

# Worlding the Brain

*Neurocentrism, Cognition, and the Challenge of the  
Arts and Humanities*

*Edited by*

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# Transgenerational Trauma and Worlded Brains

## *An Interdisciplinary Perspective on “Post-Traumatic Slave Syndrome”*

*Machiel Keestra*

### 1 Introduction

Trauma and traumatization have arguably always been part of the human experience yet have in the last few decades come to occupy a prominent place in various popular and academic contexts. This increased prominence, if not popularity, has motivated many new investigations and debates yet also raised critical questions. Observing the wide spectrum of applications of the concept of trauma in popular culture, Ruth Leys contends that “it is hard not to feel that the concept of trauma has become debased currency” (2). Others critically refer to the “postmodern trauma discourse” as a “spectacular failure [...] of scholars in the humanities and social sciences to develop a truly interdisciplinary trauma concept” (Kansteiner and Weilnböck 229). Anne Rothe diagnoses how such trauma theorizing has led to “irresponsible nonsense” that eclectically borrows from empirical trauma studies while in fact blurring differences between the lived experience of and the more indirect contact with trauma, as well as between the positions of victim, witness, and perpetrator (Rothe 181).

Heeding such warnings, this chapter offers an interdisciplinary and comparative investigation of trauma and traumatization in different historical contexts. More specifically, my aim is to discuss whether the rich bodies of research in trauma and traumatization in Holocaust survivors and their descendants yield relevant insights for post-slavery contexts. This comparative and interdisciplinary approach is partly motivated by my personal background as the child of a Jewish mother who was born one week before Nazi-Germany invaded the Netherlands. Her parents were murdered in 1943 in Sobibor and the aftermath of the Holocaust has strongly affected her life and our family. Reflections on that biography have been enriched since 20 years by the ongoing conversations with my Surinamese-Dutch wife, Mercedes Zandwijken, whose ancestors were enslaved until the abolition of slavery in Suriname in 1863, when her great-grandmother was “emancipated”. Together, we developed the *Keti Koti Table*, a facilitated and ritualized dialogue method addressing among others post-slavery topics, which has enabled exchanges of personal experiences,

emotions and insights between some 18,000 participants—among whom descendants of former enslaved people, white participants, and those with other colors.<sup>1</sup> These personal and professional experiences and insights have motivated me to think about differences and similarities between the continuing impacts of traumatization in post-Holocaust and post-slavery contexts. It has been shown that children of Holocaust survivors suffer from stress and other symptoms related to their parents' traumatization, which influence the interactions with their environments (Danieli et al.; Kellermann; Wetter). Such results made me wonder whether the traumatic impact of chattel slavery—which has been abolished some 160 years ago—might have a similar impact, yet now across several generations.

I am aware that this question is not a scientific question alone, and maybe not even in the first place. Issues of the transmission and current persistence of trauma are inherently linked to questions of social justice, recognition and reparations (Craemer; Graff). Yet, the science regarding transgenerational transmission of trauma is itself also debated. The field of epigenetics, for example, has made important contributions to the study of transgenerational trauma in the descendants of enslaved people (Jackson et al.) but is also contested as a form of knowledge that may generate new forms of biopolitics and discrimination itself (Meloni and Testa). Although I suggest to consider epigenetics as one among several factors in transgenerational traumatization, I offer this chapter not primarily as a contribution to these debates but rather as an exploration of interdisciplinary connections that should be studied in concert to account for the traumatic impact of historical and present day experiences.

This interdisciplinary perspective also makes my exploration a study of the *worlding* of the brain. It means investigating the brain's functioning in worldly contexts, involving multimodal and mutual interactions between adaptive brains and bodies in specific historical, cultural, and social environments (cf. Besser et al. 1). Replacing the traditional view of a brain that functions independently from its environments as an input-output machine, cognitive neuroscientific research has integrated insights from phenomenology and hermeneutics and shown the brain to be fundamentally embodied, enactive, embedded, and social (Varela et al.; Kiverstein and Clark; Di Paolo). Moreover, it shows how our cognition and behavior is shaped—or “sculpted”—in response to factors which are affecting us in unexpected ways, which can be difficult to control (Keestra). Consequently, this chapter asks how a traumatic worlding of brains and bodies can occur across generations.

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<sup>1</sup> See <https://www.ketikotitafel.nl/> for information and resources in Dutch and English.

To address this question, I first discuss the concepts of trauma and post-traumatic stress disorder and then explore the phenomenon of the inter- and transgenerational transmission of trauma, relying in part on the important body of research conducted on families of Holocaust survivors. I then turn to the much less researched “post-traumatic slave syndrome” (DeGruy) and discuss two factors that might contribute to the transgenerational transmission of trauma in the families of former enslaved: epigenetics and the continuation of traumatization even after the abolition of slavery as articulated in Historical Trauma theory.

## 2 Post-Traumatic Stress: from War Victimization to Indirect Traumatization

Long before the concept of Post-Traumatic Stress Disorder (PTSD) was introduced, people have been bewildered by the long-lasting psychological impact of extremely agonizing or fearful events. War provided many examples, such as the poor soldier described by Herodotus, who survived the Battle of Marathon in 490 BC but had gone blind from fear (Morris 63). Some of the trauma syndromes discussed in modern times—such as the so-called “railway spine” of the 1860s (cf. Leys 3)—arguably have been less dramatic, but war remained an important factor in the history of trauma research, for instance when soldiers were diagnosed with “shell-shock” during and after WWI. However, it was not until many American Vietnam war veterans showed a specific set of symptoms that a new disorder called PTSD was included in the *Diagnostic and Statistical Manual of Mental Disorders*, in the third edition published in 1980 (Young).

The concept of trauma itself has a complex history that I can only briefly allude to here. Psychoanalysis presents two different views, for example. Freud influentially insisted that the “work of mourning” is necessary to avoid continuing suffering from traumas from the past (Freud). Subsequent psychoanalysts assumed that traumatized patients are in a constant state of anxiety and that their symptoms—such as nightmares and intrusive memories—contribute to their ongoing state of preparedness for responding to future triggers (Young). General stress theory, in contrast, posits that a stressful event can shake up an organism only *temporarily* as it returns to a homeostatic balance as soon as the stressor ceases. Reflecting this view, the first edition of the *DSM* (published in 1952) only contained the diagnosis of a “gross stress reaction” which—in the case of long-lasting symptoms—was replaced with “neurotic reaction” (Friedman et al.). More recently, PTSD changed from an anxiety disorder to a “Trauma- or stress-related disorder” (North et al.). From this early stage on,

these three phenomena—stress in response to specific events, traumatization due to stressful events in the past, and an associated anxiety for future similar experiences—have been investigated together.

With much about the etiology, underlying mechanisms, and treatment still unclear, PTSD is currently diagnosed according to the *DSM 5* (2013) in adults who suffer for more than one month from at least: an avoidance symptom (refraining from an activity associated with the trauma), two arousal and reactivity symptoms (feeling stressed and becoming angry easily), two cognition and mood symptoms (thinking badly about oneself and no longer being interested in pleasurable activities), and a re-experiencing symptom like flashbacks and nightmares (Nat. Institute of Health).

Importantly, reactivations also raise the issue of different types of trauma exposure, included as “criterion A” in the *DSM* since its III-R edition of 1987. Direct exposure to a life-threatening event forms one end of the spectrum, but the classification now also includes *indirect* traumatization, for example through observing close family, relatives, or friends to be traumatized or even hearing later about their traumatization (North et al.).<sup>2</sup>

### 3 Inter- and Transgenerational Transmission of Trauma in Post-Holocaust and Other Contexts

Such indirect exposure also suggests the possibility of a transmission of trauma to the next generation (intergenerational) or across several generations (transgenerational). An expansion of the trauma diagnosis to those not directly affected was first discussed in the 1960s when clinicians noted a high incidence of the children of Holocaust survivors seeking their help (Rakoff et al.). Absent direct traumatization, these children were found “to have consciously and unconsciously absorbed their parents’ Holocaust experiences into their lives” and to “manifest Holocaust-derived behaviors, particularly on the anniversaries of their parents’ traumata. Moreover, some have internalized as parts of their identity the images of those who perished” (Danieli 5). Research showed that children of Holocaust survivors were more vulnerable to developing a range of psychiatric disorders including PTSD than a control group (Yehuda, et al.) and that the public recognition of the Holocaust and its aftermath in

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2 “Secondary” or indirect traumatization according to the *DSM 5* seems to assume that traumatic experiences are explicitly shared or told between individuals. In many cases, though, such knowledge is only implicitly shared or indeed replaced by an “all-consuming silence”, as Horesh critically notes (347).



some countries such as Israel correlated with less severe symptoms (Danieli et al.). Summing up the results of 23 selected studies on the intergenerational transmission of Holocaust-related traumas, Dashorst et al. confirm that the children of survivors are indeed more susceptible to multiple psychiatric symptoms including PTSD.

Such intergenerational traumatization is found in other contexts, too. This holds, for example, for the children of survivors of WW II in the Dutch colony of Indonesia (Aarts), for children of victims of political oppression in the Soviet Union (Krahn), and in refugee families (Sangalang and Vang). Given that a recent *World Mental Health Survey* conducted by the WHO suggests that seven out of ten subjects experience at least one traumatizing event at some point in their life—with three subjects even suffering from four or more such events—it is even more urgent to study the transmission of trauma (Benjet et al.).

A crucial question in this context is whether this transmission continues across multiple generations or abates after two generations: is trauma transmission restricted to an intergenerational process or does it also occur *transgenerationally*, i.e., over more than two generations? For the post-Holocaust context the impact of trauma over several generations has meanwhile been recognized—even though Danieli notes in this context that a “conspiracy of silence is the most prevalent and effective mechanism for the transmission of trauma on all dimensions,” which she interprets as demonstration of the lack of integration of the trauma into the lives of survivors and their families (Danieli 678).<sup>3</sup> This was confirmed by studies from the early 1990s showing that not only the children but also the grandchildren of Holocaust survivors reported more psychopathology than control subjects (Rubenstein et al.). Another study more specifically observed increased levels of anxiety among grandchildren of Holocaust survivors, for example (Wetter).

More recent studies and reviews show more mixed results when it comes to the traumatic impact of the Holocaust on later generations. In one meta-analysis the authors did not find significant evidence of transmitted trauma to the grandchildren of Holocaust survivors in general (Sagi-Schwartz et al.). However, this result might be due to the criteria used for assessing traumatization. Indeed, an earlier research survey by the same authors indicated that

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3 The *Keti Koti Table* is a personal dialogue intervention that Mercedes Zandwijken and I developed in order to break a similar silence between people of color and white participants about the shared legacy of slavery and enhance mutual empathy and understanding (Keestra and Zandwijken). Meanwhile, it has been embraced as one of few effective interventions to combat racism and discrimination (Felten and Taouanza).

children of non-clinical Holocaust survivors, while not suffering from secondary traumatization, did show an elevated vulnerability and more difficulties in coping with stressful events than controls (van Ijzendoorn et al.).<sup>4</sup>

Such findings of more nuanced patterns of vulnerability and potential protective factors in subsequent generations are common. They confirm the suggestion to distinguish between investigating the *contents* of what is transmitted from investigating features of the *process* itself (Kellermann). For example, research in children and grandchildren of Holocaust survivors showed that they did experience traumatic stress related to the survivors' stress, moderated by the emotional exchanges and reactivity in their relations (Giladi and Bell). Indeed, although survivors might be successful in “encapsulating” potentially risky elements of trauma, under specific circumstances these might later resurface and affect their children or grandchildren (Shmotkin et al.). Specific features of parenting—like stress about survival, separation and loss—influenced this transmission process (Scharf and Maysel). Explaining the differences between groups of respondents found in such studies, another study found a correlation between the salience or “event centrality” of the Holocaust in families of survivors with PTSD influences and the degree of traumatization of the next two generations (Greenblatt-Kimron et al.). This emphasizes how indirect traumatization is not just dependent upon the horrifying contents related to the original trauma but also upon the specific properties of the processes involved in sharing those contents between generations.

#### 4 Transgenerational Trauma in Post-Slavery Contexts

Turning now to the issue of transgenerational traumatization in the descendants of former enslaved, we are confronted with a lack of empirical research on the one hand and the complexity of dealing with an extended period of time that passed since the end of slavery on the other.<sup>5</sup> Still, a debate emerged

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4 Another researcher explicitly expressed their surprise about the unexpected outcome of two dissertation projects into tertiary traumatization in Holocaust families: “I went into the studies expecting, as [the graduate students] did, that there would be transfer to the third generation (...) but we didn't find that in either study. Believe me, that is not what we were looking for and not what we expected” (Nathan-Kazis).

5 The difference in number of studies pertaining to the transmission of trauma due to the Holocaust versus the aftermath of slavery is striking. A quick search for publications from the period 1975–2021 with the keywords “transmission AND trauma AND holocaust” versus “transmission AND trauma AND slavery” yielded: 202 versus 14 in Web of Science and 69 versus 1 (a study on Japanese Military Sexual Slavery in ww II) in Pubmed. Larger numbers

relatively early between two explanations that both could account for its occurrence. One explanation entailed the traumatization effects on the dispositions of the descendants, affecting their family and marital relations. Psychoanalyst Abram Kardiner, for example, argued that the period of slavery had undermined the “most rudimentary type of family organization” in African American communities with continuing effects (Kardiner and Ovesey 45). Rejecting this notion of a “tangle of pathology,” Herbert George Gutman pointed out how after the Emancipation African Americans were still subject to challenging conditions like poverty, migration, discrimination, and violence (Gutman xviii). This latter view insists on the fact that even after the abolition of slavery the descendants of former enslaved would still experience consequences of the racism upon which slavery rested.

By introducing the concept of “post-traumatic slave syndrome” (PTSS), clinical psychologist and social work expert Joy DeGruy recently intervened in this debate. Defending the existence of a syndrome connecting present day symptoms with events that traumatized people numerous generations earlier, DeGruy seeks support from research on transgenerational traumatization: “While the direct relationship between the slave experience of African Americans and the current major social problems facing them is difficult to empirically substantiate, we know from research conducted on other groups who experienced oppression and trauma that survivor syndrome is pervasive in the development of the second and third generations” (DeGruy 135).<sup>6</sup> In line with this, several symptoms DeGruy describes are comparable to those in Holocaust survivors and their offspring.

DeGruy mentions three crucial patterns of cognition and behavior associated with PTSS: vacant esteem, ever-present anger, and racist socialization. Vacant esteem is described as “the state of believing oneself to have little or no worth, exacerbated by the group and societal pronouncement of inferiority” (DeGruy 140). The “ever-present anger” is due to the “anger at the violence,

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and a much smaller disparity was visible in the results from a search in Google Scholar which returned 17.800 versus 16.400, similar to the results from JSTOR, which yielded 1638 versus 1274 entries. Yet, these results contained many more publications from the humanities and social sciences than previous ones, suggesting that the disparities are particularly prominent in medical and related fields. Difficult as it is to assess these differences, since 15 million enslaved were brought to the America’s via the transatlantic “middle passage” during the 16–19th centuries (UNESCO), a sizeable population potentially suffering from the aftermath of the historical trauma of slavery would benefit from more research.

6 The research on other groups to which DeGruy alludes is presented in the “International Handbook of Multigenerational Legacies of Trauma”, to the introduction of which she refers (Danieli).

degradation, and humiliation visited upon us, our ancestors, and our children” (148).<sup>7</sup> Thirdly, DeGruy regards PTSS as an effect of racist socialization, “due to centuries of systematic and traumatic programming of inferiority, covering all aspects of one’s being” (152).<sup>8</sup> These three patterns bear resemblance to the four domains affected by post-traumatic stress in Holocaust survivors and their descendants: self, cognition, affectivity, and interpersonal functioning (Kellermann).

My focus here, however, is not primarily on the contents of these syndromes but rather on the possible *reactivation* of symptoms in the transgenerational transmission of trauma in the post-slavery context and on the indirect exposure to traumatizing experiences of previous generations. DeGruy adds an important factor to the etiology of post-traumatic slave syndrome that is relevant here. Defining PTSS, she states that “multigenerational trauma together with continued oppression and absence of opportunity to access the benefits available in the society lead to ... Post Traumatic Slave Syndrome” (DeGruy 136). In other words, she contends that it is relevant that this trauma is transmitted during a continuing history of oppression, which is related to a “real or imagined lack of access” to societal benefits, which further contributes to the syndrome (136). This points to the necessity of a multicausal account of transgenerational trauma to which I turn now.

## 5 Causal Pluralism in Indirect Traumatization

In his discussion of the transmission of Holocaust trauma, Nathan Kellermann insightfully points to a complex interaction between “biological predisposition, individual developmental history, family influences, and social situation” as key factors in direct traumatization (Kellermann 265). These factors represent and integrate three different modes of explanation, that can be distinguished as *constitutive*, *etiological*, and *contextual* explanation respectively (Craver; Menken and Keestra). PTSD is accordingly produced by a mechanism that is *constituted* by multiple levels of components and relations, like brain

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7 Carter does also include anger in the list of discrimination and race-related stress, grouping it with other responses like fear, anxiety, and sadness (Carter). Sule et al. confirm how the ongoing denial and ignorance towards of the struggle of African Americans contribute to such anger. In addition, they point out that it might be interpreted as what the *DSM 5* calls “arousal and reactivity symptoms” of PTSD (Sule et al.).

8 Obviously, the self-denigrating contents of the racist values internalized by descendants of the enslaved do have a negative impact upon self-identification and developmental processes (Jernigan and Daniel).

networks and their interactions. Since these networks develop over time, *etiology* matters, too. Indeed, etiological explanation might refer to parental genetic influences or to an individual's own traumatic experiences over time. Finally, *contextual* explanation considers the context in which a mechanism operates, such as interpersonal and social contexts that can trigger reactivations or give rise to lasting traumas. These three modes of explanation being often interdependent, I will focus here on two factors in particular that integrate these: first, epigenetics as a form of biological predisposition (*constitution*) across generations and, second, historical context (*context*) as a factor that over time might lead to indirect traumatization of those with such predispositions (*etiology*).

### 5.1 *Epigenetics as a Constitutive Factor in Trauma Transmission*

Epigenetics is generally defined as “the study of cellular variations that are caused by external, environmental factors that ‘switch’ genes ‘on’ and ‘off,’ making changes in the phenotype of genetic expression without concomitant changes in the DNA sequence or genotype” (Krippner and Barrett 53). Such epigenetic changes are probably “ubiquitous” in various taxa, although they are more common in plants and fungi than in animals (Jablonka and Raz). This is not surprising, given the potential advantage if adaptation to, especially, risks provided by the environment is inheritable to next generations. For this mechanism to work, epigenetic changes have to be translated to changes in the germline (Lim and Brunet). Since DNA regulates both the development and functioning of brains in sometimes very specific ways, epigenetic modulation of gene expression can influence behavior and cognition (Ryan and Kuzawa). Strikingly, it can even produce inheritable patterns of behavior and cognition provoked by specific contexts across generations.

War has again provided an important source of research and insights. For instance, Dutch children who were born months after the so-called Hunger Winter of 1944–1945—as well as their children—were found to display specific inheritable physiological properties such as obesity, glucose intolerance, and coronary heart disease (Lacal and Ventura; cf. Roseboom et al.). Epigenetic changes were found to have an impact during embryonic development upon a specific gene coding for a growth factor. Confirming the transient nature that epigenetic influences often have, these effects were transmitted only over a few generations (Krippner and Barrett). Epigenetics thus allows temporary changes in response to a traumatic stressor that can be transmitted to next generations.

Given these properties of epigenetics, it is not surprising that DeGruy has included a section on “Epigenetics of PTSD” in the 2017 edition of her book on the post-traumatic slave syndrome (132–36). However, that section does

not contain any discussion of epigenetics (but instead considers the role of parenting in trauma transmission). Taking up on DeGruy's suggestion, I argue that epigenetics does potentially play a role in the alleged post-traumatic slave syndrome and its persistence across several generations—especially if accompanied by certain contextual factors.<sup>9</sup> For my argument it is important to understand epigenetics as fetal or inter-generational programming, potentially transmitting specific stress responses to next generations. Animal studies confirm that parental stress leads to programming of stress-related systems and their response profiles in next generations (Bowers and Yehuda). A recent study in rodents, for example, found that after exposure up to three subsequent generations of rats displayed a rat phenotype characterized by specific stress responses due to an abnormal regulation of the hypothalamus-pituitary-adrenal or HPA axis (Ambeskovic et al.). Reviewing research in the inheritability of stress responsivity across generations in animals and humans including PTSD, epigenetic influences on stress-related systems were found to be a relevant factor (Yehuda and Lehrner; cf. Dashorst et al.; Ramo-Fernandez et al.).

An important question is whether changes transmitted across generations via epigenetics remain adaptive, or not—as these are related to an original traumatic event or experience (Ryan and Kuzawa). The principle of “epigenetic plasticity” suggests that “changes to the epigenome might reset when the environmental insults are no longer present, or when we have changed sufficiently to address environmental challenges in a new way” (Yehuda and Lehrner 253). An exceptional animal study that subjected animals to extinction training did indeed find such a reset of epigenetic changes upon extinguishing an acquired stress response (Aoued et al.). However, we should not conclude that epigenetic changes always reset after a traumatic event, since so-called “epigenetic recall” might occur even after a period in which these changes have remained dormant. Epigenetic changes entail a form of “neural sensitization,” yielding “inherited, partial epigenetic patterns that facilitate a response” even if the stressor is weaker than the one experienced by the previous generation (Jablonka and Raz 160). Such epigenetic recall could imply that under triggering circumstances, some descendants of traumatized generations could display stronger stress responses as well. The brains and bodies of members of next generations might thus potentially be “neurally sensitized” through epigenetic changes.

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9 A similar conclusion is drawn in the review of epigenetics research relevant to the “trauma and stress of enslavement and institutionalized racism”, which lists potential epigenetic effects according to specific life stages from pregnancy to adulthood (Jackson et al.).

## 5.2 *Historical Trauma as a Contextual Factor in Indirect Traumatization*

With this possibility in mind I turn now to the historical and contextual dimension of transgenerational trauma and discuss in which ways post-slavery generations are exposed to worldly stressors that might reactivate epigenetic changes. Given the prominence of post-Holocaust studies of transgenerational transmission of trauma it is perhaps not surprising that several studies on other cases of transgenerational trauma transmission make efforts to differentiate their approaches from this research. Studies on intergenerational trauma in refugee families, for example, emphasize the role of migration and instability for these groups (Sangalang and Vang) while research on the historical traumatization of indigenous peoples underscores the extended period of time in which it occurred (O'Neill et al.). Colonization is also key factor in a recent review of transgenerational trauma in Latin American migrants to North America and their descendants, for which the authors regard “the cyclical reproduction of colonial and racialized violence continues to impact communities across the globe, including Latin Americans and Latinxs” as essential (Cerdeña et al 3).

Integrating etiological, constitutive, and contextual explanations, Historical Trauma theory aims to account for the impact of such long-lasting cultural, social, and historical contexts on traumatization processes that affect certain groups and which tend to be overlooked by explanations that exclusively focus on individual risk factors and parenting contexts. This theory initially emerged from research on, and social work practices in, American Indian and Alaska Native communities (cf. Hartman and Gone). As complicated as it is to integrate evidence about historical oppression with research on psychological trauma, the concept of Historical Trauma has informed research on how historically traumatized people are showing vulnerabilities that extend to generations that are not directly affected by it. While recognizing the risk of victimization and acknowledging that there are different ways of coping with such historical traumata, research does confirm that these can have effects on physical and mental health across generations (Prussing).

However, it is essential to keep in mind the complexities involved in comparing different historical traumata. Importantly, there are several structural differences between the trauma of the Holocaust and the so-called Historical Trauma experienced by indigenous and colonized populations. Leaving unattended the centuries of endemic antisemitism preceding it, one could refer to the Holocaust as “a time-limited series of events covering about a decade, [whereas] the events that constitute historical trauma for Indigenous peoples in the Americas lasted hundreds of years” (Kirmayer et al. 305). The



latter holds largely for the former enslaved as well, being exposed to the dehumanization of enslavement for centuries. Moreover, the abolition has almost nowhere led to the immediate equal participation of the formerly enslaved and their descendants in society without further violence, oppression, and discrimination—on the contrary.<sup>10</sup> Indeed, researchers have introduced the notion of African American Historical Trauma in order to account for “the symptoms that can result from the long-lasting effects of trauma stemming from slavery, racism, and discrimination, in addition to the cultural, historical, and intergenerational trauma that African Americans have had to endure” (Williams-Washington and Mills 247).

Historical Trauma generally is defined by four main factors: 1) a subdominant group is systematically traumatized by a dominant group; 2) traumatization occurs on a long-term scale; 3) consequently, the target group has a “universal experience of trauma”; 4) traumatization causes a trans-generational legacy of “physical, psychological, social and economic disparities” (Sotero 95). The interaction between these factors can lead to “snowballing” effects such as unexpected peaks of traumatization in a community (Hartmann and Gone).

Questioning the notion that Historic Trauma necessarily implies a “universal experience of trauma,” it is important to acknowledge the differences in vulnerabilities and resilience between individuals. In addition, even though there are cases in which contemporary events are continuous with historical traumata and might as such be considered re-traumatizing, in others we should appreciate the *discontinuity* between past and present traumatization. Distinctions like these enable us to take seriously the warnings about ill-defined concepts that I started this chapter with. Hence, we again need to consider the specific constitution, context, and etiology as factors when accounting for complex patterns of indirect traumatization. An individual’s personal appraisal of a stressor and their capability of coping with stress, for example, influences to a large extent the experienced impact of external stressors (Jones et al.).<sup>11</sup> Another strategy mitigating the negative outcomes of perceived racism entails a stronger identification with an identity group which might “buffer the negative effects of discrimination and increase self-esteem”

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10 Wekker uses the concept “cultural archive”, introduced by Edward Said, to refer to the legacy of centuries of slavery, racism, and discrimination in terms of the stereotypes, attitudes, prejudices that did not at once disappear with the abolition of slavery (Wekker).

11 An fMRI study of survivors of sexual trauma suggests that resilience can consist of a cognitive strategy according to which individuals focus on and downregulate negative emotions associated with the trauma (New et al.).



(Harrell 51). In addition, connection to family and community, and optimism can form protective factors (Danzer et al.).

Yet, if epigenetic recall *does* lead to increased sensitization such efforts and strategies might be less effective as an individual may be predisposed to enhanced reactivity to external stressors, and in turn to potential re-traumatization (Jablonka and Raz). Indeed, children do not only inherit specific epigenetic patterns, they also learn cognitive schemata from their parents. Parents suffering from PTSD do influence the appraisal of stressors by offspring, indirectly traumatizing them (Yahyavi et al.). More specifically related to our context is the observation of increased levels of stress in response to perceived racism in the offspring of African American descendants of former enslaved (Anderson). Hence, it is important take into account that the post-slavery periods carry and continue to carry “trauma potential in their own right,” as Cross notes in his chapter on “black psychological functioning and the legacy of slavery” (Cross 388). Events with such trauma potential might occur in some countries more than others, yet the psychological distress experienced by many people of color upon the brutal murder of George Floyd by US police—which motivated Black Lives Matter demonstrations across the globe—suggests that this “trauma potential” is felt elsewhere, too. These demonstrations testify to the continuing history of structural and ideologically motivated violence and discrimination, which have a great impact on mental health (Weine et al.). More recently, the disproportionate harm by the COVID-19 pandemic experienced by Black communities is related to their traumatic histories with subsequent health disparities (Leitch et al.) In sum, the Historical Trauma of centuries of slavery, interacting with contemporary events that for some groups and individuals are related to that trauma, can feed into the transgenerational transmission of trauma, sometimes possibly enhanced by epigenetic factors.

## 6 Concluding Remarks

One year after the Black Lives Matter demonstrations, questions about the legacy of centuries of racism and slavery in our societies are becoming more urgent—questions which might be challenging existing scientific insights and requiring new answers. Integrating insights from different fields of research—in post-traumatic stress, in transgenerational traumatization in Holocaust families, in epigenetics, and in Historic Trauma—I have proposed an interdisciplinary approach to work in this direction. I have attempted to integrate three different types of explanation which all lend themselves for further empirical investigation and articulate features of the “worlding the brain”

process. Environmental conditions are included in a contextual explanation of the emergence of epigenetic changes but also of cognitive and behavioral patterns, which in turn have an impact on inheritable patterns of brain development, cognition, and behavior. Brain development and functioning are implied in a constitutive explanation of post-traumatic stress responses in traumatized individuals. Finally, etiological explanation is involved here in the impact of historical trauma on certain communities and individuals across generations. This potentially includes specific properties of brain development and functioning and the interactions of individuals with their worlds.

Obviously, various lines of research are needed to fill in the many large gaps in knowledge on the transgenerational transmission of trauma. Even if this affects only a limited number of individuals and families, it is important to recognize that the aftermath of slavery can still be experienced in such intricate ways by some until this very day. Indeed, the complex process underlying this phenomenon needs further scrutiny not just to better understand its complexity and dynamics, but also to develop interventions, and help breaking the chains of such traumatization across generations.

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