

DAOISM AS A CURE FOR THE EXCESSES OF WESTERN MODERN SCIENCE IN  
*PI* (D. ARONOFSKY, 1998)\*

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1. INTRODUCTION

*There is a limit to our life, but to knowledge there is no limit.  
 With what is limited to pursue what is unlimited is a perilous  
 thing.  
 When knowing this, we still seek to increase our knowledge,  
 the peril cannot be averted.*

— *Zhuāngzǐ*, Chapter 3

Darren Aronofsky's *Pi* (1998) presents us with a mathematician's obsessive search for a pattern within the endless decimals of number pi. In a Galilean fashion, main character Maximilian Cohen (Sean Gullete) assumes that Mathematics is the language of nature and believes his investigations will be able to predict stock market movements and ultimately lead to a rational explanation of everything and the control of nature. His research awakens the interest of both Marcey Dawson (Pamela Hart), a Wall Street businesswoman and Lenny Mayer (Ben Shenkman), a Hasidic Jew who thinks Max can help his religious group reveal the true name of God. In the course of his work, Max keeps periodical contact with his old mentor Sol Robeson (Mark Margolis) who researched into the nature of pi years previously but gave it up after a stroke. Conscious of the dangers of Max's attempt, the professor urges his former pupil to slow down and take a break, but Max dismisses Sol's concerns as cowardice.

Throughout the film, Max appears to be split in different ways. On the one hand, he has lost connection to the world by supplanting it with a perfect *image of* it and he hardly shows any link to its inhabitants (he locks himself up in his apartment and avoids social contact). On the other, he is disconnected from himself (he seems to conceive himself as a *pure mind*, showing no care about his body and its needs).

*Pi*, as well as exhibiting Western modern imagery's desire to transcend the constitutive limitations of the human condition, also contrasts this worldview with Eastern traditions of thought. Among them, Chinese heritage and philosophy (and more specifically, Daoism) play a substantial role in the film. In some instances, the references to Chinese culture are more visible (with the location of Max's apartment being in New York City's Chinatown, the appearance of a

group of people practising Tai Chi in a park or the narrative and symbolic part the game of Go<sup>1</sup> plays in the film). In other cases, the allusions are less literal, but they equally encourage a reading of *Pi* in Daoist fashion.

Our objective will be to comment on the different ways in which Daoism permeates *Pi* and to explore the kind of dialogue the film establishes between Western modern science imagery and the Daoist worldview. In doing so, we will analyse some special scenes and refer to thematic and formal aspects of the film as a whole, at the same time as we will recur to the main fonts of Daoism—the *Dàodéjīng* and the *Zhuāngzǐ*<sup>2</sup>—and to the work of some contemporary scholars. The structure of our essay will be as follows: first, we will show how the excesses of Western modern science affect Max, focusing on his disconnection from the world and from himself. Secondly, we will evaluate the ways in which Daoism is served as a means of overcoming Max's split by referring to human's integration in nature as a saner way of relating to the world whilst also underlining the importance of body and self-care for Daoism. Thirdly, we will point out the dichotomies the film displays, paying a special attention to the way they progressively blur in the course of the movie and lead us to the *Yīn-Yáng* approach. We will conclude by summarizing the most important points of our article.

## 2. THE ILLNESS: MAX AND THE EXCESSES OF WESTERN MODERN SCIENCE IMAGERY

*Why do you come to worry me  
with the problem of setting the world in order?  
— Zhuāngzǐ, Chapter 7*

*They compete restlessly for empty fame in their  
time,  
counting on continuing glory after death (...)  
Missing out on the supreme happiness of the  
present,  
they cannot be free for even an hour.  
How is that different from being  
imprisoned and shackled?  
— Liè zǐ, Chapter 7*

At the beginning of the film (scene 5), Max's voice-over presents the premises of his work devoted to finding a pattern within the decimals of pi. Sometime later (scene 23) he repeats exactly the same words, as if they constituted a sort of mantra in his obsessive search: "Restate my assumptions. One: Mathematics is the language of nature. Two: Everything around us can be represented and understood through numbers. Three: If you graph the numbers of any system, patterns emerge. Therefore: There are patterns everywhere in nature." Apart from linking to

Pythagorean postulates, Max's assumptions connect with a prevailing line of modern thought that tries to understand nature through theoretical, systematic and quantitative analysis of its alleged underlying mathematical structure. This way, the protagonist's research is aligned with the works of many of the 16<sup>th</sup> and 17<sup>th</sup> century greatest scientists—such as Galileo, Kepler, Huygens or Newton—but also with some more contemporary approaches that update the same overarching mission: “For the founding fathers of Western science, such as Leibniz and Descartes, the goal they set themselves was certainty. And it is still the ambition of the great contemporary physicists, Einstein or Hawking, to achieve certainty through a unified theory, a geometrical description of the universe. Once this goal has been reached, we would be able to deduce from our model all the various aspects of nature.”<sup>3</sup>

Max's research is, thus, marked by the worry about being, reality and truth that historically characterises Western thought and specially influenced by the pursuit of objectivity, certainty, predictability, and control assumed by the rationalist modern enterprise. The pattern he seeks implies a mathematisation of nature and aspires to a perfect *image* of the world which—as Heidegger<sup>4</sup> or Cavell<sup>5</sup> would maintain—can only be obtained after treating the world as a mere *object* and at the price of excluding the subject from the knowledge of its ordinary reality. And this is precisely what we observe in Max. As if he were the Descartes of the *Meditations*, he tries to formulate his theory of everything from his solipsist confinement—from the confines of his small apartment with a five-lock door and blacked out windows. For him, nature seems to be reduced to an inorganic dwelling with only screens, circuit boards and cables between its concrete walls. And, what is more important, in Max's day-to-day life the world seems to have been replaced by its image: he conceives and grasps nature as a mathematical picture and he feels more comfortable and safe dealing with this fixed image rather than facing the actual and chaotic reality.

What we see while Max let us know his assumptions for the first time contributes to our reading. A subjective shot shows Max's point of view as he walks through a busy street. The framing is extremely shaky and the images convey the chaos Max wants to set in order. A cut to a new shot is accompanied by Max's voice-over starting to enunciate his first premise. The image then depicts the protagonist occupying the centre of the frame. Although Max walks, his figure barely alters position, whilst the background allow us to appreciate the movement. The filming with Snorricam helps to portray a subject fixed in the middle of a world that seems to vanish in its flow behind him. The scene goes on alternating between Max's subjective shots of a tremendously agitated, unfocused and menacing world and the steadier Snorricam shots that appear every time he introduces a new assumption. Several film techniques will stress Max's position towards the world throughout the movie, such as, for example, the short planning that often abstracts Max from his environment and insists on his self-absorption or the arc shots that express Max's anxiety and emphasize his being out of place.

The main character's attitude disconnects him from the world as well as from its inhabitants. As Skorin-Kapov puts it, "[t]he strong intellect, driven to uncover hidden abstract relations supporting the visible world, is unable to connect emotionally with the outside world because that would pollute the clarity of his thoughts."<sup>6</sup> In fact, Max locks himself up in his place with his homemade supercomputer, Euclid, and refuses any social contact that is not useful for his research. His consuming logical pursuit leaves no room for the others, for empathy or diversion. This can be detected since the beginning of the film (scene 9) when his sensual Eastern-origin neighbour Devi, (Samia Shoaib), tries to pat down his hair and gives him the samosas in the hallway. Devi's attempts to take care of Max are fruitless since he not only rejects social interaction but also physical self-care. We easily notice his sloppy appearance; we never see him eating or drinking anything but coffee or ginseng soda and we witness his continuous intake of drugs that mitigate his attacks and keep him focused. It can be said that Max hardly pays any attention to his body and its needs and, what is more, that he mainly thinks of his body as an obstacle—or more properly, as a limitation, as an interference—to his purposes. This last idea is suggested in both scenes 23 and 53 in which Max tries to obtain the string of 216 numbers that can lead him to the discovery of the pattern. When he is about to press the "return" key of his computer, Max hears Devi and Farrouhk (Ajay Naidu) making love. Their gentle sounds drift through the wall, distracting and distressing him for a moment. In the first of those scenes, we can even appreciate how a tight shot of Devi's mouth fades in over the image of the wall Max is looking at and dissolves shortly after, as if the main character's repressed physical needs returned when he is close to the edge.

Max's extremely rational outlook implies two intertwined consequences for the subject that are characteristic of Western modern science. In the quest for objectivity, the individual's intervention in the world she or he is examining is to be erased. And that desired external (and *divine*) point of view results in the negation of what best denotes the individual's belonging to the world, that is to say, her or his body. Both the denial of subjectivity and the repudiation of the body make Max a divided man, someone disconnected from himself who manifests the dangers of the mind/body dualism taken to extremes. Indeed, we could maintain that *Pi* depicts Max as a mind separated from its body, as *res cogitans* that seems to dispense with *res extensa*, as a paradigmatic product of the rationalist approach.

The delusional episode in the subway (scene 40) is especially graphic in this regard. Max watches a young Hasidic man—the same one he had seen before (scene 28)—standing on the other side of the platform. Max looks at the man's face and sees for an instant his own face staring back. The *doppelgänger* effect illustrates Max's splitting and adds a sinister and surreal layer to the scene. The protagonist rushes to where the man is, but when he gets there, he finds only a trail of blood. Max follows the trail until he sees a naked brain on the stairs. He prods it with his pen and directly feels the result himself, as we infer from his gestures and from what we can consider

internal auricularisations.<sup>7</sup> Max's hallucination seems to point towards a kind of impossible external mastery of oneself, or if we prefer, towards an attainment of self-control through exclusively brain operations that would satisfy the rationalist fantasy of the disembodied mind.

Max's double (or even triple) split we have been commenting in this section—his disconnection from the world (as from the others) and his disconnection from himself—has led us to evaluate the excesses of a modern Western imagery that succumbs to hyper reflexivity and diminished self-affection. According to L. Sass and J. Parnas,<sup>8</sup> these are the two complementary distortions of the act of awareness that characterize schizophrenia, the disease that arises with the emergence of scientific discourse and that closely relates to modern consciousness and western(ized) societies. Thus, Max's mental disorder is not just a personal one, but it is an illness that affects Western culture since modern times and an illness which, we could say, is linked to a *sin*. We are referring to what many thinkers—as diverse as M. Heidegger, G. Ryle, H. Dreyfus or R. Rorty—consider the *original sin of modernity*, that is to say, the completely abstract Cartesian concept of the individual from which arose a radical schism in our self-understanding.

At the same time, we are pointing to other *sins* dealing with the wish of transcending human limitations that go further into the dawn of our civilization and are alluded in the film: the Biblical original sin which is hinted at within the passages that recall Max's mother's warning about staring into the sun (scenes 1, 48, 81) and the reprehensible behaviour of Icarus that Sol sets side by side with Max's ambition (scene 19).

### 3. THE CURE: ACCEPTING THE BODY, INTEGRATING IN NATURE, FINDING THE WAY

*Hear what is heard by your ears; see what is seen by your eyes.*

*Let your knowledge stop at what you do not know;  
let your ability stop at what you cannot do.*

*Use what is naturally useful; do what you spontaneously can do.*

*Act according to your will within the limit of your nature,  
but have nothing to do with what is beyond it.*

*This is the most easy matter of nonaction.*

— Guō Xiàng, *Commentaries on the Zhuāngzǐ*

In the first shot that shows Max outdoors (scene 5) he is walking down a street in New York City's Chinatown. A left to right dolly movement follows him as he marches straight ahead. We see Max through the tall fence of a park, as if he were imprisoned behind the bars. Suddenly, various human figures are interposed between the protagonist and us. It is a group of Asian-origin people that are practising Tai Chi in the park. As Max is far from the camera and the dolly shot

tracks him, his displacement is relativized. On the contrary, since those doing Tai Chi are in foreground, their slow gestures seem paradoxically faster. The whole shot is accompanied by a brief Asian-influenced piece of music that fades-out some seconds later in the following shot, just before we hear Max's above-mentioned assumptions.

The location of Max's apartment in Chinatown—where the West meets the East—and, above all, the reference to the practise of Tai Chi are the two first clues we are given to the role Chinese culture and Daoism are to play throughout the film. Tai Chi and Daoism are linked since the former is a physical representation of the latter's ideals. In other words, Tai Chi's physical principles mirrors the motion of the *Dào* itself. The close bond between the martial and health promoting art and the Chinese religious-philosophical tradition is easier to understand if we consider that mental and physical development are intimately associated in ancient China: the body cannot be transformed without the mind and the mind cannot be transformed without the body.

Addressing the concept of *xīn* is crucial for comprehending this approach. Though *xīn* refers to the physical heart, it has usually been translated as *heartmind*, as the ancient Chinese believed that the heart was the centre of human cognition and moreover that emotion and reason could not be disengaged from one another: “[The heartmind] denotes the source of both emoting and thinking. Thus, the human person is not broken down into separate reasoning and emoting capacities. The person is also not divided into one immutable soul and an impermanent body.”<sup>9</sup> The coextension between feeling and thinking is such that it can even be affirmed that for Daoism the heartmind “behaves like the senses and seems to be considered a sense function.”<sup>10</sup> This integration with the other senses eliminates any privileged position of the heartmind over them. As A. C. Graham wonders while commenting on the *Zhuāngzi*'s ideas on this topic: “Why do we trust the heart, the organ of thought, and allow it to take charge of the body? Isn't it merely one of many organs each with its own function within an order which comes from outside us, that Way to be walked which it vainly tries to fix in rules of conduct?”<sup>11</sup>

Max's hyperrational attitude, exposed in the previous section, has nothing to do with this approach. But Sol's advice to him does concur with this view. During Max's second visit to his mentor (scene 27), Sol remembers the story of Archimedes and the golden crown problem, emphasizing the role of the Greek mathematician's wife: “Finally, his equally exhausted wife, she's forced to share a bed with this genius, convinces him to take a bath, to relax.” After telling the anecdote, Sol asks Max what the moral of the story is and he answers: “That a breakthrough will come...” Enervated, Sol adds: “Wrong. The point of the story is the wife. You listen to your wife, she will give you perspective. Meaning, you need a break, you have to take a bath, or you will get nowhere. There will be no order, only chaos. Go home, Max, and you take a bath.” The next time they meet (scenes 36-38) the old professor further insists: “What you need to do is take a break from your research. You need it. You deserve it. Here's a hundred dollars, I want you to

take it (...) Spend it however you like as long as it falls in the category of vacation. Real world stuff, OK. No math.” Notwithstanding, the main character disregards Sol’s guide and, as we are about to see, he will only be able to take that break involuntarily.

After having one of his frequent attacks, Max falls asleep in the subway car and accidentally arrives at Coney Island beach (scene 43). The passage represents a turning point in the story and contrasts with the rest of the film at different levels. The exterior location allows Max (and us) to move away from the claustrophobic environment of his apartment and the oppression of the big city to encounter nature. The photography of the film also sets a new tone. The high contrast black and white that prevails throughout the movie gives way to a rich greyscale and harmonious photography. There is no trace of the hyperactive framing of other scenes and the passage includes carefully composited and evocative images. Calm reigns in the fragment thanks to long duration shots and a sound atmosphere that diverges from what we hear in most of the scenes. The sound of the gulls and the soft waves of the sea mix with the quiet beginning of the musical theme “Anthem”. The rhythmic emphasis fades temporarily, and the soundtrack shows its kinder face as Max contemplates the reflection of the sunlight in the sea and refreshes his face on the shore. At least for a few moments, Max unleashes his senses and seems to open himself to the placid acceptance of the world that he will end up embracing at the end of the movie.

There is certainly a line of thought in Daoism (especially visible in the *Dàodéjīng*) that advises about the dangers of the senses. Nevertheless, “the motivation for restricting the senses is grounded in an attempt to avoid desire, because desire leads to excess and exhaustion.”<sup>12</sup> As previously remarked upon, this does not seem to be Max’s case, since his excess and exhaustion is not a consequence of any physical or material desire but an outcome of his hyperrational approach (or, perhaps, a result of his irrational desire for a purely rational explanation of everything<sup>13</sup>). So, Max’s timid opening at the beach fits better with the *Zhuāngzǐ* view of the senses as nodal point-holes or openings of the person<sup>14</sup> that are decisive to define what a human is and to establish its limits and functions.<sup>15</sup> In the *Zhuāngzǐ* the senses are not to be blocked but open for circulation to let things go through us, to avoid isolation from the world. In other words, opening the senses helps us to find the rhythm of nature inside ourselves, to be faithful to what nature suggests. This is congruent with the fact that for both the *Dàodéjīng* and the *Zhuāngzǐ*, the human body is regarded as a microcosm of the universe, as something that inexorably belongs to the world and that must follow nature’s order.

This conception is at odds with Western schism between subject (individual) and object (world) and contests the external point of view that claims for objective knowledge. For Daoism, we are part of the whole we aspire to know and our belonging to it subjectivizes that knowledge.<sup>16</sup> Thus, the *Dào* is deeply marked by the interfusion and identification of the subjectivity of man and the objectivity of things<sup>17</sup>: “It is precisely the *Dào* which makes the epistemic relation possible: if the subject (man) can know the object (reality) from his own inner nature, it is because

the *Dào* binds them together.”<sup>18</sup> Hence, Daoism’s goal is neither objectivity nor certainty. We could even affirm that the goal itself is blurred in Daoism since the stress lies on *the way* (one of the most habitual translations of the slippery notion of *Dào*). This way is not something transcending the world; it is in the world, it is everywhere, it is the whole—the whole of the spontaneity or naturalness of the world.<sup>19</sup> The spontaneous order of the world (including its chaotic aspect<sup>20</sup>) is superior to any artificial object we can create to explain reality—as for example, Max’s pattern. Daoism is about how to act and live in the world, a practical learning that has nothing to do with study or erudition,<sup>21</sup> that advocates for the reduction of thought<sup>22</sup> and mistrusts logical thinking. As Graham maintains while comparing the positions of the *Dàodéjīng* and the *Zhuāngzǐ*: “They do share one basic insight, that while other things move spontaneously on the course proper to them, man has separated himself from the Way by reflecting, posing alternatives, and formulating principles of action.”<sup>23</sup>

We can appreciate the crash between Max’s rational reflection and Sol’s spontaneity when they are playing Go (scene 19). Max is hesitant and his former professor advises him: “Stop thinking, Max, just feel. Use your intuition.” Just like the Daoist art of living, the game of Go calls for “a supremely intelligent responsiveness which would be undermined by analysing and choosing.”<sup>24</sup> Apart from contrasting reflection and spontaneity, Go acts as a plot device that connects with several topics, themes and subthemes of the film including pattern recognition and the importance of Mathematics in such a task, the thin line between genius and insanity, the quest for self-improvement or even the struggle between life and death. Among them, the most central purposes of Go’s appearance in *Pi* are to present the non-Western worldview it displays, to pose an alternative to Max’s attitude and to set the conflict between Max’s and Sol’s perspectives on knowledge. This can be especially noticed when Sol explains to his pupil why the ancient Asian cultures considered the Go board to be a microcosm of the universe (scene 38): “Although when it is empty it appears to be simple and ordered, the possibilities of gameplay are endless. They say that no two Go games have ever been alike. Just like snowflakes. So, the Go board actually represents an extremely complex and chaotic universe. That is the truth of our world, Max.”

Sol’s words bring us closer to the Daoist insight on knowledge: the way is not to control nature but to respect it. Things are subject to change and have many aspects, so Daoism recommends perceiving and responding to every situation as new<sup>25</sup> instead of establishing a strategic plan. After all, the way is “not that which the sage desires, but the course on which he inevitably finds himself in his illuminated state.”<sup>26</sup> Contrary to Max’s intentions, we cannot fix things that are in flux by naming them, they cannot be reduced to *logos*. Daoism does not name the unnameable since the *Dào* cannot be determined. The *Dào* is nameless and if we try to express what enables the harmony between being and not-being—between *yīn* and *yáng*—we break that equilibrium. As the first lines of the *Dàodéjīng* assert: “The Tao [*Dào*] that can be spoken of is not the Tao itself. / The name that can be given is not the name itself. / The unnameable is the



source of the universe.”<sup>27</sup> This approach links to the moral Max learns by the end of the film: you cannot fix the infinite decimals of pi, you cannot *rationalise* that irrational number, you cannot find the pattern that leads to a logical explanation of everything in the same way as you cannot tell the true name of the unnameable Yahweh. But you can act according to your will within the limit of your nature and deepen the mystery.

The very beginning of the *Dàodéjīng* evidences Daoism’s mystical perspective. After maintaining that *Dào*’s wonder and *Dào*’s manifestations are one and the same it goes on by proclaiming: “Their identity is called the mystery. / From mystery to further mystery: / The entry of all wonders!”<sup>28</sup> As we are about to see in more detail, reaching the *Dào* is getting to the origin where the opposites are harmonized. This does not mean undoing the mystery, but participating in it—living the mystery without reasoning it.<sup>29</sup> The approach to this mystery—to this identity between *Dào*’s wonder and *Dào*’s manifestations—is through *wúwéi*<sup>30</sup>. This concept—which has been translated as *non-willing* or *non-intention*—refers to action of non-action (to attainment through non-attainment) and can be tracked throughout the *Dàodéjīng*. Maybe the most clarifying passage on *wúwéi* is the following: “Tao is real and free from action, yet nothing is not acted upon. / If rulers abide with it, all things transmute by themselves. / If, in the process of transmutation, intention emerges, it must be overcome by the original non-differentiation of the nameless. / To experience the original non-differentiation of the nameless, one should also be free from intending to have no-intention. / To be free from intending to have no-intention is to be quiescent. / Thereby, the world is naturally led to tranquillity.”<sup>31</sup>

It is apparent that *wúwéi* is linked with the returning to the state of original non-differentiation, that is to say, to the achievement of the balance of opposites<sup>32</sup> which “is not a rational affair, nor is it a matter of will, but a psychic process of development.”<sup>33</sup> The balance of opposites includes the identity of some contraries we have been dealing with as the union of subject and object—human and universe—and the unification of the two aspects of the soul—*hún* and *pò* or, in other words, the spiritual soul (*yáng*) and the corporeal one (*yīn*). Apart from these, there are some more pairs of contraries that are meaningful in *Pi*. This fact encourages us to dedicate the following section to explain the *Yīn-Yáng* approach and its diverse expressions in the film.

#### 4. THE ILLNESS IS THE CURE: FROM OPPOSITION TO COMPLEMENTARITY

*A yīn aspect, a yáng aspect—that is the Dào*

— Hsi Tz’u

We could maintain *Pi* is articulated around a series of intertwined dichotomies, many of which have already made an appearance in our essay with greater or less explicitness. It is the case of the pairs mind/body, reason/faith, divine/human, genius/insanity, artificial/natural, goal/way or masculine/feminine. Anyhow, all of them are related in the film to the polarity between Western and Eastern we are exploring through the specific contrast of Western modern science imagery and the principles of Daoism. If we consider the first part of *Pi*, we can observe this main opposition—as well as the others that are linked to it—is accentuated. It is as if the initial purpose of the film was to bring us into Max’s mindset, which is marked by the Western tendency towards absolute and well-defined dichotomies. But it is not just a matter of treating opposites as conflicting. Furthermore, before the disjunction, Max’s choice always points at the *strong* (*yáng*) element of the pair. Not in vain, the West has aspired throughout a wide range of oppositions (reality/appearance, good/evil, life/death...) to dissolve the second term of the dichotomy in the pure being, to reach the full presence of the first.<sup>34</sup>

However, as the movie unfolds these antitheses vanish progressively and it is more and more difficult for the spectator to face the movie from a simplistic binary position. *Pi* encourages the viewer to embrace complexity and one means for achieving that purpose is blurring the dichotomies it has previously suggested. In this sense, the film seems to follow the Daoist spirit according to which contradictions are simply temporary manifestations and the underlying harmony of *Dào* is fundamental endurance.<sup>35</sup> In other words, *Pi* gradually shifts towards the coexistence and balance of opposites that the principle of *Yīn-Yáng* propounds: “From the Tao, one is created; / From one, two; / From two, three; / From three, ten thousand things. All of them achieve harmony through the unification of affirmation and negation / Which is embraced by everything.”<sup>36</sup> This move is more visible in the last third of the film, especially if we take into account both Sol’s and Max’s respective changes of mind. Before dealing with this example we will add a few considerations about the basal concept of *Yīn-Yáng*.

According to this view, contraries are regarded as mutually dependent and complementary. In our natural changing world, opposite forces may give rise to each other as they are interrelated: “When beauty is universally affirmed as beauty, therein is ugliness. / When goodness is universally affirmed as goodness, therein is evil. / Therefore: being and non-being are mutually posited in their emergence.”<sup>37</sup> It is convenient to remark on at least three important differences between the *Yīn-Yáng* theory and the usual Western treatment of contraries. First, the Eastern principle assumes neither side of a dichotomy is completely true. Keeping balance is what matters and we need both sides to do so: “the worthless serves as the foundation of the worthy. / The inferior serves as the basis of the superior.”<sup>38</sup> Secondly, Lǎozǐ advocates for “the reversal of priorities in chains of oppositions”,<sup>39</sup> put another way, he emphasizes the importance of the second term of the dichotomy—the *weak* (*yīn*) element of the pair. In third place, the comparison between

Lǎozǐ's and Hegel's dialectics reveals that in the former's dialectical process there is no higher synthesis, no elevating moment towards a fixed goal, no progression towards a comprehensive, rational absolute beyond all contradictions.<sup>40</sup>

If we take the two terms of the *Yīn-Yáng* separately, *yáng* alludes to the masculine/active/positive principle of nature while *yīn* refers to the female/passive/negative one. Many other opposite terms are divided into *yīn* and *yáng*, including the seasons of the year or degrees of kinship.<sup>41</sup> Among them, we find the pair light/dark, which is thought to be at the origin of the expression *Yīn-Yáng* since the Chinese traditional characters of *yīn* and *yáng* are translated respectively as “the shady, dark side” and “the sunny, light side” (of the mountain). Working at different levels, the opposition light/dark (as well as the parallel pair white/black) plays an important role in *Pi*. Let us investigate this.

Both thematically and formally, light is linked to knowledge in the film. At first sight, this matches the Western tradition in which knowledge is light as it gives vision. And, in a sense, we could even think this also fits Daoist principles since the active and controlling attitude are with light in the *yáng* side. From this perspective, we might understand why Max's approximations to the elucidation of the pattern are wrapped in light by the fades to white that close several scenes. But we must also consider that these moments are not only related to the attainment of knowledge but especially to the recurring attacks Max suffers whenever he is close to the edge—whenever he is reaching the limits of his investigation, whenever he is experiencing his human limits. Thus, *Pi* uses the association between light and knowledge but mostly pointing to the dangers of the excess. As Max tells at the opening of the film (scenes 1 and 2) and recalls several times later: “When I was a little kid my mother told me not to stare into the sun. So once, when I was six, I did. The doctors didn't know if my eyes would ever heal. I was terrified. Alone in that darkness.” We cannot see in total darkness, but we cannot either see in absolute light and so, maybe Max is not so much an enlightened person but a dazzled one. In accordance with the *Yīn-Yáng* view, the excesses blind us and one thing can easily be transformed into its contrary, so it is better for us to leave behind conflicting dichotomies and try to keep balance: “Because the natures of things vary, one acts, another copies; / One breathes lightly, another breathes heavily; / One is vigorous, one is meek; / One carries on, another fails. / Thus, the wise is not excessive, overindulgent, or extreme.”<sup>42</sup>

These last considerations also find their way through a formal approach to the film. In the previous section we introduced the high contrast black and white photography that characterised a great part of *Pi* and more recently we have referred to Max's Western tendency towards a dichotomous outlook. Now we can read both things together and understand this extreme photography as another way of depicting Max's inclinations: his all-or-nothing attitude matches perfectly with the contrast between shiny white and completely dark black in the frame. Nevertheless, the photography of the film also sets an alternative in some scenes. This is the case

of the passage at the beach we mentioned previously in which Max opened himself to nature and glimpsed a new grasp. And that is also what happens in the epilogue of the film (scene 82) which confirms Max's turnabout. Natural lighting results in grainless and softer images of the playground; the little girl, Jenna (Kristyn Mae-Anne Lao) and the leaves Max stares at. The hues of greyscale bring us closer to the protagonist's new state of harmony and peace and suggest that in *Pi* (brought-to-its-limits) knowledge can be bright white but wisdom is grey (or black and white at the same time).

The allusion to the end of the movie takes us back to the opposition between Max's and Sol's views on knowledge we have dealt with in the previous section. Now we are ready to return to the issue and watch it under the light of the *Yīn-Yáng* principles. As we said before, Max and Sol's encounters sketch the two perspectives the film sets in dialogue. On the one hand, Max's Western modern view on knowledge; on the other, Sol's Eastern approach we have read in Daoist fashion. Our exposition on this has certainly been quite dichotomous. Indeed, while Max's standpoint was presented as an illness Sol's advices were regarded as the cure. In our defence we must say that we were trying to reflect the same conflict the film displays. But as we said some paragraphs above, *Pi* draws several strong dichotomies at the beginning of the film and proceeds to blur them as the story unfolds. That is what we can notice if we look at the disparity between Max and Sol more carefully.

Once we have come to be aware of Max's mental disorder and anguish, our hopes are redirected towards Sol since we expect him to save Max from falling. We can even be tempted to consider him a sort of incarnation of Daoism that can enlighten Max and lead him to the (b)right way—not in vain his name refers to the main source of natural light and he uses the white stones while playing Go. However, as the final part of the film shows, it is not as simple as Sol being the good one embodying the rightness. On Max's last visit to Sol's apartment (scene 73) he is told his former professor has suffered a second stroke. Max rushes into Sol's study to find it covered with pi research books. The black and white Go stones are arranged in a giant spiral across the game board. A piece of paper with Sol's handwriting on it is at the centre of the spiral and contains the sequence of numbers Max is desperately looking for. The old mathematician has succumbed to the fatal temptation he was trying to prevent Max from while the brilliant pupil is about to welcome a new way of thinking—a new way of being, a new way of living. To sum up, Sol and Max switch positions: light has turned into dark and dark will soon turn into light.

The following shots show Max in his apartment staring at Sol's handwritten string of numbers (scene 74). His thumb is twitching; he is starting to suffer a new seizure. He drops Sol's note and throws the pills he usually takes. Max's pain transforms into violence, and he smashes his computer while reciting the numbers with rage in his voice. The short and dark shots, the extremely agitated framing and the shrill soundtrack transmit the protagonist's distress to the viewer. Then, Max yanks the entire window open. Sunlight floods the room and throws the main

character into a blinding white void (scene 75). All dressed in black, Max stands in the middle of that bright metaphysical space. Everything is silent and calm. A sort of white fog is progressively dissolving Max's figure. The screenplay of the film describes the scene as follows: "The pain is gone. Everything is new to Max (...). The stress releases from his brow and his shoulders sag. Max continues to recite the number. His voice becomes tender and peaceful. As he starts to become part of the void, his voice turns into a whisper and his eyes start to close."<sup>43</sup> Before the passage, we wonder: Has he reached his ultimate *goal*, i.e., the total knowledge that his Western rational enterprise pursued<sup>44</sup>? Has he otherwise found the *way* and entered the supreme void that enables a direct experience of the *Dào*? Is he seeing things *in the light of Heaven*,<sup>45</sup> from a higher point of view? The fact that these differently oriented questions make sense altogether lead us to think that the two opposite views on knowledge we have been dealing with reconcile somehow in this scene.

The next shot brings us back to the protagonist's apartment. Devi grabs Max's palm and his fingers wrap around her hand. They are both fused in a hug. He sobs and holds on to her for dear life. Max finally seems to be taking notice of Sol's warnings. He is embracing the woman—the *yīn* aspect that helps him keep balance—and, at the same time, he may be embracing a new, healthier way of relating to the others, to the world and to himself. Max's following action reinforces this idea: in front of the bath's broken mirror, the young mathematician lights a match and burns Sol's note. Shortly after, Max holds a drill. He places the bit against his scalp, applies pressure and drills into his brain. This time there is no fade to white but a quick cut to black that sets us thinking: Is what we have just watched another of Max's recurring hallucinations? Has he committed suicide? Should we understand this as a metaphorical death?

The final scene shows a renewed, reborn Max. He watches a tree branch gently blowing in the wind with peaceful, understanding eyes. Jenna approaches him and hands Max a leaf. We see him smiling for the very first time in the film. Once more, the little child challenges him to calculate in his head a difficult mathematical operation. But Max is no longer the one who provides the answer, the one who wants to speak the truth. In a *wúwéi* fashion, he is completely quiet and free from any intention. Similarly to Jenna, he is someone *not-knowing*, he is not calculating but playing. He smiles to the girl again, as if he were sharing the happiness of being in accordance with his—human and not divine—nature. He has learned how to preserve life and avoid harm and danger, that is to say, he has reached a final resolution of the original problem of the early Daoists<sup>46</sup> and he has achieved it, as the *Zhuāngzǐ*, by abolishing the problem: "The universe is the unity of all things. If we attain this unity and identify ourselves with it, then the members of our body are but so much dust and dirt, while life and death, beginning and end, are but as the succession of day and night, which cannot disturb our inner peace. How much less shall we be troubled by worldly gain and loss, good luck and bad luck!"<sup>47</sup> Max looks skyward. A subjective shot shows the tree branch again. The image is almost identical to the one we saw

before (scene 7), when Max watched the branch with analytical eyes and his voice-over talked about patterns. However, his gaze and his insight are completely different now<sup>48</sup>. At last, Max has dismissed his former *goal* and seems to have found the *way* that enables to live the mystery without reasoning it.

## 5. CONCLUSIONS

*Do not be the owner of fame. Do not be full of plans.  
Do not be busy with work. Do not be the master of  
knowledge.  
Identify yourself with the infinite. Make excursion into the  
void.  
Exercise fully what you have received from nature,  
but gain nothing besides. In one word, be empty.*

— *Zhuāngzǐ, Chapter 7*

In this article we try to explore the dialogue that *Pi* proposes to establish between Western and Eastern worldviews by specifically contrasting Western modern imagery and the Daoist outlook. First, we have dealt with the excesses of Max's standpoint on knowledge. We have related his search for a pattern with Western modern science— with its obsession with certainty and the achievement of a unified theory, with its replacement of the world by an image and with its repression of body and subjectivity. Then, we have tried to show the way the film presents Chinese tradition and Daoism as a means to overcome Max's distorted perspective. Departing from the reference to Tai Chi, we have considered the term *xīn* and its relation to the senses. We have highlighted the importance of the body for Daoism and presented it as fundamental for the link between individual and nature. Furthermore, by examining the role Go plays in the movie we have been able to underscore the Daoist preference of spontaneity over reflection, to establish the opposition between Max and Sol, to introduce the concept of *wúwéi* and, ultimately, to shed some light on the very notion of *Dào*. The last section has been devoted to analysing the main dichotomies the film displays. By focusing principally on the pairs light/dark, Max/Sol and Western/Eastern we have appreciated how contraries are transformed and oppositions are dissolved throughout the course of the film following the *Yīn-Yáng* spirit. Last of all, we have analysed under this viewpoint the final scenes that substantiate Max's switch.

Having reached this point, we discuss the film's position regarding the dialogue between West and East. On the one hand, it can be maintained the movie advocates for the balance and complementarity of Western and Eastern worldviews and for the mutual enrichment this interchange may lead to. After all, *Pi* can reasonably be considered a philosophical film that explores human condition, a crucial subject in all philosophical traditions. Furthermore, the film's

storytelling supports this balance between traditions by adopting a spiral narrative<sup>49</sup> form that joins Western taste for linear models to Chinese tendency to the circular ones. On the other hand, but without denying at all everything we have just said, we can affirm *Pi* decidedly aligns itself with the Eastern alternative and adheres to the Daoist point of view. At least two intertwined arguments would bear-out this claim over the previous one. Firstly, as we have seen on approaching *Yīn-Yáng*, the balance and complementarity, themselves, constitute a Daoist trait. Secondly, for balance and enrichment to happen it is necessary to observe Lǎozǐ's reversal and deconstruct chains in which *yáng* is traditionally preferred to *yīn*—or, we might say, in which the Western is preferred to the Eastern. Consequently, both opinions on the film's message are not so different as they are complementary—they can mutually be held simultaneously—and, more importantly, the second position happens to be the fundamental one.

Thus, *Pi* stands up for Eastern traditions and, as we have tried to show, presents Daoism as a cure for the excesses of Western modern science. In a similar way to Lǎozǐ's aphorisms, the cryptic movie renders it impossible to reach a closed and ultimate analysis of it and its mystical approach invites the viewers to learn without being taught, to discover for themselves. As it happens in Daoism, the film impels the spectators to a hermeneutic commitment—to a departing point from which they may enter the mystery since there is no *pattern* that could explain the whole of *Pi*, no one-and-only truth we can name in the film. In other words, before the spiral *Pi* displays for us, we are pushed to open our senses and mind to find our own *way*.

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<sup>1</sup> We will use the official romanisation system for Standard Chinese (*Hànyǔ pīnyīn*) when transcribing. This will not apply when dealing with expressions such as Tai Chi or Go which are used in common English.

<sup>2</sup> We will use the translation of the *Dàodéjīng* contained in Chung-yuan Chang, *Tao. A New Way of Thinking* (London and Philadelphia: Singing Dragon, 2014) and the translation of the *Zhuāngzǐ* offered by Fung Yu-lan, *Chuang-Tzu. A New Selected Translation with an Exposition of the Philosophy of Kuo Hsiang* (Heidelberg, New York, Dordrecht and London: Springer, 2016).

<sup>3</sup> Ilya Prigogine, "What we do not know?," *Philosophy Forum - UNESCO*, March 14, 1995.

<sup>4</sup> Martin Heidegger, "The Age of the World Picture," in *The Question Concerning Technology and Other Essays*, ed. and trans. William Lovitt (New York and London: Harper and Row, 1977), 122.

<sup>5</sup> Stanley Cavell, *The World Viewed. Reflections on the Ontology of Film. Enlarged Edition* (Cambridge, MA: Harvard University Press, 1979), 39, 102.

<sup>6</sup> Jadranka Skorin-Kapov, *Darren Aronofsky's Films and the Fragility of Hope* (New York, London: Bloomsbury Academic, 2016), 5.

<sup>7</sup> André Gaudreault and François Jost, *El relato cinematográfico*, trans. Núria Pujol (Barcelona: Paidós, 1995), 146.

<sup>8</sup> Louis Sass and Josef Parnas, "Schizophrenia, Consciousness, and the Self," *Schizophrenia Bulletin* 29, no. 3 (2003): 427-444.

<sup>9</sup> Jane Geaney, *On the Epistemology of the Senses in Early Chinese Thought* (Honolulu: University of Hawai'i Press, 2002), 12.

<sup>10</sup> Jane Geaney, *On the Epistemology of the Senses...*, 13.

<sup>11</sup> Angus Charles Graham, *Disputers of the Tao: Philosophical Argument in Ancient China* (La Salle: Open Court, 1989), 182.

<sup>12</sup> Jane Geaney, *On the Epistemology of the Senses...*, 164.

<sup>13</sup> Our view on Max's desire relates to what is maintained in Skorin-Kapov, *Darren Aronofsky's Films...*, 11: "We cannot say that Max is emotionally dead; on the contrary, his emotions run very high when working on his hypotheses and trying to understand the underlying pattern to achieve perfection. But he is caught up in his emotional cage when dealing with people, especially the woman he is attracted to."

<sup>14</sup> Cf. *Zhuāngzǐ*, Chapter 7.

<sup>15</sup> Gabriel Terol, "La epistemología subjetiva del daoísmo primitivo" (PhD diss., Universitat de València, 2015), 517.

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- <sup>16</sup> Gabriel Terol, "La epistemología subjetiva...", 495.
- <sup>17</sup> Chung-yuan Chang, *Tao. A New Way of Thinking*, 15.
- <sup>18</sup> Gabriel Terol, "La epistemología subjetiva...", 553.
- <sup>19</sup> Fung Yu-Ian, *Chuang-Tzu*, xi.
- <sup>20</sup> Cf. *Dào dé jīng*, Chapter 25.
- <sup>21</sup> Cf. *Dào dé jīng*, Chapter 65.
- <sup>22</sup> Cf. *Dào dé jīng*, Chapter 48.
- <sup>23</sup> Angus Charles Graham, *Disputers of the Tao*, 172.
- <sup>24</sup> Angus Charles Graham, *Disputers of the Tao*, 186.
- <sup>25</sup> Cf. *Zhuāngzǐ*, Chapter 33.
- <sup>26</sup> Angus Charles Graham, *Disputers of the Tao*, 191.
- <sup>27</sup> *Dào dé jīng*, Chapter 1.
- <sup>28</sup> *Dào dé jīng*, Chapter 1.
- <sup>29</sup> Gabriel Terol, "La epistemología subjetiva...", 500.
- <sup>30</sup> Chung-yuan Chang, *Tao. A New Way of Thinking*, 35.
- <sup>31</sup> *Dào dé jīng*, Chapter 37.
- <sup>32</sup> Cf. *Dào dé jīng*, Chapter 28.
- <sup>33</sup> Carl Jung, *The Secret of the Golden Flower: A Chinese Book of Life* (London: Routledge, 1999), 99.
- <sup>34</sup> Angus Charles Graham, *Disputers of the Tao*, 227.
- <sup>35</sup> Chung-yuan Chang, *Tao. A New Way of Thinking*, 189.
- <sup>36</sup> *Dào dé jīng*, Chapter 42.
- <sup>37</sup> *Dào dé jīng*, Chapter 2.
- <sup>38</sup> *Dào dé jīng*, Chapter 39.
- <sup>39</sup> Angus Charles Graham, *Disputers of the Tao*, 223.
- <sup>40</sup> Chung-yuan Chang, *Tao. A New Way of Thinking*, 41.
- <sup>41</sup> For a complete list of opposites vid. Angus Charles Graham, *Disputers of the Tao*, 330-331.
- <sup>42</sup> *Dào dé jīng*, Chapter 29.
- <sup>43</sup> Darren Aronofsky, *Pi Screenplay & The Guerilla Diaries* (London: Faber and Faber, 1998), 150.
- <sup>44</sup> This would constitute the "depiction of the paradoxical and harrowing nature of the fully fledged psychotic break, in which the subject is completely engulfed by the jouissance of the Other" as we can read in Paul Eisenstein, "Visions and Numbers; Aronofsky's  $\Pi$  and the Primordial Signifier," in *Lacan and Contemporary Film*, ed. Tod McGowan and Sheila Kunkle (New York: Other Press, 2004), 11.
- <sup>45</sup> Cf. *Zhuāngzǐ*, Chapter 2.
- <sup>46</sup> Cf. Fung Yu-Ian, *Chuang-Tzu*, 73.
- <sup>47</sup> *Zhuāngzǐ*, Chapter 21.
- <sup>48</sup> We find similar commentaries on the film's last scene in Eisenstein, "Visions and Numbers", 26: "This decision in favor of non-knowledge is captured cinematically as well in the frames with which the film closes—reverse zoom point-of-view shots that complete the arc established in the film's opening in which Max gains some much-needed distance from Nature. Shot at the normal frame rate, Max gazes at leaves blowing in the wind in a way that no longer regards them as the bearer of a hidden and/or sinister pattern or meaning."
- <sup>49</sup> This spiral narrative or "regular pattern of repetitive events" in the film is also observed in Elizabeth Klaver, "'Proof,  $\pi$ , and Happy Days': The Performance of Mathematics," *The Journal of the Midwest Modern Language Association* 38, no 1 (Spring 2005): 14.