

## ACKNOWLEDGMENTS

During a trip to Nova Scotia in the summer of 2003, my partner, Jeanne Inch, introduced me to her old friends Alex and Rhoda Colville and their daughter, Anne Kitz. Subsequently, the artist gave me permission to use three of his paintings as cover artwork for this trilogy. I am most grateful to Alex Colville for this gracious act, and to Anne Kitz for assisting me with the arrangements for securing the transparencies and permissions from the museums that hold two of these paintings.

In at least some respects, the painting style known as “magic realism” fits well with the minor literary genre of utopian fiction. Both ask their audiences to accept their obvious violations of normal experience as the point of entry into another dimension of existence. More particularly, both seek to achieve their effect on us in the same way, namely, by concealing beneath the work’s surreal surface layer an elaborate, precisely drawn architecture—in the painting, an exact geometry of space, and in the fictional work, a methodical dialogue about ideas. The intended effect is, of course, a conjurer’s trick, the creation of an illusion. By willingly suspending disbelief, the audience can pass through the work’s portal and live for awhile in another dimension of space and time.

The short piece entitled “About the Herasaga,” also found in this Back Section, contains an interpretation of the imagery in the three Colville paintings used as cover artwork

in this trilogy. No one should regard this brief interpretive exercise as anything else than my own purely idiosyncratic reading of these settings. No claim is made that the painter himself had any such meanings in mind for his creations.

Dr. Don M. Tucker is a professor of psychology at the University of Oregon, and CEO and Chief Scientist of Electrical Geodesics, Inc., a firm based in Eugene, Oregon ([www.egi.com](http://www.egi.com)). This firm supplies high-resolution EEG devices used in brain function research and hosts the Brain Electrophysiology Lab ([www.egi.com/bel](http://www.egi.com/bel)); the website offers links to the many publications by researchers affiliated with the lab. (This field is profiled in the cover photo and lead article in the March 2005 issue of *National Geographic* magazine.) He is the actual author of chapter 5 and of the scientific article linked to [www.herasaga.com](http://www.herasaga.com) that forms the basis of that chapter. He also provided advice on the section dealing with the “house of the brain” in chapter 25. His keen enthusiasm for this venture and his willingness to entertain somewhat unusual requests for his assistance is a source of immense satisfaction to me. I also thank Anne Awh of Nashville, Tennessee, who did the three original drawings that appear in chapter 5.

In the course of a pleasant dinner in May 2005 with Patrick and Baiba Morrow of Canmore, Alberta, I received permission to use Pat’s photo of the Carstenz Pyramid—taken during his climb to the summit—in the design for the Herasaga logo. Carstenz is one of the famous “seven summits” of mountaineering lore, and Pat’s account of his treks up these mountains is told in his book *Beyond Everest* (Camden House, 1986).

Dr. Karen Phillips and Dr. Mike Tyshenko, University of Ottawa, provided expert advice for the sections on reproductive biology and molecular genetics in this volume, for which I am much in their debt. Mike has also given me innumerable briefings on many scientific articles consulted

during the writing of this book, and somehow retained his usual cheerful demeanor despite the thankless aspects of this assignment. Neither of them is in any way accountable for the result.

Philip Cercone of Montréal, a dear friend, editor and collaborator during the publication of many of my earlier books, supplied guidance and enthusiastic support to this project from the beginning. Ed Levy of Vancouver, philosopher and entrepreneur, did a detailed and very useful commentary on an early draft. My friend and former student Richard Smith of Bowen Island, BC, provided help with the text as well as with strategies of Internet book marketing. Others who read earlier versions and provided encouragement or suggestions for improvement are Conrad Brunk, Avi Caplan, Kim Curtin, Pat Demers, Taryn Fagerness, Sally Hansen, Holly Mitchell and her parents, Phyllis and Gifford Mitchell, David Ropeik, Marc Saner, Michelle Turner, and Mark L. Winston.

I was a guest in the home of the Vredenburg family of Calgary (Harrie, Jennifer, Jessica, Vanessa, Lauren, and German shepherd Bowen) on many occasions during the years in which this book was written, and I am grateful for the innumerable kindnesses they bestowed. Scarlett Schiapirelli, University of Calgary, provided cheerful and indispensable logistical help for this project throughout its long gestation, expertly producing more than ten complete drafts. I thank also Suzanne Therien, University of Ottawa, for many kinds of administrative assistance during this period. Chad Saunders (Calgary) prepared the “Index and Study Guide” featured on the Herasaga website. Brian Hyde-smith of Winnipeg did the attractive book design and prepared the manuscript for printing; Jenny Gates, also of Winnipeg, provided an expert and painstaking copyediting.

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Franz Joseph Haydn's oratorio *Die Schöpfung* ("The Creation") was composed between 1796 and 1798. Haydn had delighted in hearing Handel's choral works during a trip to England in the mid-1790s; he was inspired to write *The Creation* after hearing a performance of the *Messiah* ([www.handelandhaydn.org/concerts/notes01/haydn.htm](http://www.handelandhaydn.org/concerts/notes01/haydn.htm)). When he was ready to leave England for home, the impresario who had arranged Haydn's own concerts there handed him a libretto entitled "The Creation of the World," which was based on sections of the *Book of Genesis*, *Psalms*, and Milton's *Paradise Lost*. Haydn brought this English text with him to Vienna, where it was then translated into German, but Haydn actually set the text in both languages. During its first public performance at the Burgtheater in Vienna in March 1799, at the point where the chorus and orchestra together deliver the line "and there was light," the audience rose to its feet with wild applause.

The first performance of Mozart's *Singspiel*, "The Abduction from the Seraglio" (*Die Entführung aus dem Serail*), took place at the Burgtheater in Vienna on July 16, 1782. Mozart is thought to have had a hand in writing the final text of the libretto. The two lines quoted (in my translation) by Hera toward the beginning of chapter 17 occur in the extraordinary Act II duet between Osmin and Blonde that begins "*Ich gehe, doch rate ich dir*," and in the original German are:

*O Engländer! Seid ihr nicht Toren  
Ihr laßt euern Weibern den Willen!*

Reinbert de Leeuw's recording of *The Early Piano Works* of Erik Satie (1866-1925), referred to in chapter 18, is on Philips CD 462 161-2. For information on this composer see [www.af.lu.se/~fogwall/satie.html](http://www.af.lu.se/~fogwall/satie.html) and [www.jazclass.aust.com/satie.htm](http://www.jazclass.aust.com/satie.htm).

J. S. Bach's cantata BWV 82 *Ich habe genug* ("I now have enough") was composed for the festival of the Purification of Mary in 1727 and was first performed in Leipzig in that year. The text is by an unknown hand; the English translation of the passage given in chapter 22 is my own. The original German (online at [www.cs.ualberta.ca/~wfb/cantatas/82.html](http://www.cs.ualberta.ca/~wfb/cantatas/82.html)) is as follows:

*Ach! Möchte mich von meines Leibes Ketten  
Der Herr erretten;  
Ach! wäre doch mein Abschied hier,  
Mit Freuden sagt ich, Welt, zu dir:  
Ich habe genug.*

No one who has heard any of the recordings of this work made by the German bass-baritone Dietrich Fischer-Dieskau would be easily satisfied with another rendition, and this is the one (Hannsler CD 94.029, recorded 1983) Hera chooses for herself and Marco in chapter 25; again, the English translation is mine:

*Schlummert ein, ihr matten Augen  
Fallet sanft und selig zu!  
Welt, ich bleibe nicht mehr hier  
Hab ich doch kein Teil an dir,  
Das der Seele könnte taugen.  
Hier muß ich das Elend bauen,  
Aber dort, dort werd ich schauen  
Süßen Friede, stille Ruh.*

Giuseppe Verdi's *Messa da Requiem* ("Requiem Mass") was composed in 1873 in honor of the poet Alessandro Manzoni and first performed in Milan in May 1874. The translation of the Latin text in chapter 23 is from the accompanying notes to the performance directed by Fritz

Reiner and featuring the soloists Leontyne Price, Rosalind Elias, Jussi Björling, and Giorgio Tozzi (London CD 444 833-2). The Latin text of the passages quoted is concise and powerful:

*Dies irae, dies illa  
Solvat saeculum in favilla,  
Teste David cum Sibylla.*

*Quantus tremor est futurus  
Quando iudex est venturus  
Cuncta stricte discussurus.*

...

*Mors stupebit et natura  
Cum resurget creatura  
Judicanti responsura.*

*Judex ergo cum sedebit  
Quidquid latet apparebit,  
Nil inultum remanebit.*

In Vienna's Burgtheater, where in 1782 Mozart's *Abduction from the Seraglio* was first performed, and where Haydn's *The Creation* was presented to the public in 1799, Christoph Willibald von Gluck conducted the première of his opera *Orfeo ed Euridice* (with Italian libretto by Calzabigi) in October 1762. The aria sung by Amor (Cupid) that Hera listens for in Chapter 26 is in Act 1, Scene II; the words of the aria are from the revised French production prepared by Gluck for its first performance in Paris in 1774:

*Va trouver Eurydice au séjour de la mort.  
Si les doux accents de ta lyre,  
Si tes accents mélodieux*

*Apaisent la fureur des tyrans de ces lieux,  
Tu la ramèneras du ténébreux empire.*

In the original Italian version, Gluck had written the role of Orfeo for an alto castrato, but he rewrote the French version for high tenor. In the nineteenth century Hector Berlioz reconfigured the role of Orfeo in Gluck's opera once again, this time for a female voice (mezzo-soprano). Today there are recordings in which the role of Amor is also sung by a woman, such as the one conducted by John Eliot Gardiner with Magdalena Kozena as Orphée, Madeline Bender as Eurydice, and Patricia Petibon as Amour (Arthaus Musik DVD 100 062).

Gustav Mahler (1860-1911) composed *Das Lied von der Erde* in 1908, shortly after the death of his eldest daughter and the diagnosis of the heart condition that would contribute to his own untimely death a few years hence. He never heard his immortal work performed, having died a few months before his pupil Bruno Walter conducted its première in Munich in November 1911. An excellent commentary on this piece by Henry-Louis de La Grange is available at [www.andante.com/profiles/Mahler/daslied.cfm](http://www.andante.com/profiles/Mahler/daslied.cfm); La Grange is author of the definitive multi-volume Mahler biography. There is also a lovely picture of the little wooden shack near Toblach ([www.toblach.it/en/right/gustav\\_mahler\\_toblach\\_dobbiaco.htm](http://www.toblach.it/en/right/gustav_mahler_toblach_dobbiaco.htm)), in Austria's South Tyrol, where Mahler worked on his composition during the summer of 1908.

The collection of Chinese poems that are the original source for the text of Mahler's song-cycle date from the eighth century A.D. The original poems are by various authors, but are mostly the work of Li T'ai Po (or Li Bai), whose dates are thought to be A.D. 701-762. They were translated from Chinese first into French, by Marquis d'Hervey St-Denis in 1862 and again by Judith Gautier in 1867. Mahler adapted the German version by Hans Bethge, who

had worked with the two French translations, after receiving Bethge's book from a friend as a gift in 1907. When composing *Das Lied von der Erde* during the year 1908, Mahler made his own interesting changes to Bethge's text. The full text in all its variations—the original Chinese, the French translation, Bethge's German version, and the final text that Mahler set to music—may be found online at [www.mahlerarchives.net/DLvDE/DLvDE.html](http://www.mahlerarchives.net/DLvDE/DLvDE.html).

“Der Abschied” (“Farewell”) is the sixth and last of the pieces in this song-cycle. Mahler, who composed some poetry in his youth, combined two different poems from Bethge's collection for the text of this song, but he himself wrote the words in the short stanza of five lines that brings it to a close. During this final stanza the orchestral accompaniment is hushed, the mood is serene and bittersweet. The German text for the passage quoted at the end of chapter 9 is as follows:

*Die liebe Erde allüberall  
Blüht auf im Lenz und grünt aufs neu!  
Allüberall und ewig  
Blauen licht die Fernen!  
Ewig... Ewig...*

The English translation is my own. In rendering the text I received some useful help from my friend Gernot Böhme of Darmstadt.

Also on the Internet is a good short commentary on this work, as well as an extensive review of some current recordings ([www.musicweb.uk.net/Mahler/Daslied.htm](http://www.musicweb.uk.net/Mahler/Daslied.htm)), by Tony Duggan. “Der Abschied” and two of the earlier songs are almost always performed by the female voice, either mezzo-soprano or contralto, although Mahler had indicated that a baritone could be suitable. (Fischer-Dieskau takes on this role, along with tenor James King and conductor Leonard Bern-

stein, on Decca CD 466 381 2.) Mahler's *Das Lied* was a signature piece in the career of the distinguished Canadian contralto Maureen Forrester, who sang it under Walter's direction in a live performance in New York in 1960 (unfortunately, there is no currently available CD version sung by her).

The first time that the great English contralto Kathleen Ferrier gave a live performance of this work, under Bruno Walter's direction, she could not sing the last two words in the final song because she was in tears and overcome with emotion. When she apologized to the conductor for what she called her "unprofessionalism," he is reported to have said: "My dear Miss Ferrier, if we were all as professional as you we would all be in tears." At the time when she recorded it with Walter in 1952, now on Decca CD 414 194-2, she already knew that she was dying of breast cancer ([inkpot.com/classical/mahlerdeferrier.html](http://inkpot.com/classical/mahlerdeferrier.html)).

In the opening piece, entitled "The Drinking-Song of Earth's Sorrow," the tenor soloist has to do battle against the full orchestra. The German text for the stanza referred to in Chapter 24 follows (the translation is mine):

*Das Firmament blaut ewig und die Erde  
Wird lange fest stehen und aufblühn im Lenz.  
Du aber, Mensch, wie lang lebst denn du?  
Nicht hundert Jahre darfst du dich ergötzen  
An all dem morschen Tande dieser Erde!*

For the last stanza, quoted in chapter 27, I have modified the English translation by Emily Ezust at [www.recmusic.org/lieder/merge.cgi?235](http://www.recmusic.org/lieder/merge.cgi?235). Mahler's German text is:

*Seht dort hinaub! Im Mondschein auf den Gräbern  
hockt eine wildgespenstische Gestalt—  
Ein Aff ist's! Hört ihr, wie sein Heulen hinausgellt  
in den süßen Duft des Lebens!*

*Jetzt nehm den Wein! Jetzt ist es Zeit, Genossen!  
Leert eure goldnen Becher zu Grund!  
Dunkel ist da Leben, ist der Tod!*

The original Chinese character for the animal referred to in the third line of the stanza is expressed phonetically in English as “yuan.” The Chinese original may well have been referring to either gibbons or siamangs, which are classified as lesser apes (*Hylobatidae*) and are—or were—found in China. The best recent rendition of this song is by the Canadian tenor Ben Heppner, on the recording with conductor Lorin Maazel (RCA Red Seal CD 74321-67957-2).

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Some passages from the Bible are cited in the King James version: chapter 4, *Book of Genesis* 1:1-3; chapter 11, *Book of Job* 1:7; chapter 14, *Book of Genesis* 3:2-5 and *Book of Revelation* 14:1; chapter 21, *Psalms* 23. The language of *Book of Zephaniah* 1:18 (chapter 16), *Book of Revelation* 6:1-2 (chapter 18), and *Psalms* 37 (chapter 20) is from the New Revised Standard Version.

For the quotation from John Chadwick’s *The Decipherment of Linear B* (Cambridge University Press, 1987), cited in chapter 4, I am indebted to Simon Singh’s fascinating volume, *The Code Book* (New York: Doubleday, 1999), page 238. After sketching Hera’s dream about the train in Chapter 16, I found in Rohinton Mistry’s *A Fine Balance* (Toronto: McClelland & Stewart, 1995), page 164, the account of the trains filled with corpses that Ariadne refers to.

The passage of Milton’s poetry quoted in chapters 22 and 27 is from his *Paradise Lost*, Book X, lines 743-5. It forms the epigraph on the title page of Mary Shelley’s *Frankenstein: or, the Modern Prometheus*, which was first published in 1818. In Shelley’s novel, the being created by Dr. Frankenstein

compares himself to Milton's Satan; for a good discussion, see the Preface in Susan Wolfson's edition of *Frankenstein* (New York: Longman, 2002).

Hera's discussion of the bodily basis of the self, found at the end of chapter 25, and the quotation from Nietzsche's *Thus Spake Zarathustra*, are based on Antonio Damasio, *The Feeling of What Happens* (San Diego, CA: Harcourt, Inc., 2000), pp. 143 and 347. In the original German, from section 3 of the Prologue to his *Also Sprach Zarathustra*, Nietzsche's phrase is "Zwitter von Pflanze und von Gespenst."

The species classification scheme alluded to in chapters 25 and 27 is inspired by Jared Diamond's *The Third Chimpanzee* (New York: HarperCollins, 1992) and by John Gribbin and Jeremy Cherfas's *The First Chimpanzee: In Search of Human Origins* (Penguin Science, 2001). Both books propose that humans, gorillas, and chimpanzees should all be grouped together in the genus *Homo*, based on the close similarity of their genomes.

The specific hominoid taxonomy in chapter 27 is adapted from M. Goodman, "The Natural History of the Primates," *American Journal of Human Genetics*, vol. 64 (1999), pp. 31-39. The terminology for the subgenera of *Homo* is adapted from the article by D. E. Wildman *et al.* ([www.pnas.org/cgi/doi/10.1073/pnas.1232172100](http://www.pnas.org/cgi/doi/10.1073/pnas.1232172100)), "Implications of natural selection in shaping 99.4% nonsynonymous DNA identity between humans and chimpanzees: Enlarging genus *Homo*," *Proceedings of the National Academy of Sciences*, vol. 100, no. 12 (June 10, 2003), pp. 7181-7188. Although Wildman and his co-authors do not include gorillas in the genus *Homo*, they do subdivide the family *Hominidae* more finely than is usually done, grouping both gorillas and humans/chimpanzees in the same "subtribe," slightly distancing both from orangutans (p. 7183): "In terms of observed distances [on the genetic "tree"], humans differ from chimpanzees by 0.9% and each differs from

gorillas by 1.0%. Orangutans are slightly more than 2% divergent from each of the African hominids ....”

Other scientists support the idea that humans are a branch of the chimp (or bonobo) clade: Charles A. Lockwood, William H. Kimbel, and John M. Lynch, “Morphometrics and hominoid phylogeny: Support for a chimpanzee–human clade and differentiation among great ape subspecies,” *Proceedings of the National Academy of Sciences*, vol. 101, no. 13 (March 30, 2004), pp. 4356–4360 [www.pnas.org/cgi/doi/10.1073/pnas.030623510](http://www.pnas.org/cgi/doi/10.1073/pnas.030623510). See also K. Semendeferi, A. Lu, N. Schenker, and H. Damasio, “Humans and great apes share a large frontal cortex,” *Nature Neurosciences*, vol. 5, no. 3 (March 2002), pp. 272–6.

The discovery of *Homo floresiensis* was reported in P. Brown et al., “A new small-bodied hominin from the Late Pleistocene of Flores, Indonesia,” *Nature*, vol. 431 (28 October 2004), pp. 1055–1061. See also K. Harvati et al., “Neanderthal taxonomy reconsidered: Implications of 3D primate models of intra- and interspecific differences,” *Proceedings of the National Academy of Sciences* ([www.pnas.org/cgi/doi/10.1073/pnas.0308085100](http://www.pnas.org/cgi/doi/10.1073/pnas.0308085100)), vol. 101, no. 5 (February 3, 2004), pp. 1147–1152.

Hera’s remark about the “famous case of a high-functioning autistic” in chapter 25 can be explored further in the chapter “An Anthropologist on Mars” in Oliver Sacks’ book of the same title (New York: Vintage Books, 1996), and in the three volumes by Dr. Temple Grandin, who is the subject of Sacks’ study: *Emergence: Labeled Autistic* (with Margaret Scariano, New York: Warner Books, 1996); *Thinking in Pictures* (New York: Vintage Books, 1996); and *Animals in Translation* (with Catherine Johnson, New York: Scribner, 2005). There is also the remarkable novel about a high-functioning autistic child by Mark Haddon, *The Curious Incident of the Dog in the Night-time* (Toronto: Doubleday Canada, 2002).