How the Fork Got Its Tines

The eating utensils that we use daily are as familiar to us as our own hands. We manipulate knife, fork, and spoon as automatically as we do our fingers, and we seem to become conscious of our silverware only when right- and left-handers cross elbows at a dinner party. But how did these convenient implements come to be, and why are they now so second-nature to us? Did they appear in some flash of genius to one of our ancestors, who yelled "Eureka!," or did they evolve as naturally and quietly as did the parts of our bodies? Why is Western tableware so alien to Eastern cultures, and why do chopsticks make our hands all thumbs? Are our eating utensils really "perfection," or is there room for improvement?

Such questions that arise out of table talk can serve as paradigms for questions about the origins and evolution of all made things. And seeking answers can provide insight into the nature of technological development generally, for the forces that have shaped place settings are the same that have shaped all artifacts. Understanding the origins of diversity in pieces of silverware makes it easier to understand the diversity of everything from bottles, hammers, and paper clips to bridges, automobiles, and nuclear-power plants. Delving into the evolution of the knife, fork, and spoon can lead us to a theory of how all the things of technology evolve. Exploring the tableware that we use every day, and yet know so little about, provides as good a starting point for a consideration of the interrelated natures of invention, innovation, design, and engineering as we are likely to find.

Some writers have been quite unequivocal about the origins of things. In their Picture History of Inventions, Umberto Eco and
G. B. Zorzi states flatly that "all the tools we use today are based on things made in the dawn of prehistory." And in his Evolution of Technology, George Basalla posits as fundamental that "any new thing that appears in the made world is based on some object already there." Such assertions appear to be borne out in the case of eating utensils.

Certainly our earliest ancestors ate food, and it is reasonable to ask how they ate it. At first, no doubt, they were animals as far as their table manners were concerned, and so we can assume that the way we see real animals eat today gives us clues as to how the earliest people ate. They would use their teeth and nails to tear off pieces of fruits, vegetables, fish, and meat. But teeth and nails can only do so much; they alone are generally not strong enough or sharp enough to render easily all things edible into bite-sized pieces.

The knife is thought to have had its origins in shaped pieces of flint and obsidian, very hard stone and rock whose fractured edges can be extremely sharp and thus suitable to scrape, pierce, and cut such things as vegetable and animal flesh. How the efficacious properties of flints were first discovered is open to speculation, but it is easy to imagine how naturally fractured specimens may have been noticed by early men and women to be capable of doing things their hands and fingers could not. Such a discovery could have occurred, for example, to someone walking barefoot over a field and cutting a foot on a shard of flint. Once the connection between accident and intention was made, it would have been a matter of lesser innovation to look for other sharp pieces of flint. Failing to find an abundance of them, early innovators might have engaged in the rudiments of knapping, perhaps after noticing the naturally occurring fracture of falling rocks.

In time, prehistoric people must have come to be adept at finding, making, and using flint knives, and they would naturally also have discovered and developed other ingenious devices. With fire came the ability to cook food, but even meat that had been delicately cut into small pieces could barely be held over a fire long enough to warm it, let alone cook it, and sticks may have come to be used in much the same way as children today roast marshmallows. Pointed sticks, easily obtained in abundance from nearby trees and bushes, could have been used to keep an individual's fingers from being cooked with dinner. But larger pieces of meat, if not the whole animal, would more likely first have been roasted on a larger stick.

Upon being removed from the fire, the roast could be divided among the diners, perhaps by being scored first with a flint knife. Those around the fire could then pick warm pieces of tender meat off the bone with pointed sticks, or resort to their fingers.

From the separate implements of sharp-edged flint for cutting and sharp-pointed stick for spearing evolved the single implement of a knife that would be easily recognized as such today. By ancient times, knives were being made of bronze and iron, with handles of wood, shell, and horn. The applications of these knives were multifarious, as tools and weapons as well as dining implements, and in Saxon England a knife known as a "scramasax" was the constant companion of its owner. Whereas common folk still ate mostly with their teeth and fingers, tearing meat from the bone with abandon, more refined people came to employ their knives in some customary ways. In the politest of circumstances, the dish being sliced might have been held steady by a crust of bread, with the knife being used also to spear the morsel and convey it to the mouth, thus keeping the fingers of both hands clean.

I first experienced what it is like to eat with only a single knife some years ago in Montreal, in a setting that might best be described as participatory dinner theater. The Festin du Gouverneur took place in an old fort, and a hundred or so of us sat at long bare wooden tables set parallel to three sides of a small stage. At each place were a napkin and a single knife, with which we were expected to eat our entire meal, which consisted of roast chicken, potatoes, carrots, and a roll. It was relatively easy to deal with the firm carrots and potatoes, for pieces of them could be sheared off with the knife blade, speared on its point, and put neatly in the mouth. However,
I had considerable trouble just cutting off pieces of chicken. At first I tried to steady it with my roll, but it was soft to begin with and soon became crumbly and soggy. I had to resort to eating the chicken with my fingers. What I remember most about the experience was how greasy my fingers felt for the rest of the evening. How convenient and more civilized it would have been at least to have had a second knife.

My only other experience eating with a single knife occurred at a barbecue restaurant popular with the students and faculty of Texas A&M University. I had been visiting the campus, and for a light dinner before I caught my plane back to North Carolina one of my hosts thought I might enjoy trying what he described as real barbecue—Texas beef instead of the pork variety I had come to know and love in the Southeast. I ordered a small portion of the house specialty, and the waitress brought me several slices of beef brisket, two whole cooked onions, a fat dill pickle, a good-sized wedge of cheddar cheese, and two slices of white bread, all wrapped in a large piece of white butcher paper, which when opened up served as both plate and place mat. On the paper was set a very sharply pointed butcher knife with a bare wooden handle.

I followed the lead of the Aggies I was with and picked up a piece of brisket with the point of the knife and laid it atop a piece of bread. (In medieval times, the piece of bread, called a “trencher,” would have been four days old to give it some stiffness and body, the better to hold the meat and sauce.) We proceeded to eat off bite-sized pieces of this open-faced sandwich, and everything else set before us, and it all was delicious. The single knife worked well, because it was very sharp and could be pressed through the firm food, which itself did not slip much on the paper. However, I was quite distracted throughout the meal by my host, who used his knife so casually that I feared any minute he would cut his tip or worse. He also kept a bit uneasy with his jokingly expressed hope that no one would come up behind us and give us a good pat on the back just as we were putting our knives into our mouths.

Eating a meal with two knives might seem to have been doubly crude and dangerous, but in its time it was thought of as the height of refinement. For the most formal dining in the Middle Ages, a knife was grasped in each hand. For a right-handed person the knife in the left hand held the meat steady while the knife in the right hand sliced off an appropriately sized piece. This piece was then speared and conveyed to the mouth on the knife’s tip. Eating with two knives represented a distinct advance in table manners, and the adept diner must have manipulated a pair of knives as readily as we do a knife and fork today.

By using one knife to steady the roast in the middle of the table while the other knife cut off a slice, the diners could help themselves without touching the common food. But a sharp, pointed knife is not a very good holding device, as we can easily learn by trying to eat a T-bone with a steak knife in each hand. If the holding knife is to press the steak against the plate, we must use some effort to keep it in place, and this can become tiring; if the holding knife is to spear the steak, we will soon find it rotating in place like a wheel on an axle. As a result, using the fingers to steady food being cut was not uncommon.

Frustrations with knives, especially their shortcomings in holding
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most nearly for cutting, led to the development of the fork. While ceremonial forks were known to the Greeks and Romans, they apparently had no names for table forks, or at least did not use them in their writings. Greek cooks did have a "bath-fork," to take meat out of hot water, and the "tense-fork," used to remove bones from fish. However, the names and uses of these forks were not as formalized as those of our modern tableware.

Ancient Greeks also used a type of fork called the "blad-fork," which was used to remove bones from fish. The Greeks called this type of fork "aleo-fork," and it was used to remove bones from fish. The Greeks also used a type of fork called the "fish-fork," which was used to remove bones from fish. The Greeks called this type of fork "aleo-fork," and it was used to remove bones from fish.

The Romans, on the other hand, used a type of fork called the "spoon-fork," which was used to remove bones from fish. The Romans called this type of fork "spoon-fork," and it was used to remove bones from fish. The Romans also used a type of fork called the "fork-fork," which was used to remove bones from fish. The Romans called this type of fork "fork-fork," and it was used to remove bones from fish.

However, by the time of the Middle Ages, forks were beginning to be used more frequently. By the 10th century, forks were being used in Italy and France, and by the 12th century, forks were being used in England. By the 14th century, forks were becoming more common in Europe.

The first English forks were made of bone and were used to remove bones from fish. The English called this type of fork "bone-fork," and it was used to remove bones from fish. The English also used a type of fork called the "fish-fork," which was used to remove bones from fish. The English called this type of fork "fish-fork," and it was used to remove bones from fish.

By the 16th century, forks were becoming more common in Europe, and by the 17th century, forks were being used in most European countries. By the 18th century, forks were becoming much more common, and by the 19th century, forks were becoming the standard tableware in Europe.

By the 20th century, forks were becoming even more common, and by the 21st century, forks were becoming the standard tableware in most parts of the world. Forks are now used in most parts of the world, and they have become an important part of the tableware in most parts of the world.
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But the new fashion was soon being taken more seriously, for Jonson could also write, in Volpone, "Then must you learn the use and handling of your silver fork at meals."

Putting aside acceptance and custom, what makes the fork work, of course, are its tines. But how many times make the best fork, and why? Something with a single tine is hardly a fork, and would be no better than a pointed knife for spearing and holding food. The toothpicks at cocktail parties may be considered, like sharpened sticks, rudimentary forks, but most of us have experienced the frustrations of manipulating a toothpick to pick up a piece of shrimp and dip it in sauce. If the shrimp does not fall off, it rotates in the sauce cup. If the shrimp does not drop into the cup, we must contort our hand to hold the toothpick, shrimp, and dripping sauce toward the vertical while trying to put the hors d'oeuvre on our horizontal tongue.

The single-tined fork is not generally an instrument of choice, but that is not to say it does not have a place. Butter picks are really single-tined forks, but, then, we do want a butter pick to release the butter easily. Escargot and nut picks might also be classified as single-pronged forks, but, then, there is hardly room for a second tine in a snail's snug spiral or a pecan shell's interior.

The two-pronged fork is ideal for carving and serving, for a roast can be held in place without rotating, and the fork can be slid in and out of the meat relatively easily. The implement can be moved along the roast with little difficulty and can also convey slices of meat from carving to serving platter with ease. The carving fork functions as it was intended, leaving little to be desired, and so it has remained essentially unchanged since antiquity. But the same is not true of the table fork.

As the fork grew in popularity, its form evolved, for its shortcomings became evident. The earliest table forks, which were modeled after kitchen carving forks, had two straight and lengthwise tines that had developed to serve the principal function of holding large pieces of meat. The longer the tines, the more securely something like a roast could be held, of course, but longish tines are unnecessary at the dining table. Furthermore, fashion and style dictated that tableware look different from kitchenware, and so since the seventeenth century the tines of table forks have been considerably shorter and thinner than those of carving forks.

In order to prevent the rotation of what was being held for cutting, the two tines of the fork were necessarily some distance apart, and this spacing was somewhat standardized. However, small loose pieces of food fell through the space between the tines and thus could not be picked up by the fork unless speared. Furthermore, the very advantage of two tines for carving meat, their ease of removal, made it easy for speared food to slip off early table forks. Through the introduction of a third tine, not only could the fork function more efficiently as something like a scoop to deliver food to the mouth, but also food pierced by more tines was less likely to fall off between plate and mouth.

If three tines were an improvement, then four were even better. By the early eighteenth century, in Germany, four-tined forks looked as they do today, and by the end of the nineteenth century the four-tined dinner fork became the standard in England. There have been five- and six-tined forks, but four appears to be the optimum. Four tines provide a relatively broad surface and yet do not feel too wide for the mouth. Nor does a four-tined fork have so many tines that it resembles a comb, or function like one when being pressed into a piece of meat. Wilkens, the German silversmith, does make a modern five-tined dinner fork, but it appears to have been designed more for fashion than function, since the pattern (called Epoca) is marketed as being "unique in its entirety and in every detail" and "full of generous, massive strength." The fork's selling point seems to be its unusual appearance rather than its effectiveness for eating. Many contemporary silverware patterns have three-tined dinner forks for similar reasons, but some go so far in rounding and tapering the tines, thus softening the lines of the fork, that it is almost impossible to pick up food with it.

The evolution of the fork in turn had a profound impact on the evolution of the table knife. With the introduction of the fork as a more efficient spearer of food, the pointed knife tip became unnecessary. But many artifacts retain nonfunctional vestiges of earlier forms, and so why did not the knife? The reason appears to be at least as much social as technical. When everyone carried a personal knife not only as a singular eating utensil but also as a tool and a defensive weapon, the point had a purpose well beyond the spearining of food. Indeed, many a knife carrier may have preferred to employ his fingers for lifting food to his mouth rather than the tip of his most prized possession. According to Erasmus's 1530 book on manners, it was not impolite to resort to fingers to help yourself from the pot as long as you "use only three fingers at most" and you "take
the first piece of meat or fish that you touch." As for the knife, the young were admonished, "Don't clean your teeth with your knife." A French book of advice to students recognized the implicit threat involved in using a weapon at the table, and instructed its readers to place the sharp edge of their knife facing toward themselves, not their neighbor, and to hold it by its point in passing it to someone else. Such customs have influenced how today's table is set and how we are expected to behave at it. In Italy, for example, when one is eating with a fork alone, it is correct to rest the free hand in full view on the table edge. Though this might be considered poor manners in America, the custom is believed to have originated in the days when the visible hand showed one's fellow diners that no weapon was being held in the lap.

It is said to have been Cardinal Richelieu's disgust with a frequent dinner guest's habit of picking his teeth with the pointed end of his knife that drove the prelate to order all the points of his table knives ground down. In 1690, as a measure to reduce violence, King Louis XIV made pointed knives illegal, whether at the table or on the street. Such actions, coupled with the growing widespread use of forks, gave the table knife its now familiar blunt-tipped blade. Toward the end of the seventeenth century, the blade curved into a semicircular shape, but this contour was to be modified over the next century to become less weaponlike. The blunt end became more prominent, not merely to emphasize its bluntness but, since the paired fork was likely to be two-tined and so not an efficient scoop, to serve as a surface onto which food might be heaped for conveying to the mouth. Peas and other small discrete foods, which had been eaten by being pierced one by one with a knife point, or a fork tine, could now be eaten more efficiently by being piled on the knife blade, whose increasingly backward curve made it possible to insert the food-laden tip into the mouth with less contortion of the wrist. During this time, the handles on some knife-and-fork sets became pistol-shaped, thus complementing the curve of the knife blade but making the fork look curiously asymmetrical.

With the beginning of the nineteenth century, English table-knife blades came to be made with nearly parallel straight sides, perhaps in part as a consequence of the introduction of steam power during the Industrial Revolution and the economy of process in forming this shape out of ingots, but perhaps even more because the fork had evolved into the scooper and shovelier of food, and the knife was to be reserved for cutting. The blunt-nosed straight-bladed knife, which was often more efficient as a spreading than a cutting utensil, remained in fashion throughout the nineteenth century. However, unless the cutting edge of the blade extended some distance below the line of the handle around which the fingers curled, only the tip of the blade was fully practical for cutting and slicing. This shortcoming caused the knife's bottom edge to evolve into the convex shape of most familiar table knives of today. The top edge serves no
With the introduction of three- and four-tined forks, the latter sometimes called "split spoons," it was no longer necessary or fashionable to use the knife as a food scoop, and so its bulbous curved blade reverted to more easily manufactured shapes. However, habit and custom persisted at the dinner table, and the functionally inefficient knife was used throughout the nineteenth century by less refined diners for putting food in the mouth. Left to right, these sets date from about 1855, 1875, and 1880.

purpose other than stiffening the blade against bending, and since this has not been found to be wanting, there has been essentially no change in the shape of that edge of the knife for two centuries.

Whereas the shapes of table knives have evolved to remove their existing failings and shortcomings, kitchen knives have changed little over the centuries. Their blades have remained pointed, the shape into which they naturally evolved by successive correction of faults from flint shards. The inadequacy of the common table knife to be all things to all people is emphasized when we eat a food like steak. Since the table knife is generally not sharp-pointed enough to work its way in tight curves around pieces of gristle and bone, we are brought special implements that are more suited to the task at hand. Cutting up a steak is very much like kitchen work, and so the steak knife has evolved back from the table knife to look like a kitchen knife.

The modern table knife and fork have evolved through a kind of symbiotic relationship, but the general form of the spoon has developed more or less independently. The spoon is sometimes claimed to be the first eating utensil, since solid food could easily be eaten with the bare fingers and the knife is thought to have had its beginnings as a tool or weapon rather than as an eating utensil per se. It is reasonable to assume that the cupped hand was the first spoon, but we all know how inefficient it can be. Empty clam, oyster, or mussel shells can be imagined to have been spoons, with distinct advantages over the cupped hand or hands. Shells could hold liquid longer than cramping hands, and they enabled the latter to be kept clean and dry. But shells have their own shortcomings. In particular, it is not easy to fill a shell from a bowl of liquid without getting the fingers wet, and so a handle would naturally have been added. Spoons formed out of wood could incorporate a handle integrally, and the very word "spoon" comes from the Anglo-Saxon "spoon," which designated a splinter or chip of wood. With the introduction of metal casting to make spoons, the shape of bowls was not limited to those naturally occurring in nature and thus could evolve freely in response to real or perceived shortcomings, and to fashion. But even having been shaped, from the fourteenth century to the twentieth, successively round, triangular (with the handle at the apex, sometimes said to be fig-shaped), elliptical, elongated triangular (with the handle at the base), ovoid, and elliptical, the bowl of the spoon has never been far from the shape of a shell.

The use of the knife, fork, and spoon in late-seventeenth- and early-eighteenth-century Europe has influenced some persistent differences in their use by Europeans and Americans today. The introduction of the fork produced an asymmetry in tableware, and the question of which implement a diner’s right and left hand held could no longer be considered moot. With identical knives in each hand, the diner was able to cut and carry food to the mouth with either knife, but, whether by custom or natural inclination, right-handedness may be assumed always to have prevailed, and so the knife in the right hand not only performed the cutting, which took
much more defective than merely holding the meat steady on the plate, but also served to cut off normal to convey it to the mouth. Because it did not need to be pierced, the left-hand knife was sometimes called the "knife of courtesy." When the fork was inserted, it displaced the function of the relatively passive knife in the right hand, and in some cases was a blunted blade. By the eighteenth century, the European style of using utensils had become somewhat standardized, with the knife in the left hand cutting food, which was then picked up and spooned into the mouth, a practice carried over even to the left hand, even for right-handed Englishmen.

In the eighteenth century, the fork was often called the "knife of courtesy" because it allowed the person to hold the meat steady on the plate, cutting it to the mouth, and the knife was used to cut the meat on the plate. The left-hand knife was sometimes called the "knife of courtesy." When the fork was inserted, it displaced the function of the relatively passive knife in the right hand, and in some cases was a blunted blade. By the eighteenth century, the European style of using utensils had become somewhat standardized, with the knife in the left hand cutting food, which was then picked up and spooned into the mouth, a practice carried over even to the left hand, even for right-handed Englishmen.
In the Far East, chopsticks developed about five thousand years ago as an extension of the fingers. According to one theory, people used fingers to hold the food and then dipped their fingers in the sauce. Another theory suggests that chopsticks were used to pick up food and cut it into smaller pieces. Whatever the origin, the use of chopsticks spread across Asia, becoming an integral part of the cuisine in countries like China, Japan, and Korea.

In China, chopsticks are considered to be a symbol of good fortune. They are usually made of bamboo, although other materials like bone, ivory, and metal are also used. The design of the chopsticks can vary widely, with some being quite ornate. In Japan, chopsticks are often made from lacquered wood or bone, and are often used for tea ceremonies.

Chopsticks are not just tools for eating, but also an art form. In many Asian cultures, the way chopsticks are held and used is considered a reflection of the person's personality and social status. For example, holding the chopsticks at different angles can indicate different emotions or states of mind.

In conclusion, chopsticks have played a significant role in the development of Asian cuisine and culture. They are not just a means of eating, but also a symbol of tradition and hospitality. As such, they are an integral part of the rich tapestry of Asian culinary heritage.
experiences of their users within the social, cultural, and technological contexts in which they are embedded. The formal evolution of artifacts in turn has profound influences on how we use them.

Imagining how the form of things as seemingly simple as eating utensils might have evolved demonstrates the inadequacy of a "form follows function" as a guiding principle for understanding how artifacts have come to look the way they do. Reflecting on how the form of the knife and fork has developed, let alone how vastly divergent are the ways in which Eastern and Western cultures have solved the identical design problem of conveying food to mouth, really demolishes any overly deterministic argument, for clearly there is no unique solution to the elementary problem of eating.

What form does follow is the real and perceived failure of things as they are used to do what they are supposed to do. Clever people in the past, whom we today might call inventors, designers, or engineers, observed the failure of existing things to function as well as might be imagined. By focusing on the shortcomings of things, innovators altered those items to remove the imperfections, thus producing new, improved objects. Different innovators in different places, starting with rudimentary solutions to the same basic problem, focused on different faults at different times, and so we have inherited culture-specific artifacts that are daily reminders that even so primitive a function as eating imposes no single form on the implements used to effect it.

The evolution of eating utensils provides a strong paradigm for the evolution of artifacts generally. There are clearly technical components to the story, for even the kind of wooden in chopsticks or the kind of metal in knives and forks will have a serious impact on the way the utensils can be formed and can carry out their functions. Technological advances can have far-reaching implications for the manner of manufacture and use of utensils, as the introduction of stainless steel did for tableware, which in turn can affect their price and availability across broad economic classes of people. But the stories associated with knives, forks, and spoons also illustrate well how interrelated are technology and culture generally. The form, nature, and use of all artifacts are as influenced by politics, manners, and personal preferences as by that nebulous entity, technology. And the evolution of the artifacts in turn has profound influences on manners and social intercourse.

But how do technology and culture interact to shape the world beyond the dinner table? Are there general principles whereby all sorts of things, familiar and unfamiliar, evolve into their shapes and sizes and systems? If not in tableware, does form follow function in the genesis and development of our more high-tech designs, or is the alliterative phrase just an alluring concomitant that lulls the mind to sleep? Is the proliferation of made things, such as the seemingly endless line of serving pieces that complement a table service, merely a capitalist trick to sell consumers what they do not need? Or do artifacts multiply and diversify in an evolutionary way as naturally as do living organisms, each having its purpose in some wider scheme of things? Is it true that necessity is the mother of invention, or is that just an old wives’ tale? These are among the questions that have prompted this book. In order to begin to answer them, it will be helpful first to look beyond a place setting of examples to rules, and then to illustrate them by an omnivorous selection of further examples. Thus is the design problem of this literary artifact.