What can the structure of the human brain teach us about criminal law? Psychologist Fiery Cushman asks us to consider the following. Hal and Peter drink together in a bar. After becoming intoxicated from consuming identical amounts of alcohol, they drive separate cars home. Each man loses control of their car on an icy road. Hal’s car runs into a tree. Peter’s car hits a little girl and kills her. Hal will face some driving-related sanctions. Peter, on the other hand, has committed a homicide and will probably serve some time in prison.

Why should two accidental outcomes of identical behavior result in such drastically different punishments? Legal scholars refer to this situation as an example of “moral luck” — the idea that chance outcomes can and do affect the way we judge culpability.

But Cushman contends that “moral luck” is more than just a topic for philosophers. Rather, it illustrates a conflict that is hard-wired into our brains. One part of the brain assigns punishment in proportion to the harm an actor causes; thus, it wants to see Peter punished more severely than Hal. But another part of the brain evaluates moral wrong based upon the actor’s intent to harm; this part of the brain sees Peter as no more culpable than Hal. In short, we blame based on the actor’s intention, while we punish based on the harm that occurred.

Jean Piaget in the 1930s noticed the tension that exists between these two moral judgment components: The harm a person actually causes, as opposed to the harm a person intends. To examine this, Piaget performed an experiment in moral judgment where he presented children with two stories about boys who broke teacups. In one, a boy accidentally broke 15 cups while helping his mother in the kitchen. In the other, a boy accidentally broke 1 cup while trying to steal cookies in the kitchen. In the other, a boy accidentally broke 15 cups while helping his mother set the table. Piaget then asked each child which boy was “naughtier.” Children 6 years and older generally gave the answer an adult would give: The boy with bad intentions who broke one cup is worse than the boy with good intentions who broke 15 cups. Yet children under 6 generally found the boy who broke 15 to be worse. Experiments similar to this that have been replicated dozens of times consistently show that while older children and adults focus on the actor’s intent, young children focus on the harm the actor caused.

Interestingly, Cushman conducted a survey of 1,000 adults and found that their responses were not all that different from the children’s. Like the 6-year-olds, adults based judgments of “moral wrongness” almost exclusively on the actor’s intent. But, like the children under 6, adults also tended to assign punishment based on the harm caused — that is, attempts to harm were punished more severely when they succeeded than when they failed. Further, accidental harm was not fully excused.

Thus, the different criminal sentences we give depends on a basic psychological impulse present in the youngest minds: The impulse to punish those who cause harm.

Can we locate this tendency in the physical brain? Psychologist Liane Young has conducted experiments concerning a part of the brain that has been connected to processing information about other people’s mental states, e.g., whether an approaching stranger is a friend or foe. This region of the brain is called the right temporo-parietal junction, RTPJ. Young conducted a series of brain scans of people who were asked to make moral judgments involving several different scenarios that varied both the fictional actor’s intention or belief and whether there was a good or bad outcome. When the person was processing the actor’s state of mind, the RTPJ “lit up,” thus suggesting that this is the part of the brain that registers beliefs that are relevant for assessing moral blame.

Further, Young actually found a correlation between the intensity of the RTPJ response and the moral judgment rendered. People with a high RTPJ response — people more attuned to an actor’s intent — blamed actors less for causing accidental harm. But people with a low RTPJ response — people who reacted less to the actor’s intent — assigned more blame to actors causing accidental harm.

But is the intensity of the RTPJ response a cause or an effect of the moral judgment? Young applied an electrical current in the brain to dull the RTPJ during a moral judgment experiment. Disrupting the RTPJ resulted in moral judgments far more concerned with outcomes rather than the intent of the actor.

Thus, the disruption resulted in more lenient judgments of failed attempts to harm — “no harm, no foul.” Conversely, it resulted in harsher judgments of mere accidents — “if there is harm, there must have been a foul.” Thus, the moral mind is actually rooted in the physical brain.

Cushman and Young have each described their work in “Future Science: Essays From the Cutting Edge,” Max Brockman, Ed., Vintage, 2011.

So what do we do with this information? Perhaps nothing. Morris B. Hoffman, both a trial judge and a member of the MacArthur Foundation Law and Neuroscience Project, has also noted the “blame/punish” problem involved with moral luck.

But he observes that “[C]riminal law’s harm principle may be a kind of evolutionary shortcut for [assessing] blame.” Given the impossibility of determining precisely what punishment is proper in a given situation, “evolution armed us with the ability to make rough guesses about deterrence. Bad intentions unaccompanied by any harm are too hard to detect, so harm became one proxy for blame; however, because ... accidents do sometimes happen, evolution armed us with a second blame proxy: intentionality. It is when there is no intentionality — when our blame intuitions depend exclusively on harm alone — that our moral luck dissonance is at its starkest.” Morris B. Hoffman, “Ten Legal Dissonances,” 62 Mercer L. Rev. 989, 1008 (2011).

Even with science’s remarkable breakthroughs in understanding brain structure, “muddling through” may still at this time be the best we can do in struggling with “blame/punish” problems in criminal law.