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Dr. C. P. Hertogh

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In this paper we will discuss Zombie TE (thought experiments)* from (e.g.) Robert Kirk and David Chalmers. On rhetorical analyses there appear three possible fallacies, popular science fallacy, objectivist fallacy and straw man which are restorable to some extent.

On surface analyses of Kirk's Zombie Replica we discover one more TE, Zulliver, an alternate of Brain-in-a-Vat (BIV). On deep analysis as by Kirk himself in Stanford Encyclopedia of Philosophy it is a Conceivability Argument that could be considered basic to TE in consciousness studies. Because of complexity and modal structure of Conceivability Argument we discuss a nonmodal, non-TE example as inverted spectrum (ST1) that appears acceptable to skeptics as W.V. Quine.

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Zombie o, zombie (zombie o, zombie) Zombie o,
zombie (zombie o, zombie)

Zombie no go go, unless you tell 'em to go
(zombie) Zombie no go stop, unless you tell 'em to
stop (zombie) Zombie no go turn, unless you tell
'em to turn (zombie) Zombie no go think, unless
you tell 'em to think (zombie)

....

(from Fela Kuti and Africa '70 (1977). *Zombie*
Lyrics)
(note o)

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On surface analyses of Kirk's Zombie Replica we discover one more TE, Zulliver, an alternate of Brain-in-a-Vat (BIV). On deep analysis as by Kirk himself in Stanford Encyclopedia of Philosophy it is a Conceivability Argument that could be considered basic to TE in consciousness studies. Because of complexity and modal structure of Conceivability Argument we discuss a nonmodal, non-TE example as inverted spectrum (ST1) that appears acceptable to skeptics as W.V. Quine.

Chalmers proposes his global Zombie World TE as an argument from failure of logical supervenience of the mental on the physical.

Chalmers's Anti-materialism Modal Argument (AMMA) appears on deep analyses with help of

modal logic an ontological modus tollens falsifying materialism.

As nonmodal alternate argument (ST2) we next discuss Saul Kripke's Pain \neq (\square) C fibers Firing.

It is itself not a TE but as according to Chalmers most essentially based on related Divine Creation TE by Kripke, which Kripke interpretation has received less attention than merited.

Lastly, we discuss a non-TE example of phantom pain as mentioned by Kripke (a/o) which appears acceptable to Daniel Dennett who even accepts René Descartes's metaphorical explanation of the bell-pull, although Dennett maintains it is only an example of a relatively 'thin hallucination.'

*We end the paper with some suggestions of further research as based upon Chalmers's catalogue of conscious experiences.**

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Zombies Robert Kirk, David Chalmers

I don't have the prejudices many have today, I don't believe in a naturalist world view. I don't base my thinking on prejudices or a world view and do not believe in materialism. (Saul Kripke in Saugstad 2001)

I. RHETORICAL ANALYSES--THREE (ANTI) FALLACIES

As many more TE, *Zombies* have equivocated with many sources, myths, stories etc. from

popular culture, not at least with recent horror movies, which have added violent properties which turned them into flesh or brain eating monsters. *Zombies* may now function as a connotation trigger like Nagel's *Bat* ('What It Is Like to Be a Bat' 1974) which also has some horror aspects.

First step of our rhetorical analyses will not be a close analysis of the *Zombie* texts but a short intercultural research into the concept of zombie and the many mysterious notions and rather less-known phenomena it is related to as voodoo (or vodou), syncretism, satanism, ghosts and the undead.

Voodoo

The word stems from more than just one voodoo religion, African, Haitian and West Indian and it is also linked to Tibetan folklore where they are called rolangs risen up (ro) corpses (lang).

Webster's says Louisiana Creole or Haitian Creole *zonbi*, of Bantu origin; akin to Kimbundu *nzúmbe* ghost, dating from circa 1871. Most of these cultures share common features of zombie concept as a will-less, speech-less or psychotic person under control of a scorserer (bokor) drugged, poisoned or hypnotized whose actions are powered by the bokor instead of by itself, often performing evil, malicious deeds to individuals and society, that is enemies, opposers of the commissioner.

The Undead

In western folklore and popular culture zombies are only one category of the undead particularly reanimated corpses bereft of consciousness and self-awareness. An undead can be both a zombie and a vampire according to *Webster's 11th*. The word undead is not coined but anyway popularized by Bram Stoker's 1897 novel *Dracula*.

It has important precursors in Edgar Allen Poe's horror and Mary Shelley's 1818 *Frankenstein*. Just like *Frankenstein* modern-day scientists, philosophers and psychologists are still looking for the principle of life conducting bizarre—in sense of immoral—Es and TEs.

Next to corporeal species of the undead there are the better known incorporeal undead, e.g. (maleficent) ghosts and demons. The 19th century fictions go back again on (hi)stories of myths from bacchants and keres (tenebrae) to demons, skeletons and mummies (Europe), from Sheherazade *Thousand and One Nights* (e.g. Dawood 1954, 1957) to modern-day Disney versions of Alladin's Lamp (Arabia), from ancestor ghosts and spirits as guǐ (鬼) to jiangshi (僵尸) and nowadays movies as 2005 *The Maid* (e.g. Tong 2005) about e.g. the Ghost Month (鬼月) (China).

Hollywood Zombies

Romero's 1968 *Night of The Living Dead* redefines the concept of zombie from people controlled by a voodoo bokor to a story about a hypothetical zombie apocalypse, a mass homicide by a virtual army of unidentified killers, as we watch hundreds of those things that appear to be in a kind of trance, move over the fields slowly like rather humanoid automata or robots cannibalizing their victims, possibly caused by a mutation brought about by radiation from an exploded satellite the rather racist radio and TV commentaries tell a group of people closed in in a farmhouse to protect themselves from the zombies that are all around. The unverydead come back to life and are killing human victims.

In the end the only survivor, an African-American man (Ben played by Duane Jones) in those days potentially controversially casted as the hero of the story, is killed by a gun shot of police who behave like slave hunters. Romero made many sequels as 1978 *Dawn of the Dead* and 1985 *Day of the Dead* and nowadays zombies are commonly familiar and thus lost most of their initial horror effects.

Considered a cult classic it is said to be critical of American society (patriarchal nuclear family as e.g. a daughter kills and eats her mother), horrors of Vietnam era (showing bloody slaughters, newsreels telling about search-and-destroy operations) and domestic racism (murder of Ben would have reminded murders on MLK and Malcolm X). Possibly it also connotes a secularized version of Resurrection of the Body

without Soul though they have a (re)animated soul in physical sense.

Nigerian musician Fela Kuti calls one of his tracks *Zombi* therein likening authorities as police and military to these will-less creatures, sort of human automata without any consciousness or conscience that kill on purpose—and that subsequently raided Fela's home, killing his mother. (note 1)

Philosophical Zombies (P Zombies, P Zeds)

Next to the popular zombies, Wikipedia distinguishes philosophical zombies, p zombies or p zeds.

Stanford Encyclopedia of Philosophy defines Zombies

Zombies in philosophy are imaginary creatures used to illuminate problems about consciousness and its relation to the physical world. Unlike those in films or witchcraft, they are exactly like us in all physical respects but without conscious experiences: by definition there is 'nothing it is like' to be a zombie. Yet zombies behave just like us, and some even spend a lot of time discussing consciousness.

The *SEP* entry was written by Robert Kirk in 2011, updated in 2019. Kirk developed his *Zombie TE* in his 1974 paper 'Zombies versus Materialists'.

In the 90s it was revived by David Chalmers in his 1996 *The Conscious Mind*. It is often thought to be preceded by e.g. Saul Kripke's proof that we are all intuitive dualists. We will first discuss Kirk's *Zombie (Replica) TE*, next Chalmers's *Zombie (World) TE* as used in his ground-breaking *AMMA (Anti-materialism Modal Argument)* and lastly—as after e.g. Chalmers 1996—relate it to Kripke's *Pain ≠ C fibers Firing* which argument has no reference to anything as *Zombies*.

Dennett 1995 distinguishes between *Zombies* and *Zimbos* the latter having higher order reflective informational states as beliefs about beliefs, but Chalmers considers the distinction irrelevant as according to him "...my zombies and Dennett's zimbos are exactly the same thing." (Chalmers in private email from 2000, Dennett did not reply to

Chalmers's statement which contradicts Dennett's 1995 quote).

1.1 *Popular Science (Anti) Fallacy*

Like (e.g.) Nagel's *Bat*, analyses of *Zombies* are blurring popular and scientific contexts. Although there is now a philosophical *P Zombie* and philosophico-scientific definition, Chalmers populates his *Zombie* internet page with Hollywood zombies and the philosophical concept of zombie—not its imaginability as one does not need to perform a dreadful personification after the *P Zed* definition as (possibly) different from Nagel's *Bat*—is still parasitic on popular concept of how one can imagine bodies without consciousness.

We will call this seeming fallacy the popular science fallacy which is restorable by meticulous elaboration for which many philosophers however seem to be missing adequate time or literary skills. Examples of convincing TE in literature as Bram Stoker's 1897 *Dracula* show it is possible to portray personifications in literature and Jean Paul Sartre, 1964 Laureate of Nobel Prize in Literature, shows the same for philosophical experiences as in his 1938 *La nausée (Nausea)*. (note 2)

Furthermore, when performing such a personification there appears an ambiguity between imager and imagined character which we also point out in Einstein's *CABOL (Chasing a Beam of Light)*, an instance of kabuki antifallacy in Sorensen's words. Additionally we refer to Denis Diderot's 1830 *Paradoxe sur le comédien* e.g. on issues as if an actor really feels who/what he plays or merely imitates these feelings, and more theater analyses. (note 3)

Like Nagel escapes from the seeming fallacy by rejecting the *Bat* personification from a restricted empathy point of view, Chalmers—and already his precursor Kirk—evades the problem by explicitly stating the *Zombie TE* as a modal argument—it is about the possibility of *Zombies*—thereby evading discussions on actual existence of *Zombies* as well. For this reason we will focus on modal logical analyses of their *Zombie* arguments

though both Kirk and Chalmers mention nonmodal analogues.

As modal possibility arguments the *Zombie* TE seem to be directed against radical materialist accounts of the mind that attribute necessary truth to statements as 'man is nothing but a physical object', although Kirk argues 'that it is logically implied by *any* view of man which remains true to the rationale of materialism.' (Kirk 1974 : 135) (note 4)

1.2 Objectivist/Fact-Value (Anti) Fallacy

Consciousness and philosophy of mind discussions are confused by many senses of consciousness and mind, the former also meaning conscience (indeed possibly Dennett's higher order *Zombies*, *Zimbos*), the latter having overlapping senses with I, self, brain, soul, heart, spirit etc. Body – mind dualism originates as rationale to account for morals, ethics and the Afterlife (e.g. immortal soul, moral heart and spirit, sense of self for moral reasons). Also, Descartes's dualism had these connotations.

This fact remains unmentioned in nowadays philosophy of mind and consciousness studies, and philosophers and cognitive scientists hardly ever supplement their texts with e.g. explanations of moral, ethical consciousness (pace e.g. Nagel).

We will call it the objectivist or fact-value fallacy that is also committed by Kirk and Chalmers and more nowadays epistemological dualists. Possible explanation is utilitarianism in ethics but still, if so, it has to be stated in so many words. And the fact-value distinction does not hold in the area of consciousness as strong as in e.g. physics.

Anyway, the moral implications that ring that strong in the popular *Zombie* stories are missing in the philosophical texts though they are often suggested.

Question remains, what does the *Zombie* discussion contribute to previous man-machine, automaton, *Doppelgänger*, human clone, duplicate (without consciousness—e.g. Campbell's *Imitation Man*), monsters created by science (e.g.

Mary Shelley's *Frankenstein* and its many movie remakes) discussions?

One of the meanings of *Zombie* is automaton and the philosophical *Zombie* (*P Zed*) definition adds nothing to a machine, automaton definition of man or a human replica TE, Descartes *res extensa* without *res cogitans*, as possible connotations of *Zombie* are abstracted from in *P Zed*. Why Chalmers has not dubbed his TE e.g. (*Human*) *Replica* as after Robert Kirk's *Zombie Replica* TE or Keith Campbell's *Imitation Man* TE, whom Chalmers refers to both on introduction of his *Zombie* TE in *The Conscious Mind*? (note 5)

We may only guess the choice for *Zombie* instead of e.g. *Imitation Man* is rhetorically motivated and it fits in with rather general rhetoric nature of use of TE in philosophy. As a Dinosaur cartoon on Chalmers's web site (wherein *P Zombies* are also called *Mental Zombies*) says, 'You must admit that it makes the whole debate a lot more interesting.'

Scientifically speaking the delusive moral overtones are not fallacious and on analyses *P Zombies* are antifallacies, but morally speaking the deception is fallacious, although we could not say this just because of the prevalent fact-value dichotomy in contemporary philosophy and science (see also sections on moral biases in ...).

Nevertheless, it may distort PF (*prima facie*) conceivability of *Zombie* TE.

1.3 Straw Man (Anti) Fallacy

Lastly, both Kirk and Chalmers may commit fallacy of straw man, that is, they represent arguments of functionalists, physicalists, materialists, behaviorists stronger, more extreme and more radical than they are and their modal conceivability/possibility arguments only refute necessary functionalism etc.

Most functionalists etc., however, don't hold on to the strongest type of materialism all their life. And linguistic behaviorist Quine, whose skepticism about meaning did not find many supporters, does not doubt subjective experiences, but rather their relevance to communication and their explanatory use; Quine

does admit that introspection is indispensable heuristically as a source of insights that can lead to new theories. (Quine, Block 1994 Section 1)

Kirk's and Chalmers's modal arguments are valid but *seem* to refute only necessary materialism and their conceivability arguments *seem* to defend only failure of the weakest form of supervenience of the mental on the physical, logical supervenience, not natural supervenience. (note 4) Chalmers does not defend natural possibility of *P Zeds* neither *Qualia*.

On the other hand, if Kirk and Chalmers and particularly Kirk don't want to direct their *Zombie* arguments against necessary materialism only (but e.g. against any kind of materialism), this (anti)fallacy does not hold to a high extent.

Furthermore, as according to 2013 email correspondence Robert Kirk has soon after changed his views as by Kirk 1979, 'From Physical Explicability to Full- Blooded Materialism', and he now rejects the *Zombie* TE (e.g. Kirk 2005) and considers himself materialist, although a materialist who does not deny occurrence of conscious subjects and the mental, but rather tries to explain them from a materialist point of view.

II. ROBERT KIRK'S ZOMBIE (REPLICA) TE

Robert Kirk is still most known for his 70s *Zombie* argument. In recent 2011/2019 contribution on *Zombies* to *Stanford Encyclopedia of Philosophy* Kirk himself proposes a deep analysis of it. We however will start with surface analysis of Kirk's 1974 paper.

2.2 Surface Analyses (*Zombie Replica*, *Zulliver*)

Kirk introduces his *Zombie* TE towards the end of part I of 1974 paper as a counter to his so-called Entailment Thesis--

Every non-relational description which applies to a given man at a given time is entailed by the conjunction of all the purely physical non-relational descriptions which apply to him at that time. (Kirk 1974 : 139)

The Entailment Thesis would be false if and only if there were a man who 'would be *more* than that,' a *Zombie Replica*

What would undoubtedly be nothing but a physical object, and that in a transparently clear sense, is a physical replica of the man to which there applied *only* the physical descriptions and whatever they entailed—something we may conveniently dub a 'Zombie replica'. (Kirk 1974 : 141)

Like Putnam's *Twin Earth* Kirk's modal TE seems to be devised to fill a logical or explanatory gap—

(I shall assume for the sake of simplicity that if *Zombie* replicas are logically possible, the descriptions which fail to apply to them are descriptions of sensations. Obviously such descriptions are likely candidates, if any are; and my argument is unaffected by the exact nature of the class of descriptions in question.) (Kirk 1974 : 141-142)

Chalmers calls it phenomenal feel (etc.), Kripke mentions example of pain.

It is a modal argument as actual existence of *Zombie Replicas* 'does not matter'--

The point is that if such things are merely possibly, it is false that we are mere physical objects. We would add 'necessarily' between 'are' and 'mere'. Such a race of *Zombies* would indeed have been 'nothing but physical objects.'

The replica concept appears to be possibly inspired by Descartes--

... Thus if Descartes' view of the nature of man were correct, an exact physical replica of a given man would not necessarily be an exact replica of that man—unless by natural necessity a soul were automatically assigned to it.

As nonmodal alternates Kirk mentions a paralyzed man (Kirk 1974 : 145), dreamless sleep, sleep-walking and sleep-talking (148-9). However, as in email correspondence in 2013 Kirk does not confirm these are examples of evidence of consciousness--

No, I don't think they are *evidence* of consciousness. The point is that it is highly counterintuitive to suggest that the paralysed man *doesn't* have conscious experiences The point of the cases of dreamless sleep, sleepwalking and sleeptalking, on the other hand, is that we have evidence that such cases occur. (email dd. February 18, 2013)

Dreamless sleep account is reminiscent of Zhuangzi (庄子, 4th C BCE Warring States Period) dreaming Zhuangzi is a butterfly, although Kirk stresses the victim is considered to be able to describe gaps in his experience whereas Zhuangzi and the butterfly are not. (note 6)

Next, Kirk develops a related *Zulliver* TE, an alternate of Descartes *Evil Demon*, nowadays known as *Brain-In-a-Vat (BIV)*--

Consider Gulliver in Liliput. ... He had encountered a race of beings even tinier than the Lilliputians, and technologically more advanced than ourselves. A team of their scientists (the 'Brain Team') had invaded his head ... The Brain Team had thus taken over those functions of Gulliver's brain which governed his behaviour. ... I will refer to this entity as 'Zulliver.'

Zombie Replica and *Zulliver* TE are directed as 'decisive counter-examples' against particular materialist accounts or suggestions as analytical behaviorism (p. 144) and causal or functional analyses of mental states as Armstrong's, Lewis's and Putnam's and alleged Identity Thesis (p. 142, 145).

2.2 Deep Analyses--Conceivability Argument

The *Zombie* debate is quite argumentative of nature because of its technical restriction to *P Zombies* as, in fact, arguments and there are hardly any digressions into literary or story analyses just because of the restrictive definition.

The *Zombie* TE argument is a conceivability argument for possibility of *Zombies* and it can be summarized after Kirk 2019 as modus ponens [1]
 P1 (Major) Whatever is conceivable is possible. P2 (Minor) *Zombies* are conceivable. -----

C (onclusion) Therefore *Zombies* are possible.

Next it can be analyzed as modus ponens instantiation--[2]

Suppose

Cx : x is Conceivable

Px : x is Possible

z : *zombie(s)*

Cx --> Px

Cz

Pz

The argument is valid but both premises are disputable and apparently--as there are many discussions on them--no evident necessary truths but only probabilistic opinions.

It is an example of universal instantiation, but universal here only refers to nature of inference of instantiation, not to truth value of major premise.

So, according to definition by Aristotle it is an enthymeme as after syllogistic model of modus ponens (p --> q, p, so q).

This *Zombie* TE argument has been preceded by Saul Kripke's modal arguments against type-type identity materialism (pain ≠ (□) C-fibre firing, heat ≠ (□) molecular motion) in Kripke's 1970 Princeton lectures *Naming and Necessity* (Kripke 1972, 1980) who, however, does not use words like *Zombie* or *Zombie World*. (Papineau 2008—see note 7)

III. DAVID CHALMERS'S ZOMBIE (WORLD) TE AND ANTI-MATERIALISM MODAL ARGUMENT (AMMA)

Chalmers introduces his *AMMA* (*Anti-materialism Modal Argument*) in chapter 4 on Naturalistic Dualism of 1996 *The Conscious Mind*. We will start with chapter 3, in which Chalmers develops his *Zombie World* TE, a case from global supervenience, instead of Kirk's individual *Zombie Replica*.

3.1 Surface Analyses (TE Argument from Failure of Logical Supervenience)

Chalmers develops his *Zombie World* as one out of five arguments against reductive explanation of

consciousness as that everything in the world can be explained in physical terms.

Again, the vocabulary is highly technical--

The most obvious way (although not the only way) to investigate the logical supervenience of consciousness is to consider the logical possibility of a *zombie*: someone or something physically identical to me (or to any other conscious being), but lacking conscious experiences altogether. At the global level, we can consider the logical possibility of a *zombie world*: a world physically identical to ours, but in which there are no conscious experiences at all. In such a world, everybody is a zombie. (Chalmers 1996 : 94)

Chalmers states his case against reductive explanation in terms of logical supervenience--

we need to show that consciousness is not logically supervenient on the physical.

The notion of supervenience was first introduced into the philosophy of mind by Donald Davidson (1970)

[M]ental characteristics are in some sense dependent, or supervenient, on physical characteristics. Such supervenience might be taken to mean that there cannot be two events alike in all physical respects but differing in some mental respect, or that an object cannot alter in some mental respect without altering in some physical respect. (Davidson 1970 : 98) (note 8)

Next, Zombie World reminisces of (one of) Putnam's Twin Earth(s) when Chalmers continues--

So let us consider my zombie twin. This creature is molecule for molecule identical to me, and identical in all the low-level properties postulated by a completed physics, but he lacks conscious experience entirely.

Later on using Nagel's vocabulary

.... It is just that none of this functioning will be accompanied by any real conscious experience. There will be no phenomenal feel. There is nothing it is like to be a zombie. (Chalmers 1996 : 95).

Again, we may conclude that TE nature and popular connotations may have contributed to fame of the *Zombie* argument as applied in Chalmers's *AMMA*. Chalmers has elaborated his views on to 1998 Princeton lectures *Mind and Modality* as supported by (metaphysics of) two-dimensionality (e.g. primary and secondary intension instead of Frege's sense and reference).

In 2002 as part of his contribution to Gendler's and Hawthorne's *Conceivability and Possibility* Chalmers develops a TE theory that we discuss in part on natural sciences in ... , applying it to Einstein's *CABOL (Chasing a Beam of Light)*. In a 2010 explanation to *AMMA*, 'The Two-dimensional Argument against Materialism', Chalmers adds a formalization to *AMMA* and analogously to Kripke's *Pain ≠ C fibers Firing* argument—please, see notes 11 and 14--as well as some non-TE examples, nonmodal analogues of a zombie or 'invert, who has an experience that differs slightly from the corresponding experience of the corresponding individual in our (physically identical) world'--

It suffices if we can conceive of a being whose conscious experience is for just a moment slightly different from that of an actual physical duplicate's: perhaps they experience a slightly different shade at a point in the background of their visual field. Any problems that are specific to zombies then will not apply.

3.2 *Inverted Spectrum (ST1)*

The *Qualia* debate is difficult to access and assess because of many ambiguities and emotions lurking in the vocabulary. *Qualia* are defined as both (1) sort of universals or abstracts (fitting in with mysterious conceptions from Plato's forms and Aristotle's essences to Wittgenstein's beetle/thing-in-a- box) and (b) sense experiences (colors etc. but also pain) as different from the source it may have in an object (and discussion features on whether it is about brain, physical, (neuro)physiological, neural states or a mental, phenomenal etc. states). The debate is beset by emotions with terms as the slightly deprecatory 'qualophiles' versus supposedly die-hard

necessarily necessary materialists of various sorts and types.

When looking for non-TE, non-modal alternate qualia we may find more convincing examples in the field of pain experiences—e.g. phantom pain mentioned by e.g. Saul Kripke, phenomenal pain without physical cause—than in the field of colors—where inverted spectrum of qualia do not refer to obvious examples of red-green color blindness but to a TE from John Locke about an intrapersonal case of inverted qualia viz. waking up and experiencing that the world has inverted its colors, Block's *Inverted Earth*, or meeting one's *Inverted Twin* (interpersonal case of Chalmers) often again emotionally explained by sci-fi actions of 'evil neurosurgeons' and 'second switcheroos' (Dennett 1991, similar to Kirk's *Zulliver TE*). The problem has changed from whether inverted spectrum like red-green color blindness is logically or naturally possible—and science has proved the latter, it is not only possible it is an actual defect of the retinal cones quite often genetically determined—to debating a situation wherein two or more people are sharing vocabularies but 'systematically' differ on sense impressions or experiences, qualia e.g. A says red and sees red but B says red and sees green—in their minds.

Of course, medical tests can reveal who is color-blind and who has common vision and experiments (e. g. visual field inversion experiments with goggles mentioned in Dennett 1991 : 393) have demonstrated that humans adapt extremely quick to modifications of their visual field.

W. V. Quine is taking a conservative logical-positivist stance--'the extent to which that [*Inverted Qualia TE*] make sense is still a puzzle to me' in 1994 video conversation with Ned Block as according to Quine it is 'irrelevant to linguistic side of assessing communication' when there are only stimuli and words without any fixed or fixable ideas and Quine guesses mental states can be explained by neuroscience--'it's going to be mechanistic, physiological'. Philosophers of mind and cognitive scientists, of course, struggle with it from a cognitive, psychological or phenome-

nological point of view as with possibility of Cartesian substance dualism, property dualism etc. (versus materialist Identity Theory) and nowadays the latter quite obvious perspective seems evaded for modal logical phrasings as failure of reductive physical account of consciousness when the mental does not logically supervene on the physical (Chalmers 1996).

However, on nonmodal non-TE examples there seems some consensus possible as in Section 3 of aforementioned video conversation with Ned Block, Quine admits that inverted spectrum example is a 'meaningful claim' that is 'rescuing something of the mentalistic realm and gives it some respectability.' (note 9)

We conclude that qualia in the sense of sense experiences may exist independent from properties of the objects as from nonmodal, non-TE medical evidence of (e.g.) red-green color blindness that can be examined by medical tests as the quite known so-called ishihara color test plate used by optometrists all around the globe, a circle with red and green dots where the latter have the shape of a number.

Nonphysical or nonphysically caused qualia like pain which may not belong to sense impressions proper--perhaps it are reflexes or biological defense mechanisms—are considered to be proven by phenomena as phantom pain—an example by Saul Kripke to illustrate *Pain ≠ (□) C fibers Firing*; perhaps it is memory of pain but humans apparently can't discern between real, actual, momentary pain and memory of it.

Since Quine seems convinced by the inverted spectrum analogue we can apply ST1 (Substitution Thesis 1)*—the *Inverted Qualia TE* can be replaced by (*real*) experiments, in fact, established medical tests for inverted qualia.

Because of the many intricacies as discussed by Chalmers and Block and particularly because of the explicitly modal statement of logical possibility of *Zombies TE* as well as *Qualia TE*, we think modal analyses of the problem aren't overdone and in next section we will propose a modal logical analysis of Chalmers's *AMMA* by applying Kripke's frame or PWS semantics.

The issue is in need of more research but it may take us far beyond the philosophical literature on TE. We miss in the philosophical literature more examples of qualia (beyond the usual ones of colors and pain) and references to up-to-date research that does not necessarily need to be fundamental neuroscience but can start from everyday experiences as a visit to an optometrist.

The *Qualia* TE treatment could benefit from results of applied science and technology as medicine instead of speculations about possible future of neuroscience (Quine, Dennett) or objective phenomenology (Nagel), a little more 'scientific journalism' that Quine usually advises. (note 10)

Possible disadvantage of this approach is question whether we can explain the usual from the unusual, whether we can give an adequate account of color vision by considering medical research about defects. We may doubt Freud's theories because he explained the psychological from the psychopathological.

We guess these doubts may hold for western sciences and their methodology as a whole (see Section on cultural, scientific, moral biases in part III of ...). Nevertheless, we have answered some philosophical issue about natural possibility by showing evidence from actual medical practice and, thus, we have at the same time answered issues about logical possibility for if something is naturally possible it is therefore also logically possible as logical possibility is broader and encompasses natural possibility—not the other way around.

3.3 Deep Analyses—Ontological Modus Tollens (AMMA)

In Chapter 4 of Chalmers 1996 on naturalistic dualism David Chalmers states an argument against materialism as an *ontological* consequence of (e.g.) logical possibility of *Zombies* (Chalmers 1996 : 123)--[3]

1. In our world, there are conscious experiences.
2. There is a logically possible world physically identical to ours, in which the positive facts about consciousness in our world do not hold.

3. Therefore, facts about consciousness are further facts about our world, over and above the physical facts.
4. So materialism is false.
5. Refers to what Chalmers defines as a zombie world.

Disputable premise seems 1, on which physicalists probably won't agree (note 11), that is exactly the transcendental presupposition the *Zombie* TE argument appears to be about as in debates between physicalists and nonphysicalists. How to scientifically, logically and empirically prove conscious experience in our world, evidence we could expect 1 to be based upon.

Applying modal semantics like Kripke's frame semantics by assuming $\{W, R, |=\}$ i.e. a set of (possible) worlds ($w_1, w_2, w_3 \dots, w_x, w_y, w_z$ etc., e.g. w_1 actual world), an accessibility relation R and a satisfaction relation $|=$, where quantification over *all* worlds, $\forall w$, signifies *necessar(ily)* (cf. \square box operator) and quantification over *some* worlds, $\exists w$, signifies *possible/y* (cf. \diamond diamond operator).

Suppose

[4]

CSx x has/is having Conscious(ness)
 (experiences) Px x is/has (only) Physical (features)
 \exists existential quantifier
 A universal quantifier
 \wedge conjunction
 - negation
 then as after structure of modus tollens
 $\exists wx \mid = Ax (Px \wedge - CSx)$ (2) i.e. *Zombie (World) TE*

w1 $\mid = \exists x (Px \wedge CSx)$ (1) i.e. in our world (Planet Earth) there are conscious experiences

 $-Awx \mid = Ax (Px \wedge - CSx)$ (4) i.e. so materialism is false (note 12)

On analysis statement 1 is a presupposition that can be left out as a major and reintroduced as a minor to 2 as possibly together with 3 which is not necessary for the final argument. Statement 3 can be formalized like this

w1 $\mid = Ax (CSx \rightarrow Px \wedge CSx)$ (3) i.e. in our world facts about consciousness are further facts about the (physical) world [5]

It seems logically redundant to falsify materialism but it is exactly Chalmers's positive statement of irreducibility thesis of consciousness in our world and in *AMMA* it functions as a sub-premise to sustain 1.

Furthermore, 3 is inferred from 1 and 2 ([t]herefore in 3).

Again both *Zombie TE* and *AMMA*(s use of *Zombie TE*) aren't scientific syllogisms with necessarily true or false premises and conclusion but rhetorical syllogisms--enthymemes--with possible, probable premises and conclusion as (e.g.) opinions.

Considered as a (psycho)physical theory, however, we could ask for more (note 13) and in Coherence as a psychophysical law at the end of the first step towards a nonreductive theory of consciousness in chapter 6 Chalmers reveals 'the overall epistemological framework'

[6]

This is the same sort of reasoning that goes on in formulating physical theories In all these

cases, the underlying assumption is that the world is a simple and reasonable place. Failing such an assumption, anything goes. With such an assumption, things fall into place. (Chalmers 1996 : 246)

Coherence as between conscious experience and cognitive structure, between phenomenology and psychology of the mind, between consciousness and awareness is '[t]he most promising way to get started in developing a theory of consciousness' (Chalmers 1996 : 218).

In our TE Matrix terminology *Zombie World TE* is the basic or elementary TE in restricted sense, [TE]RS—which structure is similar to Kirk's local *Zombie TE* and *Conceivability Argument—AMMA* or, in fact, formula [4] is TE in broad sense, [TE]BS –and [5] and [6] are supporting premises of the TE in extended sense, [TE]EX revealing [6] as epistemological principle, that functions as justificatory underpinning or backing.* On closer discussion of Chalmers's theory of consciousness more different and more extended formalizations are possible e.g. involving coherence principles etc.

For dualists [TE]BS is MT (modus tollens) for the major (1) is (necessary) true. Since materialists doubt the major the logical strength of the syllogism is mitigated to enthymematic probability and the major is only an opinion.

Radical necessary materialists will deny the major and for them *AMMA* is only formally valid since at least one of the premises, major (1), is necessarily false.

3.4 Kripke's Pain ≠ C fibers Firing Argument (ST2)* (note 14)

Chalmers discusses two more arguments for dualism, Frank Jackson's 1982 *Mary's Room* (or *Color Scientist Mary*) and Kripke's *Pain ≠ C fibers Firing*.

In part of Kripke's 1971, 1972, 1980 philosophy of mind argument Chalmers recognizes a related *Zombie* argument from supervenience in Kripke's contention that God had to do more work--after creating brain states, he next had to create mental states corresponding to phenomenal feelings as pain. Because it is only hinted at in the secondary literature we will quote Kripke's *Divine Creation* TE here in length in as far as it relates to pain and C fibers (note 15)--

Suppose we imagine God creating the world. ...

What about the case of the stimulation of C-fibers? To create this phenomenon, it would seem that God need only create beings with C-fibers capable of the appropriate type of physical stimulation; whether the beings are conscious or not is irrelevant here. It would seem, though, that to make the C-fiber stimulation correspond to pain, or be felt as pain, *God must do something in addition to the mere creation of the C-fiber stimulation; he must let the creatures feel the C-fiber stimulation as pain, and not as a tickle, or as warmth, or as nothing, as apparently would also have been within His powers.* (Kripke 1980 : 153-4, italics added)

On Chalmers interpretation this passage in Kripke supports 'an argument from the failure of logical supervenience' (Chalmers 1996 : 149)--

This leaves the argument from the possibility of instantiating physical states without the corresponding phenomenal states—essentially an argument from the possibility of zombies. Curiously, this is the part of Kripke's argument that has received the least critical attention, with most commentators focusing on the possibility of disembodiment.

The possibility of instantiating the relevant physical states without pain, Kripke argues (pp. 153-154), shows that even after God created all the physical stuff going on when one has a pain—perhaps a brain with C-fibers firing—*he had to do more work* in order that those firings be felt as pain. This is enough to establish that materialism is false (David Chalmers 1996 : 148)

Kripke himself uses the *Divine Creation* TE to conclude that the relation between brain states and mental states seems to be contingent and, so, the Identity Thesis is not correct.

On Chalmers interpretation this passage in Kripke supports a supervenience argument as opposed to an identity argument, so, Chalmers twists Kripke's Anti(or Non)Identity Thesis argument into an Anti(Non)Supervenience Thesis--

It is crucial that the argument as I have put it does not turn on questions of *identity* but on *supervenience*. The form of the argument is not, "One can imagine physical state *P* without consciousness, therefore consciousness is not physical state *P*." The form of the argument is rather, "One can imagine all the physical facts holding without the facts about consciousness holding, so the physical facts do not exhaust all the facts." (Chalmers 1996 : 131)

However, the last paragraph of *Naming and Necessity* may point in same supervenience direction phrased as 'ontological dependent' like *AMMA* is stated as an ontological argument--

Materialism, I think, must hold that a physical description of the world is a *complete* description of it, that any mental facts are 'ontologically dependent' on physical facts in the straightforward sense of following from them by necessity. No identity theorist seems

to me to have made a convincing argument against the intuitive view that this is not the case (Kripke 1980 : 155)

Now we seem back again at Kirk's Entailment Thesis. The TE from God's creation of the world having to do more work seems unnecessarily metaphysical, although, of course, it brings in an additional teleological aspect as the TE reminds (teleological) proof for God's existence from design in nature, which however could be considered even more metaphysical and it remains undiscussed.

Dennett confesses himself to be 'a sort of "telefunctionalist"' though explained with reference to evolutionary natural selection instead of *Divine Creation* (TE) and proofs for God's existence. (note 16)

3.5 Phantom Pain (ST1)

In Section 3.2 together with non-TE, nonmodal alternates of *Qualia* TE we have already discussed Kripke's non-TE, non-modal analogue of phantom pain as to prove mental states independent from brain states.

Dennett 1991 traces the example back to Descartes's discussion of phantom limbs of amputees and seems to agree on Descartes analogy of the bell-pull while admitting existence of the phenomenon but as relatively weak ('thin hallucinations') and explains it as false information from the brain—

Phantom-limb hallucinations, while remarkably vivid, are—by our terminology—relatively weak; they consist of *unorganized* pains and itches, all in our sensory modality. Amputees don't see or hear or (so far as I know) smell their phantom feet. So something like Descartes's account *could* be the right way to explain phantom limbs, setting aside for the time being the notorious mysteries about how the physical brain could interact with the nonphysical conscious mind. But we can see that even the purely mechanical part of Descartes's story must be wrong as an account of relatively strong hallucinations; there is no way the brain as illusionist could store and manipulate enough false information to fool an inquiring mind. (Dennett 1991 : 9)

Although Dennett does not know how to explain it, he can't deny the natural occurrence of the phenomenon nor possible truth of Descartes's explanation, so, phantom pain seems indeed a successful example of a non-TE, nonmodal natural phenomenon of conscious of phenomenal feel that is acceptable to both proponents and opponents of mentalism or any sort of dualism.

So, we can apply ST1* and substitute modal TE as *Zombies* and *Qualia* by a nonsensory conscious example as pain, particularly phantom pain as when one won't accept natural or possible existence of *Qualia* or *Zombies*. Again, like the example of color blindness it is a quite known phenomenon that does not need any advanced neuroscientific explanation. But again, it is an unusual example from medicine that can't escape possibly disputable second nature of western science to explain the common from the uncommon, health from disease etc. which could be considered part of bias from negative thinking.

Chalmers lists pain in his catalogue of conscious experiences as a paradigm example, adds that 'pains form a very distinctive class of qualitative experiences' that 'can seem even more subjective than most sensory experiences' and points out 'a great variety of pain experiences from shooting pains and fierce burns through sharp pricks to dull aches.' (Chalmers 1996 : 9).

We expect that inclusion of more scientific research into not just variety of color sensations and pains, but particularly of many more categories of sense impressions (as auditory, tactile, olfactory, taste, hot/cold experiences next to visual senses) and conscious experiences (like bodily sensations, mental imagery, conscious thought, emotions, sense of self) may surely advance philosophical investigations in this field.

To Chalmers's list we want to add intuition since it is often mentioned as cause, source, or psychological faculty of TE as may be clear from alternate, but usually deprecatory considered, names as 'intuition pump,' while, conversely, established theories as Identity Theory in philosophy of mind are attacked on grounds of being counter intuitive.

Notes

*Terminological abbreviations from our TE theory (see ...e.g. Sup. D Glossary) used in this paper TE thought experiment(s) - passim

ST1 Substitution Thesis (ST) No. 1/Transformation Rule (TR) No. 1

holding that a TE can be substituted by an experiment or experience as indicated by thought experimenter in TE text or elsewhere or as indicated in secondary literature. See Sections 3.2, 3.5

ST2 Substitution Thesis (ST) No. 2/Transformation Rule (TR) No. 2

holding that a (modal) TE can be substituted by a nonmodal example, alternate or analogue as in accordance with intention of thought experimenter, purport of TE text or possibly indicated elsewhere or in secondary literature.

See Section 3.4

[TE] RS TE in restricted sense - see Section 3.3, one but last paragraph [TE] BS TE in broad sense – see Section 3.3, one but last paragraph [TE]EX TE in extended sense – see Section 3.3, one but last paragraph RTE religious thought experiment – see note 15

note 0- motto derived from lyrics to Fela Kuti and Africa 70 (1977). *Zombie* as derived from e.g. <https://songmeanings.com/songs/view/3530822107858712085/> (retrieved June 24, 2022)

e.g. performed by *Seun Kuti and The Egypt 80* in LA 2011 <http://www.youtube.com/watch?v=X8SHLF3rKZO&feature=related> (retrieved June 24, 2022).

From *Wikipedia* on Fela Kuti (1938-1997 Nigerian musician and composer)

In 1977, Kuti and Africa 70 released the album *Zombie*, which heavily criticized Nigerian soldiers, and used the zombie metaphor to describe the Nigerian military's methods. The album was a massive success and infuriated the government, who raided the Kalakuta Republic [communal compound that housed Kuti's family, band members, and recording studio] with 1,000 soldiers.... (http://en.wikipedia.org/wiki/Fela_Kuti (retrieved June 24, 2022)

note 1- The concept of zombie may seem to have political connotations.

Michael Jackson's best-selling 1982 album *Thriller* and single 'Thriller' seem to allude to Caucasians as zombies, and later track 'DS', from album *HIStory*, to a Caucasian police chief as a 'cold man'.

note 2- However, Sartre did not accept the Nobel Award--

... on 23 October, *Le Figaro* published a statement by Sartre explaining his refusal. He said he did not wish to be "transformed" by such an award, and did not want to take sides in an East vs. West cultural struggle(*Wikipedia* retrieved June 24, 2022)

From Sartre's letter to Nobel Academy--

Mes raisons objectives sont les suivantes: Le seul combat actuellement possible sur le front de la culture est celui pour la coexistence pacifique des deux cultures, celles de l'est et celle de l'ouest. [...] Mes sympathies vont indéniablement au socialisme et à ce qu'on appelle le bloc de l'est, mais je suis né et j'ai été élevé dans une famille bourgeoise. [...] J'espère cependant bien entendu que "le meilleur gagne", c'est à dire le socialisme. (<http://vietsciences.free.fr/nobel/litterature/sartre.htm> e.g. retrieved June 24, 2022)

note 3- Tamar Gendler has published on related psychological topics as alief/belief.

note 4- In email comments to this paper Robert Kirk emphasized-

Although some materialists think materialism is necessarily true, most do not. It is perfectly consistent to maintain that it is only contingent that our world is exclusively

material (physical). (For discussion, see my book *The Conceptual Link from Physical to Mental* (2013).) Contrast something different: *materialists must maintain that:*

(A) IF materialism is true, then if P is the totality of purely physical truths about the world and Q is some actual truth about conscious experience, THEN it is absolutely necessary that if P, then Q.

Kirk and Chalmers's zombie arguments are intended to show that (A) is false. (Since I have long been a materialist, I argue in my *Zombies and Consciousness* (2005) and my (2013) that (A) is true.)

In our first interpretation and formalization we have chosen the safest interpretation and analyzed and symbolized *Zombie TE* as necessity refuters, one of the main categories of modal TE discussed in Sorensen 1992a and Cohnitz 2003. After receipt of comments by Robert Kirk we have italicized 'seem' in this place and more places in this paper.

note 5- We quote Chalmers's introduction of his *Zombie TE* in Section 3. In a note Chalmers refers to both Robert Kirk 1974 and Australian realist Keith Campbell 1970--

Kirk (1974) provides a vivid description of a zombie, and even outlines a situation that might lead us to believe that someone in the actual world had turned into a zombie, by specifying appropriate intermediate cases. Campbell (1970) similarly discusses an 'imitation man' that is physically identical to a normal person, but that lacks experience entirely. (Chalmers 1996 : 369)

Kirk's description of a zombie is not very vivid in possible sense that he refers to popular zombies or describes them. Kirk adds in a note to his statement

Such a race of Zombies would indeed have been 'nothing but physical objects.'

a reference to British biologist Thomas H. Huxley for the idea of *Zombies*

G.F. Stout, in *Mind and Matter* (Cambridge, 1931), pp. 138-139, describes this possibility as an objection to materialism, though in

connexion with the causation of events. The idea of Zombies is of course an old one. See, e.g. T.H. Huxley, 'On the Hypothesis that Animals are Automata, and its history', in his *Methods and Results* (London, 1894)

Only in Kirk's 2011-2019 *SEP* definition there is a negative reference to zombies in films and witchcraft and Chalmers distinguishes both Haitian and Hollywood zombies from *Philosophical Zombies* on his web site *Zombies on the Web* (<http://consc.net/zombies.html> retrieved June 24, 2022) but without much concern about morals (although he mentions Haitian zombies lack free will and Hollywood zombies are 'typically rather mean, and fond of human flesh'). As according to philosophical definitions of Kirk and Chalmers *P Zeds* are morally neutral as they have no particular moral properties, possibly because they are lacking consciousness and free will, nor seem their *Zombies* be driven by powers beyond their control.

The latter feature, however, is in Kirk's *Zulliver TE* in same 1974 text. This TE is rather vividly described as by a story on the Brain Team, but we doubt if Chalmers is confusing Kirk's *Zombie Replica* with Kirk's *Zulliver*, the latter reminding of Descartes *Evil Demon TE* and nowadays *Brain-In- a-Vat TE* introduced by Hilary Putnam in the first chapter of 1982 *Reason, Truth, and History* who attributes it to some arguments in Wittgenstein 1953 *Philosophical Investigations*.

Wikipedia traces BIV back to Plato's Cave, Hindu Maya Illusion and Zhuangzi's Butterfly TE.

We won't trace the references to zombies in philosophical literature further down as we have already traced the concept of zombie to (e.g.) voodoo. We only want to say that nonmoral names as (*Human*) *Replica* or *Imitation Man* suit the *P Zed* definition much better than *Zombie*.

note 6- Zhuangzi dreaming he's a butterfly 昔者莊周夢為胡蝶，栩栩然胡蝶也，自喻適適志志與與！！

不知周也。俄然覺，則蘧蘧然周也。不知周之夢為胡蝶與，胡蝶之夢為周與？周與胡蝶，則必有分矣。此之謂物化。

([#14](http://ctext.org/zhuangzi/adjustment-of-controversies) retrieved June 24, 2022)

Once Zhuangzi dreamt he was a butterfly, a butterfly flitting and fluttering around, happy with himself and doing as he pleased. He didn't know he was Zhuangzi. Suddenly he woke up and there he was, solid and unmistakable Zhuangzi. But he didn't know if he was Zhuangzi who had dreamt he was a butterfly, or a butterfly dreaming he was Zhuangzi. Between Zhuangzi and a butterfly there must be some distinction! This is called the Transformation of Things. (trans. Burton Watson 1968:49 e.g. after *Wikipedia* Zhuangzi entry)

note 7- Papineau 2008, 2 Kripke's Argument—italics and bracketed reference added

As I said, I want to use Kripke's anti-physicalist argument from the end of Naming and Necessity to show that we are all in the grip of a dualist intuition. Let me begin by reminding you how this argument goes.

After some preliminaries, Kripke turns to type-type identities like pain = C-fibres firing (p 148) [Kripke 1980 : 148]. If such an identity obtains, then it obtains necessarily. Even so, claims like pain = C-fibres firing certainly seem contingent. There certainly seem to be metaphysically possible worlds in which C-fibres fire, yet there are no pains. (*'Zombie worlds' as we would call them now, though this is not Kripke's terminology.*)

note 8-- Davidson developed a TE himself in 1987 called *Swampman*, after comic book character Swamp Thing, a so-called humanoid/plantcreature, invented by writer Len Wein and artist Berni Wrightson.

note 9- Quine, Block 1994: Section 3 which is referred to on Ned Block's homepage of online papers at inverted spectrum. Same development as from extreme, hardwired to moderate, softwired functionalism, physicalism, materialism etc. we can see in oeuvres of e.g. Putnam and Dennett. Block's

TE, such as *Inverted Earth*, has raised discussions on representationalism or intentionalism according to which theory

qualia are intentional contents or representational properties.

note 10- The example of Ishihara color tests is ours but we guess Quine and Block could accept it as test that proves natural de facto existence of (e.g. red-green) color blindness. Speculations on future of neuroscience may not be that convincing as Quine contends that with any new discovery, breakthrough in the field of neuroscience we may still not know 'how we can link any kind of physical discovery with' e.g. sensations of green and red. To *Color Scientist Mary* TE of Australian philosopher Frank Jackson Quine replies that Mary has apparently 'acquired capacity to a new neural connection.'

note 11- In email comments to this paper Robert Kirk countered he cannot agree on it--

Pretty well all materialists today agree we have conscious experiences (I - a materialist - certainly do). We take our main problem to be to explain how a merely physical system can be a conscious subject.

In Section 18.2 of ... we conclude to additional research into various shades of materialism, dualism etc. in nowadays philosophy of mind e.g. Kirk 2013 *The Conceptual Link from Physical to Mental*, as it seems hard to us that materialists can acknowledge consciousness and the mental and still go on considering themselves materialists.

note 12- In email conversation David Chalmers refers to his 2010 'The Two-dimensional Argument against Materialism' for a formalization update of his 1996 *AMMA* under the heading of *Conceivability Argument*.

To bridge the epistemic and modal domains, the framework of two-dimensional semantics can play a central role. I have used this framework in earlier work (Chalmers 1996) to mount an argument against materialism. Here, I want to revisit the argument, laying it out in a more explicit and careful form. In what follows I will concentrate mostly on the conceivability argument. I think that very similar considerations apply to the other arguments mentioned above, however. In the

final section of the paper, I show how this analysis might yield a unified treatment of a number of anti-materialist arguments.

1 The Conceivability Argument-

The most straightforward form of the conceivability argument against materialism runs as follows.

1. $P \& \sim Q$ is conceivable
2. If $P \& \sim Q$ is conceivable, $P \& \sim Q$ is metaphysically possible
3. If $P \& \sim Q$ is metaphysically possible, materialism is false.
4. Materialism is false.

Where P is 'the conjunction of all microphysical truths about the universe, specifying the fundamental features of every fundamental microphysical entity in the language of microphysics'; Q is 'an arbitrary phenomenal truth: perhaps the truth that someone is phenomenally conscious, or perhaps the truth that a certain individual (that is, an individual satisfying a certain description) instantiates a certain phenomenal property'; and $P \& \sim Q$ is 'the statement that everything is microphysically as in our world, but no-one is phenomenally conscious, ' so it says that 'the world is a zombie world', or 'the statement that everything is microphysically as in our world, but that it is not the case that the individual in question instantiates the relevant phenomenal property' in which case 'it will suffice ... that the world is a *zombie world*, or simply that the individual in question is a zombie in a physically identical world'

Inference from (3) to (4) only holds on a strong thesis of necessary materialism.

Our modal formula applying possible worlds semantics expresses directly what Chalmers adds in comments to his formalization--

The third premise is relatively uncontroversial. It is widely accepted that materialism has modal commitments. Some philosophers question whether materialism is equivalent to a modal thesis, but almost all accept that materialism at least entails a modal thesis. Here one can invoke

Kripke's metaphor: if it is possible that there is a world physically identical to our world but phenomenally different, then after God fixed the physical facts about our world, he had to do more work to fix the phenomenal facts.

note 13- TE from natural sciences can often be completed as an argument by revealing epistemological principles. Analogously, Chalmers proposes some principles of coherence to support his theory of consciousness.

note 14- In Section 11 towards the end of the 2010 paper Chalmers discusses four 'other anti-materialist arguments', Kripke's *Pain ≠ C fibers Firing* at the end, proposing formalizations similar to his *AMMA* alternate of the *Conceivability Argument*.

... Kripke's modal argument

The anti-materialist argument that is most closely related to the two-dimensional argument is Kripke's modal argument against the identity theory. Kripke's argument can put as follows. Let 'p' stand for pain and 'c' be a term for C fiber firing. Then

1. 'p=c' is apparently contingent.
2. If 'p=c' is apparently contingent, then there is a world with a being in an epistemic situation that is qualitatively identical to mine in which a corresponding statement is false.
3. If there is a world with a being in an epistemic situation that is qualitatively identical to mine in which a statement corresponding to 'p=c' is false, then there is a world at which 'p=c' is false.
4. If there is a world at which 'p=c' is false, then 'p=c' is false
5. 'p=c' is false.

Inference from (4) to (5) is only valid if it is about necessary equivalence of p and c ($p \equiv c$) saying $\Box p = c$, or $\Box p = c$ (when \Box is box operator for necessary/ily). It again demonstrates the straw man antifallacy.

note 15- What we call *Divine Creation* TE is in the last pages of 1980 *Naming and Necessity* and referred in Chalmers 1996.

The *Divine Creation* TE has two parts, first, example of heat and molecular motion, second,

example of pain and C fibers firing. The latter part is quoted in the text, here we quote the first part and show how it alludes to *Genesis*--

Perhaps the same point can be made vivid without such specific reference to the technical apparatus in these lectures. Suppose we imagine God creating the world; what does he need to do to make the identity of heat and molecular motion obtain? Here it would seem that all He needs to do is to create the heat, that is the molecular motion itself. If the air molecules on this earth are sufficiently agitated, if there is a burning fire, then the earth will be hot even if there are no observers to see it. God created light (and thus created streams of photons, according to present scientific doctrine) before He created human and animal observers; and the same presumably holds for heat. How then does it appear to us that the identity of molecular motion with heat is a substantive scientific fact, that the mere creation of molecular motion still leaves God with the additional task of making molecular motion into heat? This feeling is indeed illusory, but what is a substantive task for the Deity is the task of making molecular motion felt as heat. To do this he must create some sentient beings to insure that the molecular motion produces the sensation *S* in them. Only after he has done this will there be beings who can learn that the sentence 'Heat is the motion of molecules' expresses an *a posteriori* truth in precisely the same way that we do. (Kripke 1980: 153—underline added)

Kripke's idea of *God must do something in addition to* can be understood theologically from *Genesis* 1 in Old Testament that God first created heat and molecular motion (on the first and possibly fourth day, Gen 1, 3, 'Then God said: Let there be light, and there was light', and 1, 14 e.g.

'Then God said: Let there be lights in the dome of the sky, to separate day from night ...' telling about creation of sun and moon) and only after man (on the sixth day, Gen 1, 24, 'Then God said: Let the earth bring forth every kind of living creature ...'

and 26, 'Then God said: Let us make human beings in our image, after our likeness'). On the sixth day God does not only create man but as Kripke says (also) some sentient beings.

God's subsequent additional task of having to do more work, having to do something in addition, creating first the physical world (as light) and only after man (and animals etc.) literally refers to the chronology of the seven days of Divine Creation in *Genesis* 1. Because of very likely allusions to *Genesis*, most obviously 'God created light' and possibly 'he must create some sentient beings,' that is a creation in separate consequent phases, it is in fact a TE referring to religious discourse, what we call RTE, religious thought experiment.

(Yiftach Fehige calls same type of TE 'TE of revealed theology' e.g. Fehige 2009.) In our account a RTE is verified supernaturally (as after Józef Bochenski's 1965 supernatural verification vs. scientific natural verification) by an intervention of the Deity or supernatural agent as a Angel, Saint etc. In *Genesis* it is a very strong sort of supernatural verification by the Divinity without any intermediary agents, which is acknowledged by at least three world religions, Judaism, Christianity and Islam as similar passages occur in Torah, Bible and Quran.

According to us creationism and evolutionary theory do not exclude each other but, in fact, complement each other to some extent as both assume a development in subsequent phases. The crucial allusion to the Bible as different from reference to evolutionary theory is Kripke's 'God created light.' However, the (R)TE is not introduced by a RTE indicator (as 'Ergo, domine, qui das fidei intellectum, da mihi, ut quantum scis expedire intelligam, quia es sicut credimus, et hoc es quod credimus' in Anselm's Ontological Argument, *Proslogion* II) but by a complex higher-order TE indicator phrase as 'Suppose we imagine God creating the world,' which religious believers could consider an insult (faculty of imagination instead of belief in truth) and which would also not fully suit secularists (who deny both God and creationism). Kripke's reference to divine creation instead of evolutionism can be explained from desire for a vivid example without

any specific technical apparatus as expressed in introductory line of TE and we assume scientific theorizing of evolutionism could also diminish vividness of the example.

note 16- E.g. Dennett 1991 : 460

Am I, then, a functionalist? Yes and no. ... I am a sort of “teleofunctionalist,” of course, perhaps the original teleofunctionalist (in *Content and Consciousness*), but as I have all along made clear, and emphasize here in the discussion of evolution, and of qualia, I don't make the mistake of trying to define all salient mental differences in terms of biological functions. That would be to misread Darwin badly.

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