

~ [Ciro Pabón](#)

The Tao of Racing

Book 1 - The Silent Void

Thus spake the master engineer:

"When you have learned to tune the pilot to the car, it will be time for you to leave."

1.1

Something mysterious is formed, born in the silent void. Waiting alone and unmoving, it is at once still and yet in constant motion. It is the source of all races. I do not know its name, so I will call it the Tao of Racing.

If the Tao is great, then the engine is great. If the engine is great, then the vehicle is great. If the vehicle is great, then the race is great. The fan is pleased and there exists harmony in the world.

The Tao of Racing flows far away and returns on the wind of morning.

1.2

The Tao gave birth to the road. The road gave birth to the engine.

The engine gave birth to the race car. Now there are ten thousand races.

Each car has its purpose, however humble. Each car expresses the Yin and Yang of racing. Each car has its place within the Tao.

But do not use solid axles if you can avoid it.

1.3

In the beginning was the Tao. Space and Time were the first things created from Tao. Therefore Space and Time are the Yin and Yang of racing.

Engineers that do not comprehend the Tao are always running out of time and space for their races. Engineers that comprehend the Tao always have enough time and space to accomplish their goals.

How could it be otherwise?

1.4

The wise engineer is told about Tao and follows it. The average engineer is told about Tao and searches for it. The foolish engineer is told about Tao and laughs at it.

If it were not for laughter, there would be no Tao.

The highest sounds are hardest to hear.
Going forward is a way to retreat.
Great talent shows itself late in life.
Even a perfect car still breaks.

Book 2 - The Ancient Masters

Thus spake the master engineer:

"After three days without racing, life becomes meaningless."

2.1

The racers of old were mysterious and profound. We cannot fathom their thoughts, so all we do is describe their appearance.

Aware, like a fox crossing the water. Alert, like a general on the battlefield. Kind, like a hostess greeting her guests. Simple, like uncarved blocks of wood. Opaque, like black pools in darkened caves.

Who can tell the secrets of their hearts and minds?

The answer exists only in Tao.

2.2

Grand Master Fangio once dreamed that he was a race car. When he awoke he exclaimed:
``I don't know whether I am Fangio dreaming that I am a race car, or a race car dreaming that I am Fangio!"

2.3

A engineer from a very large car company went to a car show and then returned to report to his manager, saying:
"What sort of engineers work for racing companies? They behaved badly and were unconcerned with appearances. Their hair was curly and unkempt and their clothes were wrinkled and old. They crashed our hospitality suite and they made rude noises during my presentation."

The manager said: "I should have never sent you to the conference. Those engineers live beyond the physical world. They consider life absurd, an accidental coincidence. They come and go without knowing limitations. Without a care, they live only for their race cars. Why should they bother with social conventions?"

"They are alive within the Tao."

2.4

A novice asked the Master: ``Here is an engineer that never draws, documents or tests his designs. Yet all who know him consider him one of the best engineers in the world. Why is this?"

The Master replies: "That engineer has mastered the Tao. He has gone beyond the need for design; he does not become angry when the car doesn't work, but accepts the universe without concern. He has gone beyond the need for documentation; he no longer cares if anyone else understands his designs. He has gone beyond the need for testing; each of his race cars is perfect within itself, serene and elegant, its purpose self-evident. Truly, he has entered the mystery of Tao."

Book 3 - Design

Thus spake the master engineer:

"When the car is being tested, it is too late to make design changes."

3.1

There once was a man who went to a racing trade show. Each day as he entered, the man told the guard at the door:

"I am a great thief, renowned for my feats of shoplifting. Be forewarned, for this trade show shall not escape unplundered."

This speech disturbed the guard greatly, because there were millions of dollars of racing equipment inside, so he watched the man carefully. But the man merely wandered from booth to booth, humming quietly to himself.

When the man left, the guard took him aside and searched his clothes, but nothing was to be found.

On the next day of the trade show, the man returned and chided the guard saying:

"I escaped with a vast booty yesterday, but today will be even better." So the guard watched him ever more closely, but to no avail.

On the final day of the trade show, the guard could restrain his curiosity no longer. "Sir Thief," he said, "I am so perplexed, I cannot live in peace. Please enlighten me. What is it that you are stealing?"

The man smiled. "I am stealing ideas," he said.

3.2

There once was a master engineer who built his own cars in his own shop. A novice engineer, seeking to imitate him, also began to build his own cars. When the novice asked the master to evaluate his progress, the master criticized him for building his own cars, saying, "What is appropriate for the master is not appropriate for the novice. You must understand the Tao before transcending structure."

3.3

There was once an racing engineer who was attached to the court of the warlord of Wu. The warlord asked the engineer: ``Which is easier to design: an street car or a race car?"

"A race car," replied the engineer.

The warlord uttered an exclamation of disbelief. "Surely a street car design is trivial next to the complexity of a racing car," he said.

"Not so," said the engineer, "when designing an street car, the engineer operates as a mediator between people having different ideas: how it must operate, how its looks have to be, and how it must conform to the car laws. By contrast, a racing car is not limited by outside appearances. When designing a racing car, the engineer seeks the simplest harmony between machine and ideas. This is why a racing car is easier to design."

The warlord of Wu nodded and smiled. "That is all good and well, but which is easier to test?"

The engineer made no reply.

3.4

A manager went to the master engineer and showed him the requirements document for a new vehicle. The manager asked the master: "How long will it take to design this car if I assign five engineers to it?"

"It will take one year," said the master promptly.

"But we need this model immediately or even sooner! How long will it take if I assign ten engineers to it?"

The master engineer frowned. "In that case, it will take two years."

"And what if I assign a hundred engineers and all the management resources to it?"

The master engineer shrugged. "Then the design will never be completed," he said.

Book Four - Construction

Thus spake the master engineer:

``A well-built car is its own heaven; a poorly-built car is its own hell."

4.1

A car should be light and agile, its parts connected like a string of pearls. The spirit and intent of the design should be retained throughout. There should be neither too little nor too much, neither needless pieces nor useless devices, neither lack of structure nor overwhelming rigidity.

A car should follow the 'Law of Least Astonishment'. What is this law? It is simply that the car should always respond to the user in the way that astonishes him least.

A car, no matter how complex, should act as a single unit. The design should be directed by the logic within rather than by outward appearances.

If the car fails in these requirements, it will be in a state of disorder and confusion. The only way to correct this is to redo the design.

4.2

A novice asked the master: ``I'm building a car that sometime runs well and sometimes runs poorly. I have followed the rules of building and testing, yet I am totally baffled. What is the reason for this?"

The master replied: ``You are confused because you do not understand Tao. Only a fool expects rational behavior from his fellow humans. Why do you expect it from a machine that humans have constructed? Computer aided design simulates determinism; only Tao is perfect.

``The rules of design and construction are transitory; only Tao is eternal. Therefore you must contemplate Tao before you receive enlightenment."

``But how will I know when I have received enlightenment?" asked the novice.

``Your car will then run correctly," replied the master.

4.3

A master was explaining the nature of Tao of to one of his novices. ``The Tao is embodied in all cars designed - regardless of how insignificant," said the master.

``Is the Tao in a Volkswagen?" asked the novice.

``It is," came the reply.

``Is the Tao in a Trabant?" continued the novice.

``It is even in a Trabant," said the master.

``And is the Tao in the GM Chevrolet Corvair of the 60's?"

The master coughed and shifted his position slightly. ``The lesson is over for today," he said.

4.4

Prince Wang's chief designer was building a car. His fingers caressed the carbon fiber. The car was built without an assembly error, and the car ran like a gentle wind.

``Excellent!" the Prince exclaimed, ``Your technique is faultless!"

``Technique?" said the designer turning from his workbench, ``What I follow is Tao - beyond all techniques! When I first began to car design I would see before me the whole problem in one mass. After three years I no longer saw this mass. Instead, I broke the car into pieces to be reused in different models. But now I see nothing. My whole being exists in a formless void. My senses are idle. My spirit, free to work without plan, follows its own instinct. In short, my car designs itself. True, sometimes there are difficult problems. I see them coming, I slow down, I watch silently. Then I change a single piece or gear and the difficulties vanish like puffs of idle smoke. I then built the whole car. I sit still and let the joy of the work fill my being. I close my eyes for a moment and then I leave the shop."

Prince Wang said, ``Would that all of my designers were as wise!"

Book 5 - Maintenance

Thus spake the master engineer:

"Though a car be extremely well designed and simple, someday it will have to be maintained."

5.1

A well-used door needs no oil on its hinges.
A swift-flowing stream does not grow stagnant.
Neither sound nor thoughts can travel through a vacuum.
Cars rot if not used.

These are great mysteries.

5.2

A manager asked a car designer how long it would take him to finish the design on which he was working. "It will be finished tomorrow," the engineer promptly replied.

"I think you are being unrealistic," said the manager, "Truthfully, how long will it take?"

The engineer thought for a moment. "I have some features that I wish to add. This will take at least two weeks," he finally said.

"Even that is too much to expect," insisted the manager, "I will be satisfied if you simply tell me when the design is complete."

The engineer agreed to this.

Several years later, the manager retired. On the way to his retirement luncheon, he discovered the engineer asleep at his terminal. He had been working on his design all night.

5.3

A novice designer was once assigned to draw a simple car part for a suspension.

The novice worked furiously for many days, but when his master reviewed his program, he discovered that it contained a regenerative system, a set of generalized communication devices, an artificial intelligence interface, but not the slightest mention of anything related to suspensions.

When the master asked about this, the novice became indignant. "Don't be so impatient," he said, "I'll design the suspension stuff eventually."

5.4

Does a good farmer neglect a crop he has planted?

Does a good teacher overlook even the most humble student?

Does a good father allow a single child to starve?

Does a good engineer refuse to maintain his cars?

Book 6 - Management

Thus spake the master engineer:

"Let the engineers be many and the managers few - then all will be productive."

6.1

When managers hold endless meetings, the engineers play games. When accountants talk of quarterly profits, the development budget is about to be cut. When senior scientists talk blue sky, the clouds are about to roll in.

Truly, this is not the Tao of Racing.

When managers make commitments, game programs are ignored. When accountants make long-range plans, harmony and order are about to be restored. When senior scientists address the problems at hand, the problems will soon be solved.

Truly, this is the Tao of Racing.

6.2

Why are engineers non-productive?
Because their time is wasted in meetings.

Why are engineers rebellious?
Because the management interferes too much.

Why are the engineers resigning one by one?
Because they are burnt out.

Having worked for poor management, they no longer value their jobs.

6.3

A manager was about to be fired, but an engineer who worked for him invented a new engine that became popular and sold well. As a result, the manager retained his job.

The manager tried to give the engineer a bonus, but the engineer refused it, saying, "I designed that engine because I thought it was an interesting concept, and thus I expect no reward."

The manager upon hearing this remarked, "This engineer, though he holds a position of small esteem, understands well the proper duty of an employee. Let us promote him to the exalted position of management consultant!"

But when told this, the engineer once more refused, saying, "I exist so that I can design. If I were promoted, I would do nothing but waste everyone's time. Can I go now? I have a new design that I'm working on."

6.4

A manager went to his engineers and told them: "As regards to your work hours: you are going to have to come in at nine in the morning and leave at five in the afternoon." At this, all of them became angry and several resigned on the spot.

So the manager said: "All right, in that case you may set your own working hours, as long as you finish your projects on schedule." The engineers, now satisfied, began to come in at noon and work to the wee hours of the morning.

Book 7 - Corporate Wisdom

Thus spake the master engineer:

"You can demonstrate a car for a corporate executive, but you can't make him understand mechanics."

7.1

A novice asked the master: "In the east there is a great tree-structure that men call 'International Federation'. It is bloated out of shape with vice presidents and accountants. It issues a multitude of memos and regulations, each saying 'Go, Hence!' or 'Go, Hither!' and nobody knows what is meant. Every year new names are put onto the branches, but all to no avail. How can such an unnatural entity be?"

The master replied: "You perceive this immense structure and are disturbed that it has no rational purpose. Can you not take amusement from its endless gyrations? Do you not enjoy the untroubled ease of designing beneath its sheltering branches? Why are you bothered by its uselessness?"

7.2

In the east there is a shark, which is larger than all other fish. It changes into a bird whose wings are like clouds filling the sky. When this bird moves across the land, it brings a message from Corporate Headquarters. This message it drops into the midst of the engineers, like a seagull making its mark upon the beach. Then the bird mounts on the wind and, with the blue sky at its back, returns home.

The novice engineer stares in wonder at the bird, for he understands it not. The average engineer dreads the coming of the bird, for he fears its message. The master engineer continues to work at his computer, for he does not know that the bird has come and gone.

7.3

The Magician of the Ivory Tower brought his latest invention for the master engineer to examine. The magician wheeled a mysterious black box into the master's office while the master waited in silence.

"This is an integrated, distributed, general-purpose ECU," began the magician, "ergonomically designed with a proprietary operating system, sixth generation languages, and multiple state of the art user interfaces. It took my assistants several hundred man years to construct. Is it not amazing?"

The master raised his eyebrows slightly. "It is indeed amazing," he said.

"Corporate Headquarters has commanded," continued the magician, "that everyone use this ECU as a platform for new designs. Do you agree to this?"

"Certainly," replied the master, "I will have it transported to the design shop immediately!" And the magician returned to his tower, well pleased.

Several days later, a novice wandered into the office of the master engineer and said, "I cannot find the drawings for my new design. Do you know where it might be?"

"Yes," replied the master, "the drawings are stacked on top of the new ECU in the design shop."

7.4

The master engineer moves from car model to car model without fear. No change in management can harm him. He will not be fired, even if the project is cancelled. Why is this?

He is filled with Tao.

Book 8 – Design and Testing

Thus spake the master engineer:

"Without the wind, the grass does not move. Without testing, design is useless."

8.1

A novice asked the master: "I perceive that one racing company is much larger than all others. It towers above its competition like a giant among dwarfs. Any one of its divisions could comprise an entire business. Why is this so?"

The master replied, "Why do you ask such foolish questions? That company is large because it is large. If it only made designs, nobody would buy them. If it only made testing, nobody would contract them. If it only maintained cars, people would treat it like a servant. But because it combines all of these things, people think it one of the gods! By not seeking to strive, it conquers without effort."

8.2

A master engineer passed a novice engineer one day. The master noted the novice's preoccupation with a new automated car being tested. "Excuse me," he said, "may I examine it?"

The novice bolted to attention and gave the keys to the new car to the master. "I see that this automated car claims to have three levels of driving: Easy, Medium, and Hard," said the master. "Yet every such device has another level of driving, where the device seeks not to conquer the human, nor to be conquered by the human."

"Pray, great master," implored the novice, "how does one find this mysterious setting?"

The master released the hand brake and pushed the car over a cliff by the side of the test track. And suddenly the novice was enlightened.

8.3

There was once an engineer who worked upon family cars. "Look at how well off I am here," he said to a heavy-truck engineer who came to visit, "I have my own standard chassis design and platform. I do not have to share my resources with anyone. The cars we produce are durable and easy-to-use. Why do you not quit your present job and join me here?"

The heavy truck engineer then began to describe his designs to his friend, saying "The heavy truck sits like an ancient sage meditating in the midst of the garage. Its pistons and cylinders lie end-to-end like a great ocean of machinery. The chassis design is as multifaceted as a diamond, and as convoluted as a primeval jungle. The designs, each unique, move through our shop like a swift-flowing river. That is why I am happy where I am."

The car engineer, upon hearing this, fell silent. But the two engineers remained friends until the end of their days.

8.4

Design met Testing on the road to Changtse. Testing said: "You are Yin and I am Yang. If we travel together we will become famous and earn vast sums of money." And so the set forth together, thinking to conquer the world.

Presently they met Construction, who was dressed in tattered rags and hobbled along propped on a thorny stick. Construction said to them: "The Tao lies beyond Yin and Yang. It is silent and still as a pool of water. It does not seek fame, therefore nobody knows its presence. It does not seek fortune, for it is complete within itself. It exists beyond space and time."

Design and Testing, ashamed, returned to their homes.

Book 9 - Epilogue

Thus spake the master engineer:

"It is time for you to leave." ~ [Ciro Pabón](#)