a faithful and exhaustive representation of the distal scene. Later in the book Raftopoulos explicitly states what he takes the epistemic role of early vision to be:

[...] the fact that early vision is not directly affected by cognition entails that early vision does indeed provide the cognitive-free evidence needed for perception having the capability to be sensitive to the evidence.<sup>26</sup>

And further:

The information retrieved from the visual scene and stored in the iconic image reflects only the environment and the perceptual makeup of the viewer and not any of the viewer's cognitive states. This means that the information stored in the iconic image will contain information that is incongruent with the favored hypothesis if such information exists in the environment. Whether this information will be used during late vision to reject the favored hypothesis or whether the CP of late vision will lead to a testing of the hypothesis that is biased in favor of this hypothesis so that any incongruent information be ignored is immaterial to the epistemic role of early vision; the epistemic duty or responsibility of early vision was to deliver all available information and this it did. This makes it possible in principle for late vision to reject the favored hypothesis since the disconfirming information is there to be used. If early vision were CP, the recalcitrant information would not even be there to be used, in which case late vision would have no oth-

er choice but to confirm the favored hypothesis; viewers would be doomed to seeing only what their cognitive states dictate. This, in turn, allows early vision to play the role of a neutral arbiter for perceptual beliefs.<sup>27</sup>

These passages highlight how Raftopoulos thinks of early vision as *neutral arbiter* who delivers all the available evidence to late vision regardless of a subject's cognitive makeup. It is only during late vision that some of this evidence may be ignored to favor some hypotheses over others due to the influence of cognitive states.

As mentioned, the argument that early vision is immune to cognition is motivated by consideration of the epistemic role of perception in general, which Raftopoulos wants to secure, and it is grounded in empirical consideration about the processing architecture of the perceptual system. However, the resulting construal of early vision as an impenetrable perceptual stage that faithfully delivers all the information available entails that the processes of early vision are not themselves assessable by any epistemic standard. In other words, early vision is epistemically infallible. Malfunctions of early vision may, of course, occur, but not due to the failure to comply to a given epistemic norm. If everything in the system's machinery works properly, early vision will offer an exhaustive and accurate report on the external world. One problem that I see here is that such an epistemic role may also be assigned to the retina, or, more radically, to the external world itself. As long as the epistemic role of *x* is that of providing evidence for further deliberation or processing, distal stimuli in the visual scene and their retinal projections also perform this role, early vision becomes just the next step in this evidence delivery process.

Matters become epistemically more interesting when we get to late vision where beliefs, desires, emotions and such can in principle influence the way in which the perceptual system forms the percept on the basis of the available evidence. This process, as



Raftopoulos' acknowledges and argues for, could be biased toward ignoring or overestimating some of the evidence thus resulting in modifications to the percept and deviations, positive and negative, from an epistemically neutral standard, which would have obtained in the absence of the biasing cognitive influences. Late vision is the only stage that is epistemically assessable in this sense. The worry is that the epistemic role of early vision, as Raftopoulos envisages it, is too constrained to be distinguished from the evidence providing role of other pre-perceptual stages and that many of the problems associated with securing the epistemic role of perception may only have been pushed one step away from the world and within the perceptual system itself.

On this latter consideration, the last point that I would like to highlight is that, in the light of the above discussion of the epistemic role of early vision, and of the way Raftopoulos thinks of selection effects (§3), the CP of late vision endorsed by Raftopoulos may be exposed to analogue objections to those about pre-perceptual input selection failing to qualify as CP, that Raftopoulos also accepts. If in late vision cognitively-driven attention biases perceptual processing toward an outcome consistent with the content of the cognitive states, but this happens by a selective sampling of the "cognitively neutral" iconic image, which is the input to late vision delivered by early vision, how can such a biasing process ultimately be distinguished from pre-perceptual input selection through spatial attention? Granted, attention as a neural mechanism may work very differently at this later stage of processing, its effect may be direct and internal to the perceptual system, but from an epistemic point of view, it seems that late vision is also merely selecting where to look, i.e. what evidence to retrieve from the iconic image, and if such cases fail to constitute CP in the case of spatial attention and pre-perceptual input selection, Raftopoulos needs to offer a clearer explanation of why this is not the case in late vision.

The interpretation of Raftopoulos' proposal, which led me to the point raised above, seems confirmed in the following quotation, which also shows that Raftopoulos is fully aware of the parallel between distal-selection and selection in the iconic image:

One could draw a parallel between the role of early vision in forming the iconic image by retrieving directly information from the environment, a iconic image, which, by being unaffected by cognitive influences, is "theory-neutral", and the role of the distal stimulus when cognitive effects involve external causal links. Recall that all definitions of CP exclude cognitive effects that operate through an external causal link from being cases of CP because in these cases cognition selects the stimulus that serves as input to perception, and CP is supposed to be about the possibility of having two different percepts while looking at the same stimulus. [...] So, as the distal stimulus is available to attentional external refocusing and this mitigates the repercussions of the cognitive influences, so the iconic image is available to internal attentional refocusing and this mitigates the repercussions of CP.<sup>28</sup>

Here it seems to me that if the case of distal-selection is excluded from being a case of CP the same should hold for its analogue process of selection of evidence for testing hypotheses from the iconic image in late vision. The fact that the latter is internal to the perceptual system may not secure it as a case of cognitive-penetration in the way that Raftopoulos needs it to. Both would be instances of mere input selection by attention, the only difference being that in one case the input is the distal stimulus and in the other it is the iconic image, i.e. the input to late vision. Recall the tribunal metaphor from the previous section. Both these cases of selection can be described as evidence handpicking rather than alterations of the evidence itself, since, for Raftopoulos, evidence gath-

ering during early vision is not altered by cognition. Thus, both would be instances of Siegel's *selective mode* (§3).<sup>29</sup>

One may describe both cases as a neutral jury that reaches an optimal verdict while being fed only part of the available evidence due to an independent biasing mechanism. In this situation there is no CP because the epistemic role of the jury itself would not be compromised and the influence is external to the jury. It does not matter if it was a corrupted policeman (external to the tribunal) or a corrupted prosecutor (internal to the tribunal) who manipulated the evidence. Alternatively, one may interpret the two cases of being cases of a corrupted and biased jury which pays attention only to evidence congenial to its prejudice. Here both instances of selection could potentially be cases of CP as the epistemic role of the jury is compromised in both, regardless of when the neutral evidence has been being gathered and presented. In any case, it seems to me that both cases deserve equal treatment when it comes to selection of inputs being or not being a case of CP. This is why refocussing of attention helps mitigating the effects of cognitive influences in both cases, as Raftopoulos states in the passage mentioned above.

## 5 Conclusion

Overall, I consider Raftopoulos' book to be an invaluable guide through the very complex and longstanding debate about CP. Furthermore, I believe that Raftopoulos considerable effort in securing the impenetrability of early vision and describing, at several levels of analysis, the way in which perception and cognition may interact in late vision is convincing and largely successful.

Ultimately, however, concerning his claims about attention being the main mechanism responsible for the cognitive penetrability of late vision, I have to agree with Lyons<sup>30</sup> that the locus of CP is not really important. This is not because of the alleged cognitive penetrability or impenetrability of early or late vision,

but rather because selection effects either have or do not have pernicious epistemic consequences, regardless of where they occur. One may be inclined to call them CP. I suppose Siegel<sup>31</sup> would classify both as selection effects and thus not cases of CP, whereas for Raftopoulos selection from the iconic image in late vision is CP because it is internal to the perceptual system. However, this is, unsurprisingly for this debate, a matter of definition and if taken in isolation, it does not really settle what is, perhaps, the most philosophically interesting question about CP, namely the question about its positive and negative consequences and repercussions for epistemology.

## Notes

<sup>1</sup> Cf. A. RAFTOPOULOS, *Cognitive penetrability and the epistemic role of perception*, Palgrave Macmillan, Basingstoke 2019.

<sup>2</sup> Cf. S. SIEGEL, *Cognitive penetrability and perceptual justification*, in: «Nous», vol. XLVI, n. 2, 2012, pp. 201-222; D. STOKES, *Towards a consequentialist understanding of cognitive penetration*, in: A. RAFTOPOULOS, J. ZEIMBEKIS (eds.), *Cognitive penetrability of perception: New philosophical perspectives*, Oxford University Press, Oxford 2015, pp. pp. 75-100; D. STOKES, *Attention and the cognitive penetrability of perception*, in: «Australasian Journal of Philosophy», vol. XCVI, n. 2, 2017, pp. 303-318.

<sup>3</sup> Cf. D. STOKES, *Towards a consequentialist understanding of cognitive penetration*, cit.

<sup>4</sup> Cf. S. SIEGEL, *Cognitive penetrability and perceptual justification*, cit.; F. MACPHERSON, *Cognitive penetration of colour experience: Rethinking the issue in light of an indirect mechanism*, in: «Philosophy and Phenomenological Research», vol. LXXXIV, n. 1, 2012, pp. 24-62.

<sup>5</sup> Cf. D. BURNSTON, *Cognitive penetration and the cognition-perception interface*, in: «Synthese», vol. CXCIV, n. 9, 2017, pp. 3645-3668.

<sup>6</sup> Cf. S. SIEGEL, *How is wishful seeing like wishful thinking?*, in: «Philosophy and Phenomenological Research», vol. XCV, n. 2, 2016, pp. 408-435.

<sup>7</sup> Cf. D. BURNSTON, *Cognitive penetration and the cognition-perception interface*, cit.

<sup>8</sup> Cf. F. DRETSKE, *Knowledge and the flow of information*, Blackwell, Oxford 1981.

<sup>9</sup> For a much more articulated exposition of Burnston's argument see A. RAFTOPOULOS, *Cog-*

*nitive penetrability and the epistemic role of perception*, cit., pp. 129-132.

<sup>10</sup> A. RAFTOPOULOS, *Cognitive penetrability and the epistemic role of perception*, cit., p. 133.

<sup>11</sup> Cf. *ibid.*, p. 136.

<sup>12</sup> Cf. P. BRÖSSEL, *Rational relations between perception and belief: The case of color*, in: «Review of Philosophy and Psychology», vol. VIII, n. 1, 2017, pp. 1-21.

<sup>13</sup> Cf. A. RAFTOPOULOS, *Cognitive penetrability and the epistemic role of perception*, cit., p. 147.

<sup>14</sup> Cf. J.L. DELK, S. FILLENBAUM, *Differences in perceived colour as a function of characteristic color*, in: «The American Journal of Psychology», vol. LXXVIII, 2, 1965, pp. 290-293.

<sup>15</sup> Cf. S. SIEGEL, *How is wishful seeing like wishful thinking?*, cit.

<sup>16</sup> Cf. *ibidem*.

<sup>17</sup> Cf. A. RAFTOPOULOS, *Cognitive penetrability and the epistemic role of perception*, cit., pp. 38-40.

<sup>18</sup> Cf. *ibid.*, p. 11.

<sup>19</sup> *Ibid.*, p. 32.

<sup>20</sup> *Ibid.*, p. 33.

<sup>21</sup> *Ibidem*.

<sup>22</sup> S. SIEGEL, *Cognitive penetrability and perceptual justification*, cit., p. 202.

<sup>23</sup> A. RAFTOPOULOS, *Cognitive penetrability and the epistemic role of perception*, cit., pp. 38-39.

<sup>24</sup> *Ibid.*, pp. 124-125.

<sup>25</sup> *Ibid.*, p. 200.

<sup>26</sup> *Ibid.*, p. 126.

<sup>27</sup> *Ibid.*, pp. 229-230.

<sup>28</sup> *Ibid.*, p. 246.

<sup>29</sup> Cf. S. SIEGEL, *How is wishful seeing like wishful thinking?*, cit.

<sup>30</sup> Cf. J. LYONS, *Circularity, reliability, and the cognitive penetrability of perception*, in: «Philosophical Issues», vol. XXI, n. 1, 2011, pp. 289-311. This view of Lyons is reported in A. RAFTOPOULOS, *Cognitive penetrability and the epistemic role of perception*, cit., p. 244).

<sup>31</sup> Cf. S. SIEGEL, *How is wishful seeing like wishful thinking?*, cit.; S. SIEGEL, *The rationality of perception*, Oxford University Press, Oxford 2017.

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