

Michael Wertheimer

## Musings of Max Wertheimer's Octogenarian Son<sup>1</sup>

Meine sehr geehrten Kolleginnen und Kollegen, mein Thema heute ist, was mein Vater, Max Wertheimer, mir persönlich so grosszügig, aber meistens unbewusst geschenkt hat. Aber seit beinah' achtzig Jahren ist Deutsch nicht meine gewöhnliche Alltagssprache. Seit langem, beinah' bevor irgendjemand, der oder die diese Worte liest, geboren wurde, ist amerikanisches Englisch meine gewohnte Kommunikationsmethode. Also bitte ich Sie alle mir zu verzeihen, if I turn to that language instead.

First, my thanks to Professor Dr. Peter A. Frensch, President of the Deutsche Gesellschaft für Psychologie, for giving me the honor and pleasure of inviting me to present this talk—which likely will be the last formal lecture in a greatly enjoyed career of some 65 years as an academic psychologist. I also wish to express my gratitude to a colleague who long held the same chair at the University of Frankfurt that my father held earlier: Professor Dr. Viktor Sarris. He managed to obtain substantial support for helping me come to the 2012 congress of the Deutsche Gesellschaft für Psychologie from the Internationale Stiftung der Universität Frankfurt and the Gesellschaft für Gestalttheorie, both of whom I also thank for their kind and generous support.

But my greatest debt of gratitude for the wonderful and rewarding career and life with which I have been blessed is to my father, Max Wertheimer. He died long ago, in 1943. But many people think that his ideas are still important today. A long article he published in a scholarly journal one hundred years ago, in 1912, founded a new way of thinking about philosophy and psychology: Gestalt theory. "Gestalt" is a German term that means something like structure, shape, whole, or configuration. That theory is still prominent nowadays in cognitive science and neuroscience, as well as in general psychology, art, and many other fields.

Everybody used to assume that any whole is equal to, is nothing more than, a sum of its parts. But then in 1890 a German scholar named von Ehrenfels

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said no; a whole is usually more than the sum of its parts. A melody is the sum of the notes that make it up, plus a theme. In fact, you can change all of its “elements” or parts by transposing the theme to a different key; now all the notes, the “elements,” are different, but the theme, the “Gestalt quality,” is still easy to recognize.

Four equal straight lines plus four right angles are the “elements” or “parts” of a square, but a square is more than the sum of those parts. If you make two of the lines horizontal and the other two vertical, you add the Gestalt quality of “squareness”: the square is the sum of the four lines and the four right angles plus the Gestalt quality of squareness. Turn the whole pattern by 45 degrees, and you have a different whole, a diamond. The whole is more than the sum of its parts: the sum of the parts plus one more element, squareness or diamondness.

But my father’s Gestalt theory went one step further. The whole isn’t a sum of its elements plus one more element, the Gestalt quality. Most wholes in nature are different from a sum of their parts; summing things up, and then adding another element to that, has nothing to do with the relation between most wholes and their parts. The whole is prior to its parts; in fact, the qualities of a whole determine what its parts are, and determine the nature of its parts in terms of each part’s place, role, and function within that whole. A chair is not a sum of a few pieces of wood plus the Gestalt quality of “chairness.” Rather, the structure of the chair as a whole determines the nature of its parts: the four legs, the seat, the back, and so on. It is only because of the function of each part—the legs, the seat, etc.—in the chair’s function as a whole that these parts in fact do become parts. The nature of the whole determines what all its parts must be, and what their role in the whole is.

So: The whole is not a sum of its parts, nor more than the sum of its parts, but something entirely different. It is not determined by its parts. Rather, it determines each of its parts and the nature of each of those parts.

And the parts of most wholes are not independent, like stones in a pile or a sum of coins. Take a soap bubble. Its parts are intimately dependent upon one another. Change one tiny part of the soap film with a pin prick, and the entire structure collapses.

This way of thinking about wholes and parts has profoundly affected many modern disciplines. It applies in the physics of magnetic and electrical fields, in chemistry, in the aesthetics of arts like painting, sculpture, and architecture as well as in music, and in the social sciences: cultural anthropology, social psychology, and the study of personality. To try to understand something—anything—you need to see how it fits into its larger context, how it is a part the nature of which is determined by its place, role, and function within the whole of which it is a part.

So my father's way of thinking is still very much alive, though he died 69 years ago. But what I'd like to share with you now is his contribution to my own now 85-year-old life. I've enjoyed a long and satisfying career as a psychologist myself, and I have him to thank for making it all possible. Even though he died when I was only sixteen years old, I have benefitted from being his son throughout my whole life. He gave me ways of thinking, a positive and thankful *Weltanschauung*, and a sense of wonder—and my own career has been furthered by riding on his fame.

Let me begin with some biographical notes. Max Wertheimer was born in 1880 in Prague, a city then in Austria-Hungary, later Czechoslovakia, and now the Czech Republic. But his father, grandfather, and great-grandfather were all born in Kamenice nad Lipou, or Kamenitz an der Linde, some 50 miles southeast of Prague. His father was a successful businessman and philanthropist who for decades ran a business school in downtown Prague. His mother, an accomplished musician, saw to it that Max and his older brother Walter received some education in Judaism when they were young.

Piano and string music were an everyday event in Max's German-speaking childhood home. He went to a Catholic elementary school and then a German-language Gymnasium before he went on to study law at Charles University in Prague. But he became disillusioned with his father's desire for him to become a lawyer. It troubled him that a lawyer's duty is always to the client, **not** to finding out what is true in every case. Then further studies at the Universities of Berlin and finally Würzburg led to his Ph.D. in psychology at the age of 24 (Wertheimer, 1905).

While he was in Berlin he developed a close and warm relationship with Lisbeth Stern, the married sister of the renowned artist Käthe Kollwitz, a relationship which I'm sure played a role in his not getting married until well into his forties. My mother, Anna Caro, became his enthusiastic student at the University of Berlin, where he was teaching. In fact, she said that she fell in love with Gestalt theory. They were married in July, 1923, when she was barely 22 and he 43. Their first son, Rudolf, named after Anni's father, died of an infection when he was only a few weeks old. A second son, Valentin, was born in 1925 and their third son, myself, in 1927—some fifteen years after Gestalt theory was born with my father's 1912 article on the perception of apparent motion. A year and a half later, in 1928, my sister Lise was born. In 1929, the family moved to Frankfurt am Main, when my father was appointed to the chair in psychology at the university there.

After hearing a radio speech by a candidate for public office, Adolf Hitler, one evening in early 1933, my parents decided to leave Germany the next day for Czechoslovakia, to wait out the election and its aftermath. They expected everything to return to normal within a short time. After several months spent in

Marienbad, it became clear to my parents that the situation was not improving. My father had offers to teach in Great Britain, Jerusalem, and New York, and decided to accept the one in New York. So in September 1933 the family crossed the Atlantic Ocean and settled in New Rochelle, a New York suburb from which my father commuted by train several times a week to the New School for Social Research in downtown New York, where he taught for ten years. Then, while shaving in preparation for a New School lecture in October, 1943, he suddenly died of a massive heart attack.

My father's life in America was not easy. True, he gave invited colloquia at many colleges and universities, published several significant papers on various aspects of Gestalt theory, had many devoted students, and drafted his major book, published posthumously, *Productive Thinking*, which is still viewed as a critical challenge to modern cognitive psychology. But his personal life was difficult. He was a heavy cigarette smoker, and his health was not good. And then his wife left him, divorced him, and in 1941 married John Hornbostel, the son of his good friend and colleague Erich von Hornbostel.

During his first year in the United States, he was allowed to hold his classes and seminars in German, but by the second year he had to lecture in English. His command of that language was never very good, and he continued to have a strong German accent in English. Early on, he lectured about angels, acute and obtuse ones, and it took his puzzled students a while to realize that he was talking not about heavenly angels, but about lines that diverge by a small or large amount from a common point: not angels, but acute and obtuse angles. Often the English language failed him. This was painfully clear during his last years, when he was drafting his book on productive thinking. I remember many occasions on which his frustration at not finding words that exactly matched the content he was trying to express led him to angry outbursts at poor, infinitely patient Solomon Asch, an American psychologist who was selflessly helping him draft the chapters for his book.

Although old enough to be our grandfather, he was a wonderfully caring and supportive father. At the dinner table, he often asked for the opinions of his children on then-current events or political issues, and listened respectfully to what we said—but insisted on an articulate defense of our opinions.

My brother Val and I made kites out of bamboo and tissue paper, and he would sometimes come to the lawn where we were flying the kites, gently take the kite strings, and silently convey his admiration of how well the kites were behaving, and therefore of how well he thought we had built them.

He taught us all to play chess, but instilled a strong non-competitive spirit: he insisted that any bad move by either side be taken back and be replaced by a better one, so that the entire game would be “as good as possible.” Indeed Val

became very good at chess; years later as an undergraduate student he became first board of the Columbia University chess team.

Another instance of making a game as good as possible is reported—in a slightly distorted form—in his book *Productive Thinking* (1945). Val, almost two years older than I, was much better than I at many games, including badminton. He occasionally persuaded me to play badminton with him, but since he always won, I eventually refused to play any more. The game was finally changed so that the aim became to hit the shuttlecock back and forth as often as possible without it touching the ground, a version which led to hours of enthusiastic play. The way in which the story is distorted in the book is that, in my recollection, it wasn't either of us boys who suggested the new version of the game, but my father who came up with the co-operative solution.

Family discussions at the dinner table were not always about politics or current events. Sometimes my father would present us with puzzles, some of which he also used in his lectures. He made us aware of the pleasure that can result from insight, from the “Aha!” experience. It is rewarding when a puzzling, confusing situation is seen in a new way so that everything is clear and makes sense; solving a puzzle can be very satisfying indeed.

One puzzle of this kind, which some readers may already know, is about a wealthy man whose caravan is crossing the desert and approaching an oasis. He makes an offer to his two lieutenants, who are riding on horseback: “To the one of you whose horse gets to the oasis **last**, I will give this donkey laden with gold.” The caravan continues toward the oasis, but the two lieutenants each dawdle, unwilling to get ahead of the other, and eventually they both stop. They dismount and sit down in the sand, each waiting for the other to get so hot and thirsty that he can no longer resist going on to the oasis. At the end of the caravan is walking a wise little old man who is astonished to see the two men sitting on the hot sand while the rest of the caravan continues on its way. When he asks them what they are doing, they tell him of the rich man's offer. He thinks for a moment, then asks them if they would like some advice. They eagerly request it. He says two words to them, whereupon they jump on the horses and race for the oasis. What did the sage say to them?

If you haven't heard this story before, think about it a bit. The end of it at first seems ridiculous. Why do the two men jump on their horses and race for the oasis if the one of them who gets there **last** will win the prize? It doesn't make sense. But recall again exactly what the conditions of the offer are. The rich man doesn't say that the **lieutenant** who gets to the oasis last will win the prize; what he says is: the one of you whose **horse** gets to the oasis last will win the donkey laden with gold. So, each lieutenant should try to get the **other** man's horse to the oasis before his own horse gets there. Hence, if A rides B's horse and B rides

A's horse, then each should try to get to the oasis first. Each lieutenant jumps onto the other's horse and races for the oasis because the wise man advises them: "Trade horses."

Although it isn't a puzzle in the same way, another story that my father enjoyed (Wertheimer, 1959, pp. 269-271), and which illustrates the contrast between good thinking and stupidity, concerns a school inspector. The story has to do with what is structurally critical to a situation and what is not. Part of the duty of certain officials in the Ministry of Education in the old Austrian empire was to make periodic inspections of the schools. An inspector arrives at a village schoolroom, and at the end of the hour of observing the class, he stands up and says, "I am happy to see you children doing so well in your studies. But before I leave, there is one question I would like to ask: How many hairs does a horse have?" To the astonishment of both teacher and inspector, a little nine-year-old boy raises his hand. He stands up and says, "The horse has 543,871,962 hairs." Bewildered, the inspector asks, "And how do you know that this is the correct number?" The boy replies, "If you don't believe me, you could count them yourself." The inspector laughs out loud, thoroughly enjoying the boy's remark. As the teacher escorts the inspector to the door, the inspector says, "What an amusing story! I must tell it to my colleagues when I return to Vienna. They enjoy nothing better than a good joke." And with that he takes his leave.

A year later the inspector is back again at the village school for his annual visit. The teacher asks the inspector how his colleagues liked the story of the horse and the number of hairs. The inspector, a bit chagrined, says, "You know, I was really eager to tell the story—and a fine story it is—but, you see, I couldn't. When I got back to Vienna, I couldn't for the life of me remember the number of hairs." My father made some notes about this story. He reported that he asked people after they had heard it, "Now what is the point of the story?" A few managed to get it right. The essential answer is that the specific number has nothing to do with the joke that the inspector wanted to tell; there is no reasonable, inner relation between the whole joke and just that particular number. As long as the number is large enough, this item in the joke is reasonably variable. The function of this item in its place and role in the total structure has nothing to do with being exactly such and such a number. The story about the inspector is seen as funny because of our surprise at his foolish determination to stick to exactly the number the boy recited, as if its precise value is a relevant item in the whole; it is funny to see how blind to the structure the inspector's behavior is.

Here is another puzzle which can lead from a situation that at first is confusing and incomprehensible to an "Aha!" experience in which everything comes together in an elegant solution and makes sense when fully understood. This puzzle is a two-stage one, the first stage of which some readers may have run across before. Fully understanding the solution can be enormously satisfying.

The puzzle starts like this: A hunter sees a bear one mile due south of him. He aims, shoots, and misses, and the bear ambles away. The hunter then walks a mile due south, right to where the bear had been, turns left  $90^\circ$  and walks exactly a mile due east, turns left  $90^\circ$  again and walks exactly one mile due north—and finds himself in precisely the same place he was when he shot at the bear. Now, for those who haven't run across this puzzle before, the question is: What color was the bear?

When one first hears this story, the reaction is: How on earth does what I have heard have anything to do with the color of a bear? It makes no sense. But stop and think about it like this: Where on the earth can you go one mile due south, then one mile due east, then one mile due north, and end up standing in the same place from which you started? In most places on the face of the earth, the end of the three-mile hike, going south, then east, then north, is a place a mile east of the starting point. But is that true everywhere on the spherical surface of the earth? For many who haven't thought about this before, it comes as a satisfying insight that the **north pole** is a place from which three right angles can actually bring you back to the same point. If you start at the north pole, go one mile due south, then one mile due east, and then north for exactly one mile, you end up precisely at the north pole again.

But what does this have to do with the color of a bear? If the bear was viewed from the north pole, it must be a polar bear. And what color is a polar bear? White, of course. So that solves the puzzle. The bear, shot at by a hunter who walked one mile south, then one mile east, then one mile north, and stood at the same place he started from, must have been a polar bear, and therefore white.

But now comes the next phase of the puzzle. Where **else** on the earth's surface, other than the north pole, can you go one mile due south, then one mile due east, then one mile due north, and end up in the same place you started from? Is there any such place on the surface of the globe where you can do that, other than the north pole? Yes, there is. In fact, there are many such places, an infinite number of them, whose locus forms a circle. Indeed there are many such circles from which you can go one mile due south, then one mile due east, then one mile due north, and end up standing at the same place from which you started. The solution to this phase requires realizing that a triangle on the surface of a sphere can look different from a planar triangle. Even the spherical triangle starting from the north pole looks somewhat different from a regular planar triangle; its three sides are all curved outward in such a way that the three right angles which join them still result in a closed form. The solution here involves the recognition that a spherical triangle need not look at all like a planar triangle. Let me leave this problem with you for now without telling you the answer. You might enjoy exploring it further on your own.

Evenings in the Wertheimer household were sometimes filled with other kinds of story-telling. I don't know whether my father invented the colorful characters he told us about or whether he had heard about them himself when he was a child. There were some memorable ones. One cheerful fat little round lady was called "Gelchen-ku," taken from "Kugelchen" (or "little sphere"). Enegobitz was a wizened, kind old man with a long grey beard who was always poring over huge old tomes but would immediately stop reading in his books whenever the Wertheimer children came to visit him. And then there were my father's two thumbs, Anton and Stefan Ponitz, friends who chatted together, bowing to one another as they spoke, and engaged in innumerable innocent antics.

Singing as a family was also a frequent evening activity, with my father sometimes playing the piano or my mother accompanying the songs on a guitar. One favorite was a four-part drinking round in dialect, in a minor key, that my father had doubtless learned when he was young: "Käs und Brot / Käs und Brot / Und a Schlückje Schnapps dattu / Dat schmett goot" [Cheese and bread / Cheese and bread / And a sip of schnapps with it / That tastes good]. There were special songs for birthday celebrations; Christmas carols were much beloved; and many traditional German songs were popular with the family too. Some of these songs have been passed on to my children, and to my children's children, and now even to their children. Here is a medley of a few of their themes, which some more mature readers might recognize.

[*Harmonica*: Muss i' denn – Zu Lauterbach – Du, du liegst mir im Herzen – Ach, du lieber Augustin – Ade zur guten Nacht – Ich weiss nicht, wass soll es bedeuten – Es ist ein' Ros' entsprungen – O Weihnachtsbaum – Ihr Kinderlein, kommet – Adeste fideles – Morgen, Kinder, wird's 'was geben – Stille Nacht.]

How much my father contributed to my childhood! He gave me an appreciation for the pleasures of productive, insightful thinking, of the joys of music, of trying to do something well, and of warm human interactions. He taught me to try to avoid superficial thinking, to be kind and appreciative with fellow human beings, to try to do everything as well as possible, and to keep a positive outlook even in the face of adversity.

By the time I was sixteen years old, I realized that my father was admired by many people other than his children. We often had distinguished-looking dinner guests who seemed to view him with awe. In the spring of 1943 I was offered a summer job as a junior counselor at a children's camp in upstate New York that Val, Lise, and I had enthusiastically attended for several years already. But I proposed to my father that instead of spending two and a half summer months at the camp, I would use the time for writing his biography. He was touched by my offer, but gently insisted that it would make more sense for me to go to the camp that summer. So I did. And that October he died suddenly at the early age of 63.

Since his death, I have benefitted in a superficial way from being his son. My career has been greatly enhanced by riding on the coat-tails of his reputation and his fame.

My record in high school was not particularly distinguished, but I was admitted to exclusive Swarthmore College nevertheless, doubtless in part because I had my distinguished father's last name. There my father's colleague Wolfgang Köhler in effect took me under his wing and guided me through Swarthmore's inspiring honors program. It was he who got me to change my major, initially French literature, then philosophy, then linguistics, to psychology. He and my father's last name also, I'm sure, played a role in my acceptance for graduate study in psychology at The Johns Hopkins University and then for a doctorate at Harvard University. I'm sure that my having the last name of the famous Gestalt psychologist also helped me get offers of teaching positions from Wesleyan University and later from the University of Colorado at Boulder. The first book in which I was involved, as co-editor in 1958, included my condensed translation into English of one of my father's path-breaking earlier papers; and my second book endeavor was an enlarged 1959 edition of my father's *Productive Thinking*, which has been re-issued several times.

I have published hundreds of papers and dozens of books, but none of them have had anywhere near the impact of almost every one of my father's relatively few but nearly always significant publications. I'm sure that having my illustrious father's last name helped get me elected to the presidencies of The Rocky Mountain Psychological Association, four different divisions of the American Psychological Association, and the national psychology honor society, Psi Chi. And it surely played a part in my election to many committees and boards of the American Psychological Association.

For the first volume (Kimble, Wertheimer, & White, 1991) of the now seven-volume series that I have co-edited since its inception, *Portraits of Pioneers in Psychology*, I wrote a chapter about Max Wertheimer; an article I wrote about my father in 1980 won an award for the best paper in the humanities published by a member of the University of Colorado faculty; and I have prepared many encyclopedia articles about him and about Gestalt psychology. In 2006, MIT Press published a translation which I helped to produce of *Laws of Seeing* by my father's student Wolfgang Metzger. And the biography of my father by D. Brett King and myself, *Max Wertheimer and Gestalt Theory*, the book I had first suggested more than six decades earlier, was finally published in 2005 and then reissued as a paperback book in 2007.

This year, 2012, is the final culmination of a long career that I have greatly enjoyed. My positions in an elected role with some division or committee or board of the American Psychological Association, continuous since the early 1960s, are

finally coming to an end. And three books in which I have been involved carry a 2012 copyright: the seventh volume (Pickren, Dewsbury, & Wertheimer, 2012) in the series *Portraits of Pioneers in Psychology*, a fifth edition of my *A Brief History of Psychology*, and the MIT Press publication of translations I made with my daughter's help of two of my father's most influential papers, one from 1912 and the other from 1923, with modern evaluations of their significance from experts in the relevant fields. So my father has been of inestimable benefit to me from my earliest years down to today.

Now: let's go back to the place on the earth's surface, other than the north pole, where you can go one mile due south, then one mile due east, then one mile due north, and end up standing in the place you started from. There are indeed many such places. I'll give you the answer, but you might enjoy thinking about it a bit more to understand it fully. The solution requires a radical reorganization of the concept of a triangle. If the mile you go due north, on the third leg of the hike, covers exactly the same path that you took going south on the first leg, before you went one mile due east, then you have solved it. Place yourself a bit north of the south pole. If when you start south you are one mile north of a circle one mile in circumference, just north of the south pole, you can go one mile due south, then walk around the one-mile-circumference circle just north of the south pole, and retrace northward the same one-mile path you took southward: you end up at the same place you started. So starting from any place on a circle one mile north of a circle one mile in circumference just north of the south pole, going one mile due south, then one mile due east, and then one mile due north gets you back where you started from. And the critical circle close to the south pole need not be one mile in circumference; any fraction of a mile works too. If it is a third of a mile in circumference, you go around the circle three times. And so on. Think about it, and enjoy it.

### Summary

Max Wertheimer's 85-year-old son reminisces about his illustrious father, the founder of Gestalt theory. Being the son of a famous father has played a large role in the son's own long and satisfying career as an academic psychologist. After elaborating on the chief tenet of Gestalt theory (that the whole is prior to its parts and determines the nature of the parts and their place, role, and function in the whole), the author provides some biographical material on his father and describes how his own childhood was profoundly influenced by his father. Presented are some examples of puzzles and stories that can generate the phenomenon of insight: a puzzle about a contest in the desert, a story about what is and what is not critical in a particular joke, and a puzzle about spherical triangles. Briefly mentioned are other immediate contributions to the author by his father, including children's stories, family singing, and a positive *Weltanschauung*. After a brief summary of the author's career and expression of his appreciation for the large role that riding on his father's coat-tails played in it, the paper ends with revelation of the solution to the puzzle about spherical triangles.

**Keywords:** Biography, career in psychology, Gestalt theory, insight, Max Wertheimer, productive thinking, puzzles, spherical triangles.

## Zusammenfassung

Der 85jährige Sohn von Max Wertheimer erinnert sich an seinen berühmten Vater, den Begründer der Gestalttheorie. Die Tatsache, Sohn eines berühmten Vaters zu sein, hat in der langen und erfüllenden Karriere des Sohnes als akademischer Psychologe eine große Rolle gespielt. Nach einer näheren Ausführung des Haupt-Lehrsatzes der Gestalttheorie (das Ganze kommt vor seinen Teilen und bestimmt die Art der Teile sowie ihren Platz, ihre Rolle und ihre Funktion im Ganzen), beschreibt der Autor mit Bezugnahme auf biographisches Material über seinen Vater, wie seine eigene Kindheit tiefgreifend von seinem Vater geprägt wurde. Es werden Beispiele von Rätseln und Geschichten, die das Phänomen der Einsicht erzeugen können, angeführt: ein Rätsel über einen Wettbewerb in der Wüste, eine Geschichte darüber, was bei einem bestimmten Witz entscheidend ist und was nicht, und ein Rätsel zu Kugeldreiecken. Kurz werden auch andere unmittelbare Zuwendungen des Vaters an den Autor erwähnt, einschließlich Kindergeschichten, Singen im Kreis der Familie, und eine positive Weltanschauung. Nach einer kurzen Zusammenfassung der Karriere des Autors und dem Ausdruck seiner Wertschätzung für die große Rolle, die „das Reiten auf Vaters Rockschoßen“ dabei gespielt hat, endet der Artikel mit der Enthüllung der Lösung des Rätsels zu den Kugeldreiecken.

**Schlüsselwörter:** Biographie, psychologische Karriere, Gestalttheorie, Einsicht, Max Wertheimer, produktives Denken, Rätsel, Kugeldreiecke.

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