

A Suggested Mechanism to the Hardening of Pharaoh's Heart: A Study in Mind-Controlling Parasites

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There are numerous occasions in the Torah when God hardens the hearts of individuals and of entire groups of people. Though the most notable example occurs in Exodus 9:12 when God hardens Pharaoh's heart, lesser-known instances have been cited throughout Tanach, as in the cases of King Sihon, and the inhabitants of Canaan when Joshua entered to conquer it (Deuteronomy 2:30, Joshua 11:20). Puzzling and vague, God's recurring allotment of this treatment begs the question of how this could have been accomplished biologically.

While no formal mechanism has been proposed by the traditional commentary of scholars, its prevalence in the literature testifies to its intrigue from early on in history. Most scholars agree that this 'hardening' is psychological, rather than physical, and serves as a way to prevent Pharaoh from repenting [1].

However, this question takes on a new face when considered from the standpoint of modern scientific development. A 'hardened heart,' albeit a figurative reference to the hardening of spirit rather than of the literal heart, may in fact be the product of a chemical change in the body producing a change in mindset. The psychology of an individual has long been known to rest on the synchrony of chemicals and hormones. Therefore, as physical units that comprise our biological makeup, it is possible that they were the agents modulating the mechanism behind the hardening of Pharaoh's heart, introduced into his body by the invasion of a manipulative parasite. Such parasites, found in extreme abundance on earth, have been largely studied for their ability to addle their victim's brains and induce behavior that is self-destructive or contrary to his or her own natural instinct. One parasite, for example, reproduces by hijacking a cricket's mind and ultimately causing the cricket to commit suicide by jumping into the nearest body of water. Once the cricket succumbs to its own death by drowning, the parasite wiggles out of the cricket's body and into its ideal aqueous reproductive environment [2, 3].

Another such parasite, the single-celled *Toxoplasma gondii*, or toxo, for short, infects a wide variety of mammals, but can only sexually reproduce inside a cat. Scientist Joanne Webster has found that when toxo gets into a rat or a mouse, it chemically alters its brain to deliberately seek out the smell of cat urine, rather than to run away from it. Thus the cat preys on the mouse and toxo, now in its final destination, reproduces into zygotes [4].

The toxo parasite is particularly eerie because, like cats, humans are mammals, and are made up of the same basic structure, cell

types, and chemicals. It is not wholly illogical therefore, to argue that toxo may exist in human populations as well; in fact, extensive research has shown that this is precisely the case [4]. Current research is being conducted on the topic of this particular parasite because toxo's prevalence in our environment presents a high risk of infecting humans as well as cats. In fact, cats shed toxo's zygotic oocysts into the environment through their feces, where the parasite can be easily transmitted to humans who have frequent contact with cats. Toxo can also be picked up from grazing animals such as pigs and cattle. Interestingly, when the oocyst enters the body of non-cat organisms such as humans, toxo zygotes develop into their mobile, rapidly dividing stage of life and are carried via the blood stream to various organs. A natural immune response mediates the clustering of parasitic offspring into the brain and muscles [5]. Thus, its exposure to the brain and its capability of disrupting the chemical balance of our minds may possibly lend support to how Pharaoh's psychology was changed.

According to the Center for Disease Control, more than 60 million people in the United States today may be infected with the toxo parasite. Though it is not connected to any overt and deadly illness, it can manifest itself in those with compromised immune systems, such as pregnant women. Further research has shown that it can cause changes in personality and some researchers say that those with schizophrenia are more likely to be infected with toxo [6]. In addition, infected men and women are more likely to be involved in traffic accidents and engage in self-violence [7].

Furthermore, a study has shown that the suicidal crickets mentioned above comprised 60% of the diet of local trout in a stream studied by Japanese scientist Takuya Sato, proving that parasitic control is frighteningly common [9]. The notion that manipulation was a rare oddity was thus overturned, strengthening the possibility that local and ubiquitous parasitic populations could have gained easy access to Pharaoh's body, manipulating his mind into obstinacy.

Therefore, it is worth considering whether those whose hearts were 'hardened' fell victim to a psychology-altering parasite that shifted the chemical makeup of their bodies and minds. If God works through natural pathways to accomplish His agenda, it is possible to combine religious and scientific perspectives to explain the mechanism behind this phenomenon cited in Tanach. Therefore, research being conducted on this subject may not only have implications for the future, but may also shed a modern light on our past.

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