

## Theories of Violence and the Explanation of Ultra-Violent Behaviour

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### Abstract

Various scientific disciplines offer radically different accounts of the origin of violence, but it is not clear how the study of violence is to be "scientifically" grounded. Moreover, social scientists, biologists, anthropologists, and neurophysiologists differ about what sorts of acts constitute violence and how it is to be explained. In this chapter we investigate whether any of these general theoretical approaches can be clearly considered to be the best approach to the explanation of the origination of violent behaviour, and our specific aim is to examine the controversial explanation of violent behaviour offered by Lonnie Athens. The scientific study of violence currently uses some dozen major theories that fall into four major categories to account for violence among humans. Most assume violence is deviant and caused by factors that preside over the person, whether internally or externally. Natural theories attribute violence to congenital causes such as genetics, hormonal conditions, gender, or pathologies such as schizophrenia or bipolar disease. Biological conditions that are said to account for violent behaviour include brain damage, physical abuse, and malnutrition. Theories attributing violence to external causes claim violent actions arise from gender socialization, mental illness, or conditions in the home, school and society. Media-induced violence is a popular theory among sociologists, while some neuropsychologists study the influence of exposure to violent acts upon neurological states. An exception to theorists who find violence to be deviant, primate anthropologists are apt to explain violence as a normal evolutionary adaptation. Remaining theories hold that violence is random, inexplicable or simply "crazy," in other words, impervious to explanation. In this paper we analyze an array of types of theories of violence in contrast to an approach that purports to be the best explanation, that of Lonnie Athens in *The Creation of Dangerous Violent Criminals* (1992) and *Violent Criminal Acts and Actors Revisited* (1997): the violent socialization of the person through a four-stage holistic and experiential process. We conclude that Athens' theory is not the best explanation of violent behaviour when compared with its competitors on the basis of typical accounts of what it is to be the best explanation of a phenomenon.

**Key Words:** causal explanation, causal mechanisms, Athens, Lonnie, violence, violent socialization, best explanation, origin of violence, behaviour, situated human experience.

### 1. Introduction

Theorists in various scientific disciplines have offered radically different accounts of the origin of violent behaviour in humans, but it is not clear how the study of such violence is to be scientifically grounded. This problem is made more complicated because both what sorts of acts constitute violence and what needs to be appealed to in explaining violence differ according to social scientists, biologists, anthropologists and neurophysiologists. This situation generates serious ambiguities in even attempting to ascertain the differential *bona fides* of these various explanatory programmes. Therefore, there is little theoretical reason to suspect that efforts to prevent violence will have any appreciable effect. In this paper we expand on one particular attempt to solve this problem.

### 2. Diversity in the Study of Violent Behaviour

Various sociologists, psychologists, neuropsychologists, and anthropologists have proposed detailed theories intended to explain why certain individuals become *ultra-violent*, i.e. violent in a way that does not simply involve self-defence. The theories proposed by these theorists, however, appeal to a plethora of causal factors. It is reasonable to believe, as a result, that the lack of a shared framework concerning this issue has inhibited progress with respect to the practical management and prevention of violence in society, and it is not even remotely clear which discipline is most suited to studying the causal aetiology of aberrant violence in humans, let alone which particular theory can *best* account for the aetiology of ultra-violence.

Despite this extreme theoretical diversity, etiological theories of violent behaviour fall into four major categories, each designed to explain serious violence in humans in different ways.<sup>1</sup> These approaches are: (1) biological purism, (2) environmental purism, (3) eclecticism, and (4) interactionism. Theories of these four types assume that violence is deviant behaviour caused by factors that influence the person in question, whether internally or externally. Biological purists are internalists and attribute violence to organic causes found in the organism such as genetic compartment, hormonal conditions, low serotonin levels, gender, or pathologies such as schizophrenia or bipolar disease. Environmental purists attribute aberrant violence to external causes including brain damage, physical abuse, malnutrition, gender socialization, media influence and conditions in the home, school and society. Eclectics incorporate both internal and external factors into the explanation of such

violent behaviours, while maintaining that these multiple factors are individually distinct. Finally, integrationists, appeal to both internal and external factors in explaining deviant violent behaviour, but they hold that such multiple factors are not individually distinct.

What are we to make of this theoretical and disciplinary morass? Clearly we have good reason to believe that there is a real phenomenon here to be explained, especially when one notes that various, often repeated, studies, like that conducted in Philadelphia, have resulted in the alarming data that something like 6 percent of the 10,000 male subjects studied committed 71 percent of homicides, 73 percent of rapes, and 69 percent of aggravated assaults.<sup>2</sup> It is surely reasonable to believe that there must be some cause, or set of causal factors, that explain the ultra-violent behaviour of this relatively small group. However, there does not appear to be anything even remotely like consensus concerning how this phenomenon ought to be explained, a situation especially troubling as this issue has a deep practical importance. We should recognize that only once the correct, or approximately correct, account of the aetiology of violence is identified can we hope to have a significant and reliable influence in preventing such behaviour. The point is structurally analogous to the role of etiological assessment in the treatment of diseases, but we apparently do not even know where to start in attempting to explain this phenomenon. Consequently, there is a pressing need to rectify this situation that afflicts the study of violent behaviour by trying to establish which theoretical approach is most suited to explain ultra-violence.

### 3. Athens' Theory

In response to the lack of univocality concerning basic theoretical issues associated with the study of violence, Lonnie Athens has put forth a novel but highly controversial explanation of the origin of violent behaviour that is explicitly intended to be the best explanation of such behaviour. This is especially clear in Athens (2003) as critics of his earlier work had pointed out that his theory failed to explain both differences in frequencies of violence across the sexes and across various communities. Athens (2003) addresses these criticisms, arguing that in focusing on the experiences of ultra-violent offenders Athens' theory offers differentially the best explanation of such behaviour. This section summarizes the most important elements in Athens' theory, and the sections that follow expand on work presented elsewhere in which we contend that in fact it does not qualify as the best explanation of ultra-violent behaviour.

Athens' theory makes the fundamental claim that the four main competing types of theories all fail to include the crucial explanatory element, what Athens refers to as "human experience." His theory involves the basic idea that subjects must undergo four critical experiential stages prior to becoming ultra-violent societal deviants. For this process,

Athens uses the ugly neologism "violentization," and in the most current version of his theory (2003) the four component stages of violentization are as follows:

- (i) Brutalization.
- (ii) Defiance.
- (iii) Violent Dominance Engagements.
- (iv) Virulency.

Each stage of this causal process refers to a form of human experience, but such experiences come in two types: unitary and composite. Unitary experiences are elemental and distinct, whereas composite experiences are agglomerations that are more than the sum of the elementary experiences out of which they arise.

The brutalization stage is a composite experience made up of the sub-experiences of violent subjugation, personal horrificization, and violent coaching. Brutalization involves the physical and mental abuse of subjects followed by the shameful recognition of this fact and ends with the subjects being encouraged to inflict such abuse on others or to fight back. The defiance stage is a unitary experience that involves the subjects' self-evaluation and attempts to solve the violence-based problems they face. The third stage, violent dominance engagements, involves a unitary experience whereby the subjects fight, often physically, to establish relations of superiority. Finally, the fourth stage, virulency, is a composite experience that involves attaining violent notoriety, an aura that instils social trepidation in others during interactions, and malevolency, wherein the subjects fully give in to the idea that deviant violence is the preferred method of interaction when faced with confrontation. In any case, it should be clear that Athens has presented a complex causal model of how people become ultra-violent based primarily on the idea of human experience, and, in specifically addressing differential frequencies of violence across sexes and communities, he is asserting that his theory is the best explanation of that phenomenon.

#### 4. The Nature of Mechanisms and Explanatory Inference to Causes

Recently, a considerable body of work has appeared attempting to improve understanding of mechanisms and their role in causal explanation. Specifically, the work of Peter Machamer, Lindley Darden and Carl Craver (MDC) on mechanical models in neuroscience and cognitive psychology provides us with a convenient and theoretically neutral methodological framework in terms of which psychological mechanisms like Athens' theory of violent behaviour can be lucidly

discussed.<sup>3</sup>

The MDC theory of mechanisms is closely related to the notion of causal explanation defended most notably by Wesley Salmon.<sup>4</sup> The significance of specifying the mechanism responsible for a phenomenon is that in doing so we uncover how that phenomenon occurs, what is generally known as a 'how possible' explanation. To do this we must construct and then decompose the mechanical process in question into the entities and activities involved in the regular change that constitutes the phenomenon from its starting state to its completion. As a result, we find that mechanisms are complex stable arrangements of entities and activities. These comprise some regular *functional* process that constitutes part of the empirically accessible causal structure of the world.

Mechanical explanations of phenomena are therefore a species of functional and causal explanation. However, MDC are clear that not all mechanical models employed in these sorts of causal explanations are complete, and such incompleteness can occur in one of two ways. First, *mechanism schemata* are abstract descriptions of mechanisms the parts of which must be filled in to capture the sub-steps of a causal process, but which are continuous from start to finish. Second, *mechanism sketches* are abstract descriptions that are discontinuous from start to finish and so involve one or more gaps that must be treated as 'black boxes', in the standard sense of that expression. Black box sub-steps are thus regarded as parts of phenomena in need of further mechanical explanation. A phenomenon is completely explained only when we can offer a full mechanical model for that phenomenon.<sup>5</sup> MDC are then careful to point out that mechanisms are discovered or constructed in a piecemeal fashion, and so typical mechanical models offered as explanations are incomplete. In other words, most mechanical explanations really take the form of mechanism sketches, and are, therefore, to some degree, incomplete explanations.<sup>6</sup>

One aspect of this approach to mechanical explanation in need of more detailed attention and germane to our purposes is how to verify that a given mechanical model, or sub-mechanism that is part of a larger mechanical model, is actually instantiated in some system in the world. Initially, such explanations can only be regarded as 'how possible' explanations, but what we really desire are 'how actual' explanations.<sup>7</sup> What needs to be appended to the MDC account of mechanical/causal explanation is an account of how the associated existential claims are to be confirmed so that competing mechanical models can be differentially compared as more or less correct explanations of a given phenomenon. In what follows we propose some basic conditions that must be satisfied in order to justifiably claim that one explanation is differentially better than another.

Offering a complete account of explanation here is impossible

given spatial limitations. Nevertheless, for our purposes we can at least suggest that claims for the instantiation of any particular mechanical model can only be regarded as confirmed when all reasonable alternative accounts of the data have been effectively eliminated as realistic possibilities, that the differential *bona fides* of competing explanations can only be assessed when there is a well-defined phenomenon to be explained, and that the concepts contained in the explanatory model are relatively well-defined empirical concepts.<sup>8</sup> It is simply not epistemically acceptable in any scientific discipline to infer that the existential claim concerning a particular model is true from data that are compatible with several such models. In any case of causal modelling one must differentially eliminate all reasonable competing models of the data in order to empirically establish some model as the correct representation of a given phenomenon;<sup>9</sup> there must be a common phenomenon to be explained; and it is not scientifically acceptable to "explain" any phenomenon by appeal to ill-defined and/or non-empirical mechanisms.

If, due to our background knowledge, we believe that a particular set of data,  $d$ , could possibly be evidence for three extant incompatible phenomenological models,  $M_1$ ,  $M_2$  and  $M_3$ , we can only legitimately assert the existential claim that  $d$  is an instance of process  $M_1$  (or a sub-process of  $M_1$ ), by falsifying the existential claims that  $d$  is an instance of process  $M_2$  and that  $d$  is an instance of process  $M_3$ . What this highly artificial sort of example suggests is that in order to confirm the existential claim associated with a given model and a given data set, one must falsify, or at least significantly disconfirm, all of the existential claims associated with all plausible alternative models of the data in question.<sup>10</sup> We will refer to this methodological principle as the causal modelling principle, and it will be understood qualitatively as follows:

(CMP') Given a body of data  $d$  and existential claims  $\square_k$  associated with models  $\square_n$ , where  $n > 1$ , we are entitled to assert that the causal mechanism(s) definitive of  $M_i$ , where  $M_i \in \square_n$ , are likely instantiated in  $d$ , if and only if, it is not the case that there is a plausible model  $M_j$ , where  $M_j \in \square_n$  and  $i \neq j$ , for which the associated existential claim has not been shown to be unlikely relative to  $d$ ,<sup>11</sup> and  $M_i$  is itself plausible.<sup>12</sup>

This is neither an exceptionally strong nor controversial methodological criterion, and it seems reasonable to assert that any acceptable scientific existential claim ought to satisfy CMP'. This is just part and parcel of good causal reasoning in the experimental sciences.<sup>13</sup> Controlling for alternative and confounding causes by ruling out relevant alternative causal models is a ubiquitous scientific practice. If  $d$  turns out,

unambiguously, to be evidence for  $M_1$  because we have ruled out all other serious alternative empirical claims as being very likely, then we can legitimately, but defensibly, assert that mechanisms like those posited in model  $M_1$  exist.<sup>14</sup>

So, if there are no clear cases at all where the data supports a particular model unambiguously, then we ought to be suspicious about the existential claim concerning that model; i.e. whether or not the phenomenon is a concrete example of the theoretical process. Furthermore, if this is true, then the data the model attempts to unify as being of a piece may, in fact, turn out to be the result of a heterogeneous set of mechanisms. In other words, it may not be the case that any of the individual members of the partition of plausible theories  $\square_n$  accounts for every element of the data used in constructing a particular phenomenon. In effect, in such cases it may turn out that the data is not evidence for any one specific phenomenon or model, even if this is not immediately apparent.<sup>15</sup>

## 5. Athens' Theory as the Best Explanation of Ultra-violent Behaviour

Having surveyed Athens' theory and introduced a methodologically neutral framework in which such explanatory theories can be usefully discussed, it should be clear that we can treat Athens' theory as a proposed mechanical model of the psycho-social process of violentization in the MDC sense. Violentization is a theoretically proposed sketch of a mechanical model as understood in (i)-(iv). Moreover, it is clearly the case that Athens takes his theory to be differentially superior to the alternative types of theories (1)-(4) for at least two reasons. First and foremost in Athens' mind, it is based on human experiences, while none of those types of theories incorporates such causal factors at all. Second, *pace* his critics, his theory can explain the differences in frequency of ultra-violent behaviour observed across the sexes and different communities. Regarding this second point, Athens is arguing that his theory is at least as good as the alternatives on that score, and regarding the first point he is insisting that any adequate methodological approach to the explanation of the cause of ultra-violent behaviour must be based on human experience. In effect, he is asserting that the phenomenon in question must be an experiential phenomenon in the sense described above.<sup>16</sup> Nevertheless, given this construal of Athens' theory and our minimal version of the theory of causal explanation based on the MDC concept of mechanical explanation, it should be easy to see that Athens is, contrary to his own affirmations, in no position to assert that his theory is the best explanation of ultra-violent behaviour. This is true for numerous reasons, some of which we can now consider.

First, since Athens' theory of violentization is incomplete insofar as the sub-steps of that proposed process are not themselves well understood or clearly defined, his theory cannot be regarded as anything more than a mechanism sketch. Perhaps the theory is such that the relevant sub-process types could be rendered complete, but as it stands the theory is insufficiently precise to qualify as the best explanation of ultra-violent behaviour.

Second, as our opening remarks suggest, it is not at all clear that there is a single phenomenon here to be explained. This is true because what counts as ultra-violent behaviour is a matter disputed by various disciplines. More fundamentally, it is not even clear what *type* of phenomenon aberrant violence is. Sociologists categorize it as a social phenomenon, psychologists as a psychological phenomenon, biologists categorize a biological phenomenon, and so on. Moreover, even with these more specific domains it is not clear that violence not employed in the pursuit of self-defence is itself a homogeneous phenomenon. Considering our third and fifth critical observations, those focused on the claim that Athens' theory fails utterly to satisfy CMP', it is highly reasonable to suspect, in fact, that ultra-violent behaviour is a seriously heterogeneous behaviour. As such, theories like Athens', which appear to assume a priori the homogeneity of violent behaviour, are not very plausible candidates for the best explanation of violent behaviour.

As just noted, our third critical point is that, *pace* Athens, the mechanical model of violentization is not the best explanation of ultra-violent behaviour even if points one and two were dealt with adequately. Consider again what Athens claims in his 2003 article, that his theory: (a) is capable of explaining differential frequencies in the incidence of ultra-violent behaviour across the sexes and different communities and (b) that any adequate theory of such violent behaviour must be based on human experience in the sense described earlier. Concerning (a), Athens points out that the difference in female incidence of ultra-violent behaviour is to be accounted for in terms of women's physical inferiority and consequent lack of success in winning violent dominance engagements, and that differences in incidences of ultra-violent behaviour across communities can be accounted for in terms of social and/or cultural differences in attitudes towards and experiences of such violence, particularly as they are manifested in stages (iii) and (iv). However, this is beside the point, as the fact that Athens' theory does explain such features of the phenomenon in question does not show that his mechanical theory is *differentially superior*. At best it would be on a par with its competitors and would be actually superior only if the competitor theories were incapable of explaining these phenomena.

However, things are not even this good as our fourth point shows. Athens' account of ultra-violence and its particular distributive features

would be on a par with its competitors only if the concepts he employs in such an explanation were empirical concepts that are well-defined, but clearly, on these counts, Athens' theory fails. In appealing to human experience Athens is stunningly unclear about what such experiences are supposed to amount to. In his early work he cavalierly assumes that everyone can understand this empirically legitimate concept. His methods, however, reveal something of what he has in mind. Athens built his theory on interviews with a small sample of several hundred hardened criminal recidivists; he asked those subjects to relate from memory experiences that led to their ongoing violent behaviour. At least three comments are in order concerning this methodological practice. To begin, it is not at all clear that the subjects' narratives are true. Such reports may be intentionally falsified or manifest the misinformation effect and/or distortions of memory commonly discussed in the psychological literature on memory and testimony.<sup>17</sup> Subject's *reports* of past experiences are not obviously reliable empirical guides to actual past experiences. Next, and more importantly, even if the subjects' reports were veracious, it is not clear that they are the pertinent and actual causes of their ultra-violent behaviour. Simply because patient *x* reports having had certain experiences at the time of a violent incident in no way implies that those experiences were the actual causes of *x*'s behaviour. Finally, given the small sample size and non-randomized nature of Athens' selection of subjects, it is not at all clear that any results obtained via his methods can be generalized.

Finally, and most disastrously, even if we ignore our other points, Athens' theory is not a differentially superior explanation to its rivals. The only substantial count on which Athens bases his claim that his theory is superior to theories of types (1)-(4) is that they leave out human experience as the essentially important causal factor *necessary* to explain the genesis of ultra-violent behaviour. Why should anyone who defends any of the alternative types of theories accept this restriction on admissible causal models? It is simply asserted as a restriction on methodological approaches to the explanation of the phenomenon in question without, as we shall see in the sections that follow, any substantive argument. In effect, Athens begs the question of the causes of such behaviour against the defenders of competing theories of ultra-violent behaviour when asserting that his theory is explanatorily superior because it is not a version of any theory of types (1)-(4). This is merely poor methodology that cannot possibly satisfy CMP'. In fact, he has done nothing more than to arbitrarily stack the deck against competitors by imposing a totally unwarranted and empirically substantive restriction on the explanation of ultra-violence so as to guarantee that his theory will be the best explanation. It is nothing of the sort, and given the plethora of problems associated with it we should not be self-deceived into believing

that we are any nearer to explaining the genesis of deviant violence in humans by supposing that we must include human experience in our causal accounts of its aetiology. So, even after looking at Athens' critique of alternative methodologies and his claim that any adequate methodological explanation of violent behaviour must be based on human experience, it is clear that Athens has not made his case. Indeed, as pointed out in earlier sections, assuming *a priori* the need to include subjective human experience in the causal explanation of ultra-violent behaviour simply begs the question against those more materialistically and quantitatively minded theorists. Athens might be right about this issue, as a matter of fact, but surely not as a matter of *a priori* methodology. Recall Peirce's famous claim about such *a priori* speculation:

It makes of inquiry something similar to the development of taste; but taste, unfortunately, is always more or less a matter of fashion, and accordingly metaphysicians never come to any fixed agreement, but the pendulum has swung backward and forward between a more material and a more spiritual philosophy, from the earliest times to the latest... This method, therefore, does not differ in a very essential way from that of authority.<sup>18</sup> (Peirce 1877, 119).

To accept such an empirical restriction as, essentially, a matter of authority is not to do science at all; it is to succumb to the worst sort of metaphysical fancy.

## 6. Conclusions and General Lessons

We draw two important conclusions in light of our critique. First, Athens' theory is at least no better and likely much worse than its competitors on mechanical accounts of explanation (e.g. MDC with the CMP'), and it achieves the appearance of best explanation by methodological subterfuge rather than honest empirical toil. As a result, it cannot be seriously entertained as the best explanation of ultra-violence absent some non-question-begging justification for the claim that complete explanations of criminal violence in humans must include reference to situated human experience, and whether this is true depends on substantial issues in the philosophy of mind and psychology. In any case, the *a priori* imposition of restrictions on scientists concerning which types of theories to pursue and which types of causal factors to appeal to have no place in the *scientific* study of criminally violent behaviour, and surely doing so cannot solve the substantive empirical problem concerning which causal factors actually generate ultra-violent behaviour.

Second, and perhaps more importantly, our discussion entails a more general lesson about the study of ultra-violence and other such phenomena. We inquired earlier whether it might or might not be worth developing situational interactionism into a full-blown schema, and we conclude that it would be worthwhile, with a caveat. The caveat is that we seek to ascertain whether there are good empirical reasons to privilege on a list of desiderata for a good explanation of violence (or other similar phenomena) the corollary explanation of the subjective experience of violence as a factor in determining future violence. Again, the usefulness of this endeavour turns on substantive and controversial issues in both psychology and the philosophy of mind but is ultimately an empirical matter concerning the nature of the subjects in question. What we advocate as a healthy and sound approach to making progress with respect to the causal explanation of violence and other such phenomena is that we pursue careful interdisciplinary *empirical* study of the multitude of factors that likely contribute to the creation of ultra-violent individuals. What we caution against is the sort of aimless metaphysical speculation that attempts to solve empirical problems by fiat.

## Notes

- <sup>1</sup> See Lonnie Athens and Jeffery T. Ulmer, *Violent Acts and Violentization: Assessing, Applying and Developing Lonnie Athens' Theories*, Vol. 4 of *Sociology of Crime, Law and Deviance*, ed. Jeffery T. Ulmer (Oxford, UK: Elsevier Science Ltd, 2003).
- <sup>2</sup> See W.W. Gibbs, "Seeking the Criminal Element" in *The Scientific American Book of the Brain*, ed. Antonio Damasio (New York: The Lyons Press, 1999).
- <sup>3</sup> For related approaches, see, for example, Machamer et al., *Theory and Method in the Neuroscience* (Pittsburgh: University of Pittsburgh Press, 2001), Craver, Carl. "Role Functions, Mechanisms, and Hierarchy." *Philosophy of Science* 68 (2001): 53-74, and also Bechtel, W. "Cognitive Neuroscience" in Machamer et al., and Glennan, S. "Mechanisms and the Nature of Causation." *Erkenntnis* 44 (1996): 49-71, and "Rethinking Mechanistic Explanation." *Philosophy of Science* 69 (2000): S342-S353.
- <sup>4</sup> See Wesley Salmon, *Scientific Explanation and the Causal Structure of the World*. (Princeton: Princeton University Press, 1984) and Machamer et al., 7.
- <sup>5</sup> See S. Glennan, "Rethinking Mechanistic Explanation." *Philosophy of Science* 69 (2000): S347.

<sup>6</sup> For a more or less complete account of partial explanation, see Michael Shaffer *Idealization and Empirical Testing*. Ph.D. Dissertation. (Miami: University of Miami, 2000).

<sup>7</sup> The point is noted in Machamer et al., p. 21, and is implicit in the discussion of the adequacy of mechanical models in Darden and Craver.

<sup>8</sup> Of course, given the CDM account, what is required is that mechanical explanatory theories are such that they are empirical and completable.

<sup>9</sup> This point is closely related to Nancy Cartwright's conception of inference to be the best cause. See Nancy Cartwright, *How the Laws of Physics Lie* (Oxford: Clarendon Press, 1983.), 92. To clarify, by 'eliminate' we mean only that competitor hypotheses must shown to be significantly less explanatory.

<sup>10</sup> The sort of reasoning going on in such cases is similar to inference to the best explanation as described in Gilbert Harman, "Inference to the Best Explanation." In *The Philosophical Review* 74 (1965):88-95. It might be best understood as inference to the best causal model. In such reasoning we appear to be attempting to select the best causal model with respect to the data. As such, it is not really strictly required that we falsify all alternative existential claims, only that we make it clear that one of the set of plausible existential claims associated with the competing models is more likely than its competitors. The main point is that one must at least take into account all alternative models that have existential claims with non-marginal likelihoods.

<sup>11</sup> As in the case of the simpler formulation of the CMP, we must interpret unlikely here to mean of sufficiently low likelihood, and, again, we believe that this is partially a contextual matter.

<sup>12</sup> The "attached to CMP here is meant to distinguish CMP' from CMP as presented in Shaffer and Oakley, "Some Epistemological Concerns about Dissociative Identity Disorder and Diagnostic Practices in Psychology." *Philosophical Psychology* 18: 1 (2005): 1-29.

<sup>13</sup> For extensive discussion of such practices, see Deborah Mayo *Error and the Growth of Experimental Knowledge* (Chicago: University of Chicago Press, 1996).

<sup>14</sup> Of course, all such reasoning is nonmonotonic, and so any conclusion arrived by such a procedure is revisable.

<sup>15</sup> This, of course, is a common problem in science in general.

<sup>16</sup> We will return to this issue in later sections when we discuss Athens' specific criticisms of the types of theories with which his theory competes.

<sup>17</sup> See, for example, E. Lofthus, *Memory*. (Reading: Addison-Wesley, 1980).

<sup>18</sup> C.S. Peirce, "The Fixation of Belief." In *The Essential Peirce: Volume I*, eds. Nathan Houser and Christian Kloesel (Bloomington: Indiana University Press, 1992), 119.

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