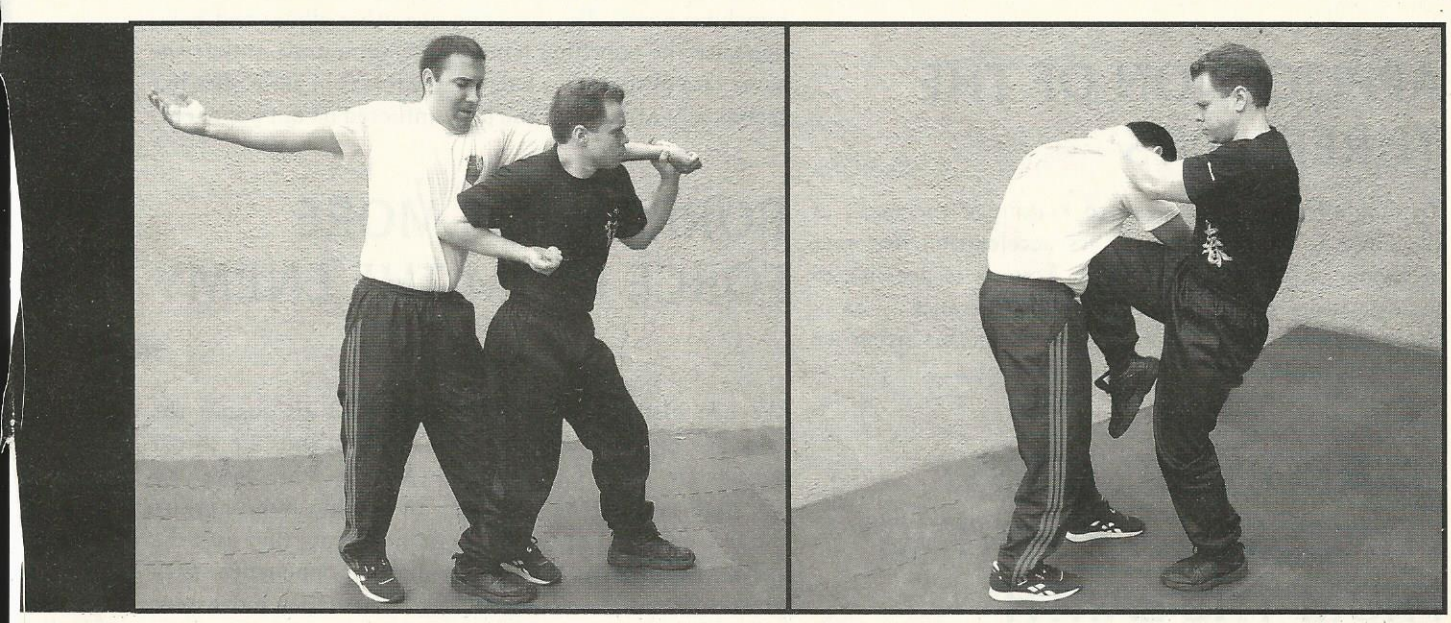
The Natural Laws of Wing Tzun

By Steve Mass (photos by Stewart Wallace)

Below: Steve grabs Hector's hand after blocking his punch and twists it hard at the wrist while sliding in to eat his horse. Steve creates more force with his body by pulling Hector's hand opposite the line of action of his elbow while borrowing force from Hector at the same time. By lifting Hector's elbow with his shoulder, Steve lifts Hector off the ground, preventing him from rooting, making the blow more powerful while Steve can break his arm at the same time.

Below: Steve disperses and then grabs and pulls Hector's punching hand. He borrows force by rooting into the ground and creates more force with his body and borrows force from the opponent by using the pressure point on Hector's neck to help pull his head down toward Steve's knee.



Wing Tzun is a martial art that arose in southern China (Foshan area). It is comprehensive, including the four building blocks of fighting: 1) striking with the upper extremities (i.e., hands and elbows); 2) applying blows with the lower extremities (i.e., kicking with the foot or knee thrusts); 3) grabbing or Chin Na with offensive and defensive bone-breaking techniques; 4) inner-circle, close-distance techniques, which includes throwing and ground grappling.

Wing Tzun is an internal style that utilizes internal and external power. An internal style is concerned with form, precision and grace, not with muscle. Developed by a woman, the style doesn't rely on brute strength; instead, it redirects a larger foe's force while maximizing one's own. Its techniques proved so effective that it became a popular style for men.

Wing Tzun borrowed white crane and snake techniques from the Shaolin temple. Many martial arts were grounded on the insights developed by watching animals fight in the wild. Lacking instinctive defensive responses, humans devised martial arts concepts based on animals' actions in order to condition their reflexes and responses to match nature.

Techniques were thousands of times to achieve mastery. Diligent students performed some basic punch continuously, trying to achieve the subtle nuances demanded by each movement. Higher level techniques were secreted away by masters until years and years of deference by their students earned them a mere glimpse of the master's cache of movements.

Rapid proficiency in the system can be achieved by bridging eastern and western knowledge. When natural principles are understood, higher level techniques can be learned earlier. If practitioners comprehend the greater systemic knowledge defined by natural laws, skill level increases and improves the accuracy of precise complex techniques.

NEWTON'S THREE LAWS

In 17th century England, Sir Isaac Newton formulated the three laws of motion. The first, commonly referred to as the "Law of Inertia," says that an object continues in its initial state of rest or motion with uniform velocity unless it is acted upon by an unbalanced force. In simpler terms, a motionless object will stay that way unless pushed or pulled. Once it is moving, it will continue to move unless something pushes or pulls against it to slow it down.

Newton's second law states that the mass and acceleration of a body are directly proportional to the net external force acting upon it. The net external force is equal to "the change of momentum" divided by the time the force is exerted. An object with large momentum requires a stronger external force to decelerate it to a stop than an object with small momentum. This is why a ball striking a wall will produce a larger dent when it is traveling faster.

Newton's third law states that forces always occur in pairs. If an object exerts a force on a second object, the second object exerts an equal and opposite force on the first object. As a result of Newton's third law, when you lean against a wall, the wall pushes back to hold you in place.

APPLICATION OF THE THREE LAWS

To maximize force we need to maximize the mass of the blow as well as increase its acceleration (the rate of change in velocity). In Wing Tzun it is possible to increase acceleration over a very short distance — as in the famous "one-inch punch." However, in this article we will focus on other means of increasing force.

BORROWING MASS/ FORCE WITH ROOTING FROM THE EARTH

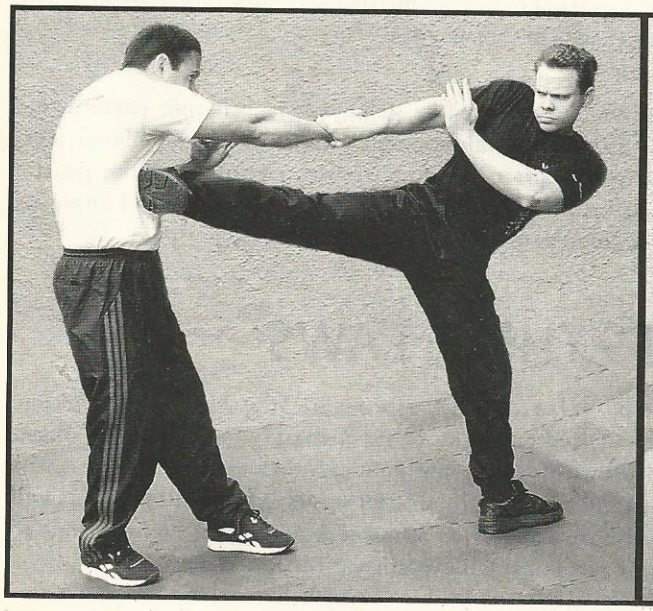
The largest body of mass around us is the Earth. By rooting our posture into the Earth with proper form, Newton's third law dictates that the Earth will push back with the reactive force equal to our weight (as determined by Newton's second law). By rooting into the Earth opposite the line of action of the blow, we cause the Earth to deliver the extra mass we need for the blow.

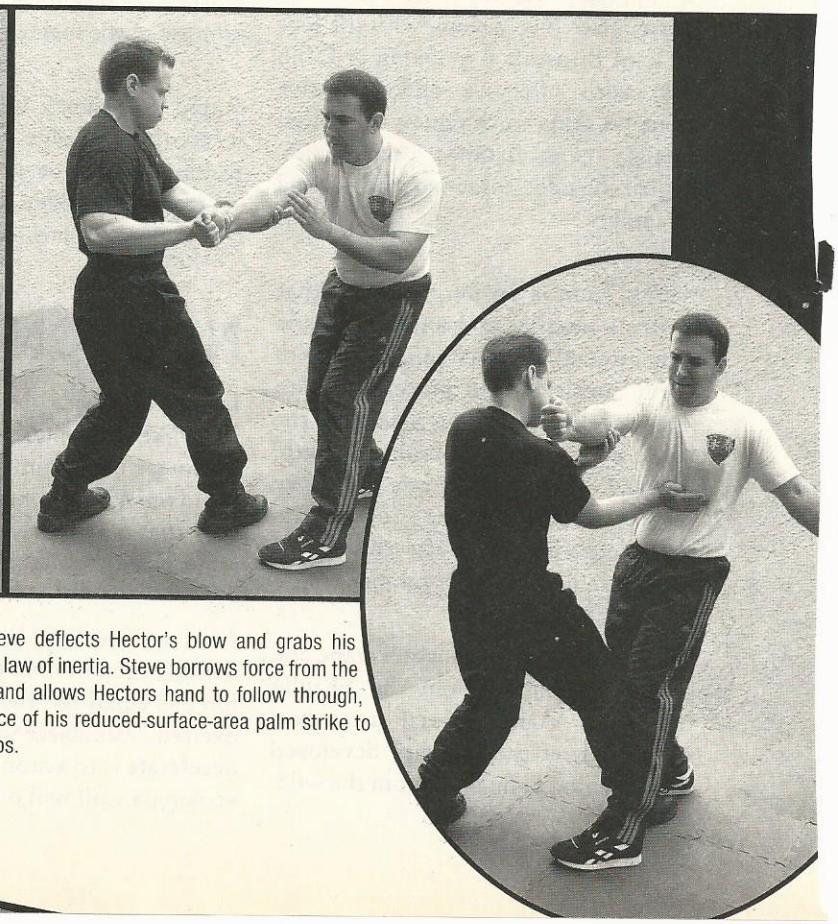
CREATING MORE FORCE WITH OUR OWN BODY

Besides utilizing the earth to generate more force in our punches, we can multiply our force by using our non-punching hand. By thrusting our other elbow and hand opposite the punching hand at the same time and at the same rate of speed, we balance the forces in our bodies but technically can double the force inflicted on our opponent.

BORROWING MORE FORCE FROM THE ENEMY

We can also allow our large opponent to supply the force for his own demise. In the same way we thrust our second hand backwards to provide more force, we can grab our opponent. Then, by pulling him opposite the line of action of the blow, we accelerate him into the strike. The strike gains force equal to the opponent's mass times acceleration. Additionally, this sudden movement shifts the opponent's center of gravity outside the base of support. The free force provided by gravity might increase the opponent's acceleration into our blow or continue his movement so that he impacts the ground, using his own size against him.





Above: Steve grabs Hector's hand and turns and roots his leg into the earth to create more force into his blow while borrowing force from Hector, pulling him into his front side kick.

Above Right: Steve deflects Hector's blow and grabs his hand, utilizing the law of inertia. Steve borrows force from the earth by rooting and allows Hectors hand to follow through, increasing the force of his reduced-surface-area palm strike to the weak lower ribs.

CREATING FORCE BY UTILIZING THE LAW OF INERTIA

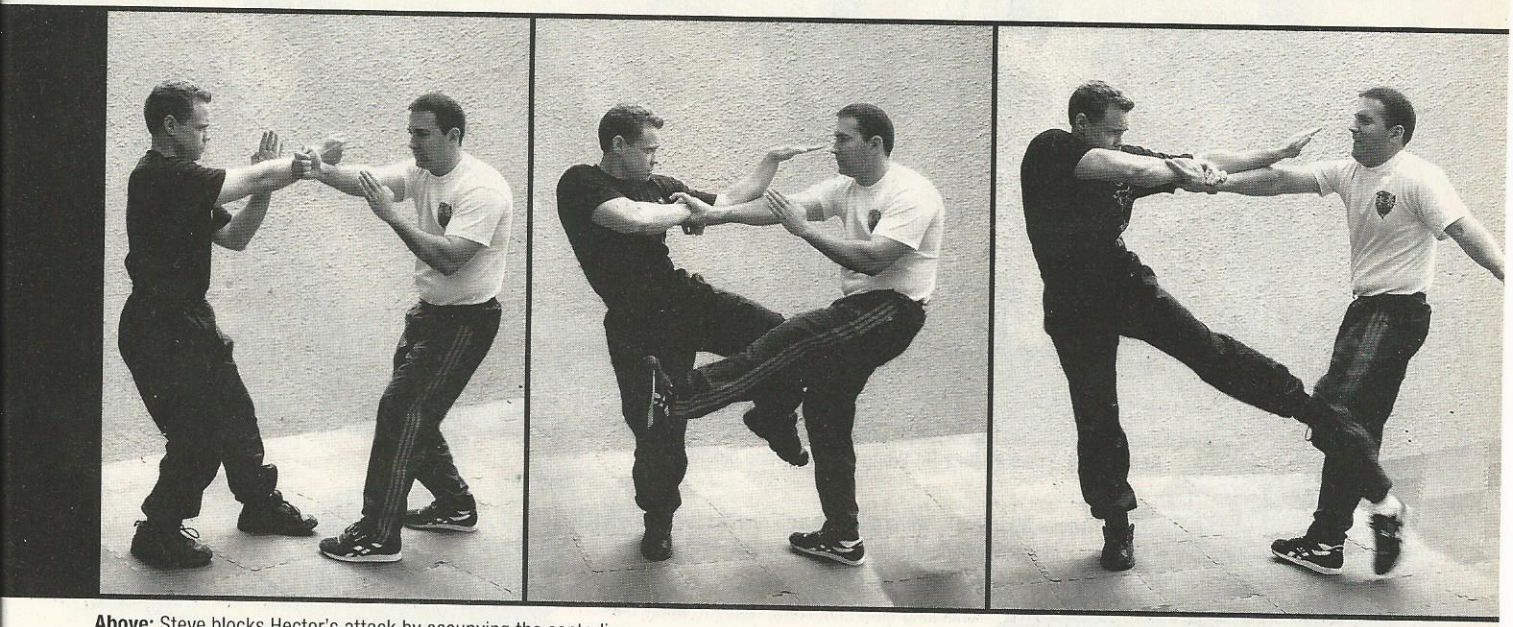
The law of inertia dictates that a force must be applied to stop the movement of an object. When two bodies have momentum in opposite directions, their momentum will be conserved if they collide. To utilize our opponents' momentum, we must not collide with his punches (absorbing a force in our body) but rather redirect his force, requiring him to provide the force needed to stop his wild high-velocity blow. Stopping a punch applies a great deal of force on joints and can result in the tear of a tendon. That is why Wing Tzun punches have high acceleration and controlled velocity so as not to provide the opponent with extra force. Also, Wing Tzun utilizes continuous movement. The forces required to start and stop movement are discounted, saving energy and wear and tear on the joints and allowing fluid attacks.

INCREASING INTENSITY BY REDUCING SURFACE AREA, USING PRESSURE POINTS

One more way to increase force is to reduce the area of contact. By striking a smaller area, the force is more concentrated and penetrating — like when a woman steps on someone's foot with a stiletto heel rather than a sneaker. When the point of impact is sharper, the blow is more powerful. Disrupting the peripheral nervous system of your opponent with a precise attack can prevent him from making coordinated movements. In this way, a precise attack without a great exertion of energy and applied force is more effective at incapacitating your foe than a bruising attack. With knowledge of bone structure and of the nervous system, a blow can be delivered in such a way as to incapacitate the opponent for a short amount of time or even cause permanent damage. Wing Tzun utilizes knife-like hits with the side of the hand and arm, strikes with the base of the palm, finger jabs known as *bil jee* and phoenix punches utilizing a specific knuckle. Great care should be taken before trying to perform such a concentrated attack, and moral considerations should always be contemplated before such a blow is delivered.

TORQUE (TWISTING PUNCH)

We have spoken of linear forces, but not rotational forces. Wing Tzun's internal power can be applied as a torque. Internal power utilizes the whole body as a frame of reference rather than applying an external force through contraction of specific muscles. Torque is a rotational force which is very similar to Newton's second law — only applied in a circular, rotational way.



Above: Steve blocks Hector's attack by occupying the centerline.

Above Middle: Hector grabs Steve's hand and attacks with a front kick. Steve defends by twisting and rooting into the ground and kneeing the pressure point above Hector's knee, spinning him out, utilizing the law of inertia to open the centerline while checking his elbow and going in for a finger jab.

Above Right: Steve uses an anti-Chin Na move to break the grab, pulling Hector in to borrow force from the opponent for his sidekick while jabbing Hector's eyes to incapacitate him.

Tzun punch can also be used as a disguised block. Movements are not necessarily offensive or defensive but multitask to serve whichever function is immediately needed. This allows close-range fighting with two points of contact, where one point can immediately switch to defense, if necessary, allowing attacks to take place at twice the speed. Another way is to twist the opponent's arm. When grabbing the opponent, we twist his arm or wrist in conjunction with pulling in the manner discussed previously.

COUPLES

We can apply torque in several ways — for one, like a wrench turning a nut. Holding the wrench near its end (a larger axis of rotation) gives a greater torque. In fighting, one can throw a punch with torque. Wing Tzun punches are thrown in a curvilinear motion. There is a rotational component as well as a linear component. The wrist, a biplanar joint, is given a circular motion. When whipping the hand out from the first powerhouse (wrist), we twist our punch and rotate with high angular acceleration, thus delivering more force to the opponent than we're expelling. A twisting Wing

Another application of rotational force utilizes couples, a pair of forces whose net force is zero but produces rotational torque. Taking as an example a rotating door, when one person is entering and the other is leaving, and each is pushing in the opposite direction, the door spins at a faster rate than if one person was pushing alone. If both push with equal force, the forces cancel each other out but the rotation of the door remains. The harder they push, the faster the rotation, while the forces still cancel each other out. By applying equal forces in opposite directions on the opponent, such as pulling/pushing an arm and sweeping a leg, we create a rotational force on the opponent that he must counteract. Couples induce a rotation that often shifts the opponent's center of gravity, causing an imbalance which may negate his ability to counter a blow. In this way, we use gravity to apply a force on the opponent that he is unable to counter, and he falls to the ground. Another way to use couples is to root into the ground to produce torque for our punch. By sinking our weight into the ground and pushing with the balls of our feet opposite each other, we can transversely rotate our waist, producing a great torque to be channeled into our punches. Using the reactive force of the Earth in this way is an example of internal power.

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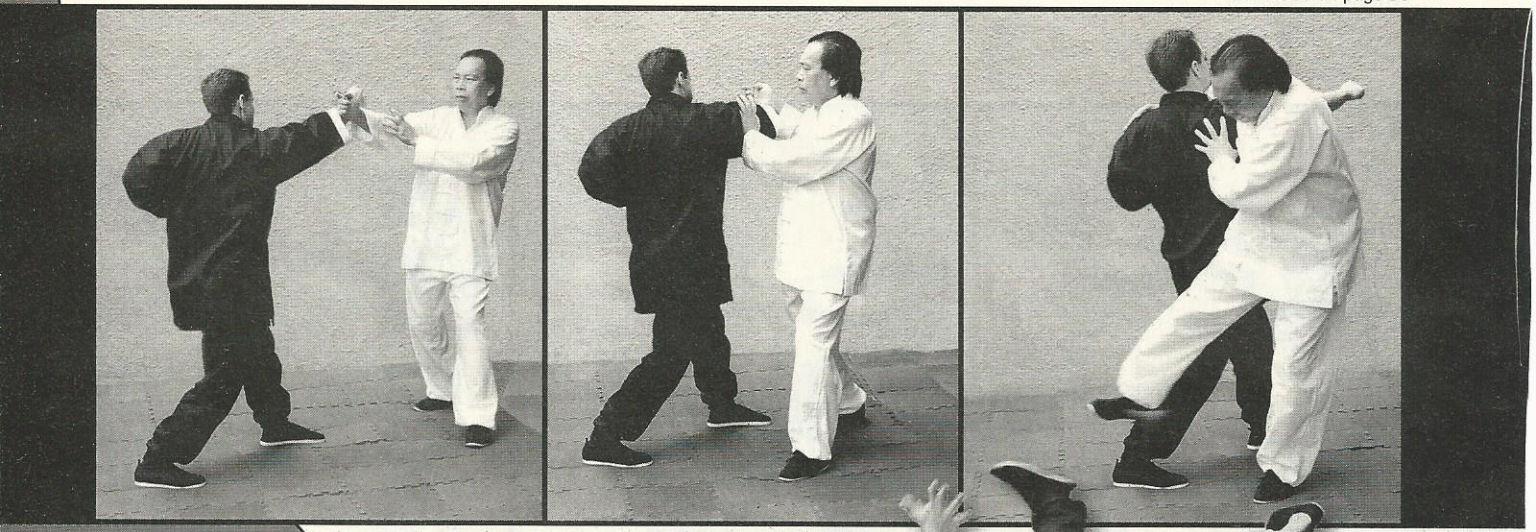

Above Left: Steve attacks Dr. Wong and Dr. Wong blocks the centerline.

Above Middle: Dr. Wong slides in, utilizing the law of inertia, while checking the elbow and wrist.

Above Right: Dr. Wong attacks Steve's leg while checking both shoulders, ready to apply one of four different coupling techniques.

Right: Dr. Wong flips Steve, utilizing a couple with a White Crane throw.

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GUIDANCE

This is only a preliminary example of basic principles implemented in the Wing Tzun system and by no means a complete treatise on the subject. There is much deeper meaning to the concepts where they apply to internal power and kung fu. However, the rules here can be applied to any system of martial arts, as they are universal physical laws. Every movement in Wing Tzun is part of a larger system of fighting and can't be dissected from the whole. Guidance from a proper instructor in the many forms and movements are necessary to progress as a practitioner. My instructor, Dr. Teddy Wong, who currently lives in New York City, has a Ph.D. in Mathematics. He has studied numerous styles for more than 50 years, including Wing Tzun under the late Grandmaster Sum Nung from China. He has integrated his advanced knowledge in martial arts and mathematics in order to make Wing Tzun — the most effective art, in his opinion — even more precise and structured. By understanding some of the basic laws of nature, we can harness powers far greater than our bodies alone can generate and accelerate advancement in our art. ☯

Steve Mass, has been studying Wing Tzun under the guidance of Sifu Wong for almost 10 years. He has a B.S. in Engineering from The Cooper Union for the Advancement of Science and Art in New York City and is a nationally certified personal trainer. He has also trained numerous students in Wing Tzun. For further information about Wing Tzun, including purchasing books or school information, send an e-mail to steve@omniwingtzun.com or visit www.omniwingtzun.com.

Dr. Wong kicks Steve's leg and pulls him down by a choke across the throat, utilizing a couple. Dr. Wong then continues the motion and strikes Steve's opposite collarbone on the way down, increasing the force of the blow before impact into the ground.