

Fugue No. 13

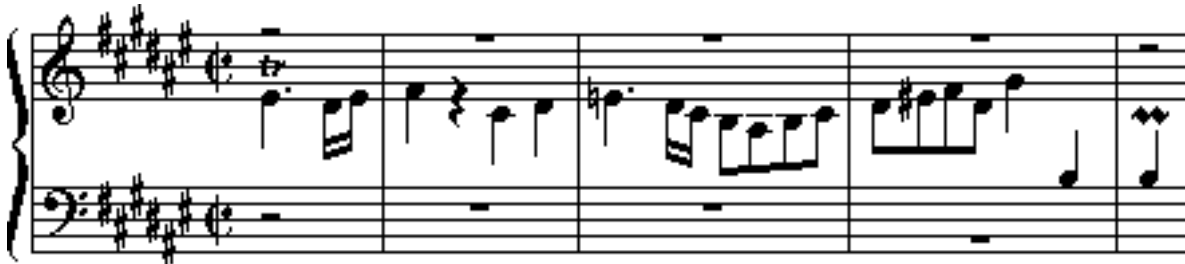
F-Sharp Major

Well-Tempered Clavier Book II

Johann Sebastian Bach

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To read this essay in its hypermedia format, go to the Shockwave movie at <http://www2.nau.edu/tas3/wtc/ii13.html>.



Subject: Fugue No. 13, *Well-Tempered Clavier*, Book II

Time is of such importance to us that the fugue, a musical way of organizing time, really gets under our skins.² To listen to a fugue is to experience time itself--with intent and focus--one reason for its enduring appeal. So I invite you to ask with me; is the fugue...

- A circle or line?
- Epochal or fungible?
- Meaningful only in time?
- Compressed or protracted?
- Returning to the future?

A Circle or Line?

In classical Greece time was thought to be like a circle, with the past, present, and future melding in one continuous motion. The same idea prevails in most indigenous and Asian cultures today. The world is forever reborn in echoes of

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² Often I think of this project like a blog, with my favorite method being to read an interesting book, then use the fugue to illustrate it. Never have I enjoyed this method more than in Allen Bluedorn's *The Human Organization of Time* (Stanford University Press, 2002). You might think of this analysis like a book report (and extended musical application) of Bluedorn's "timely" thoughts.

seasons and ceremonies that commemorate, and perpetuate, the cycle. The spiritual essence of life is revealed in rebirth, and recognition that every state has both a prior and subsequent connection to every other--nothing comes first, and nothing last.

While there is no denying the circularity of Bach's fugues (the *Well-Tempered Clavier* is an immense cycle³), the better metaphor is line. "Timelines," like the one to the right, lend themselves to the representation of structure in western music, more so than circles. Too, the musical score, with its left/right orientation in correspondence with a beginning, middle, and end, indicates a linear conception.⁴

Because this view posits that history had a beginning, and will have an end, it is said to be *apocalyptic*--often identified as the Judeo-Christian view of time. But the concept ultimately traces to the Greek *telos*, for "end" or "result." The *telos* implies a goal, perfection, preferred state, completeness, purpose, and design.

Systems are *teleological* when they reveal a final cause: all parts must be present, in order, to work or make sense. Language is teleological, as are many biological systems.⁵ Arguably, teleologies do not occur by chance. In every instance where we *know* what produced them, teleologies have existed by intelligent agency. We are able to account for the remaining instances only in theory.

The fugue is a teleology for which we *can* account--evidentiary of the plans and purposes of J. S. Bach. His fugal development would not be recognizable as elaboration unless the exposition happened first. Augmentation and diminution would not be identifiable without the kernel idea against which they are compared. The modulating sequences of this fugue are intensely teleological.

So, is the fugue a circle or line? Not to be tedious, it is a bit of both. While the fugue is circular, its circularity is directed toward a goal, implying *telos*. The

³ All tonal music starts and returns to the same key. Diagrams of tonal relationships, such as the "circle of fifths," make excellent use of the metaphor, as does the term "circle progression." Within the tonal "circle" of this fugue there are smaller eddies and whirlpools like the circle progression of mm. 12-20 that digresses from, and returns to, F# Major.

⁴ Time-as-circle, denoting continuous motion without beginning or end, is promoted in John Cage's belief that, "We no longer make objects which have beginnings, middles and endings (as fugues and sonatas do)." Whereas Cage's music represents his deep commitment to Zen Buddhism, the spiraling scores of George Crumb represent not just a philosophical rejoinder to time-as-line, but exquisite works of art in themselves.

⁵ Modern science is predisposed at the moment to dismiss teleological implications because they challenge the *belief* that everything exists by chance and necessity. What looks like purposefulness and design (*telos*) is dismissed as a trick of nature. This view, succinctly expressed in paleontologist George Gaylord Simpson's 1967 manifesto *The Meaning of Evolution*, maintains: "Man is the result of a purposeless and natural process that did not have him in mind." The National Center for Science Education calls "disturbing" the overwhelming number of Americans who have consistently (since 1982) affirmed for the Gallup organization that "God created mankind pretty much in his present form over the last 10,000 years," while evolutionary apologist, Richard Dawkins, caricatures people who don't believe in evolution as either ignorant, stupid, insane, or wicked (from Dawkins's review of Johanson & Edey's *Blueprint in The New York Times*). It would be truly ignorant, stupid, insane, *and* wicked to dismiss the design of a fugue as mere illusion. Carl Sagan's use of fugue as a metaphor for evolution does not exalt evolution but defames the fugue.

fugue's circle is therefore linear, which suggests a spiral--a coil, or spring--the best metaphor for how Bach has employed fugue to organize time.⁶ Paraphrasing Schenker, the fugue evokes sameness, never in the same way. Mark Twain's observation that the past doesn't repeat itself, but rhymes, is certainly apropos, as is the Yogi-ism, "If you don't know where you're going, you'll wind up somewhere else."

Epochal or Fungible?

But I'll bet, when you think of time, what "springs" to mind is neither circle nor line, but a watch. This particularly technological form of time begs likening (if only to reject the comparison) to a fugue.

Four centuries before Bach, someone invented--no one knows who--the escapement, a mechanical device that slices time into units of equal duration. The clock was the most important technological advance since the wheel. It improved the manufacture of machine tools, screws and gears (to make clocks), and enabled precise navigation.

The clock is so important that its mechanics have crept into our language "like clockwork." Technology has also spawned ideas of the universe as *machina mundi* (the world machine), tempting many to apply clockish thoughts, and devices like the metronome, to music.

In rejecting this comparison I would like to invite you to my summer home in Yachats, on the central Oregon coast. At 9:00 o'clock each evening I stop writing to watch the sunset. In the winter I watch the sun "retire" in Arizona, several degrees in latitude to the south. Between locations and seasons, the contrasting "styles" of sunset are magnificent.

In Arizona, from the moment the "snowbird" sun touches the horizon, to when it sinks below, takes little more than a minute. From then I have but one-half hour before dark to hike back from my favorite "sundown spot." In Yachats, the summer sun takes a more leisurely leave. This June evening, for example, a full five minutes from searing of the sea to drowning of the sun. The lingering twilight of the northern hemisphere affords an hour to walk home, although it takes but a minute.

Bluedorn reminds us of the truth so beautifully expressed by Cervantes: *Que no son todos los tiempos unos* (for not all times are one and the same).⁷ Before

⁶ Feminist theory maintains that the circle and line are feminine and masculine models for time. Another plausible analogy, if somewhat strained, is that the fugue is neither boy nor girl but a coil, with connotations of flexibility and stored energy. As a spring, the fugue has the ability to recoil from engendered analogies, expanding and contracting time, with memory of that purest moment and inclination to return, the time when all began.

⁷ Local variations in how we perceive time are so important that Bluedorn calls his first chapter, "All Times are Not the Same." He explains how "no two people living *at* the same time live *in* the same time." This is because we adopt different strategies (defined by Mintzberg as "a pattern in a stream of decisions") for organizing time. Bluedorn notes that one stratagem, *polychronicity* (roughly equivalent to multi-tasking), results "from a combination of culture and personality, both of which store these choices and preferences at deep levels, very deep levels (p. 48). Fugal polyphony, unparalleled in music for its polychronicity, betrays the temporal strategy of irreducibly complex systems: the simultaneous existence of interdependent structures with little utility by themselves.

the clock (that is most of human history), time was perceived in the context of physical events like the setting sun. Epochs, many of which are associated with heavenly bodies, are asynchronous, conditional and dynamic. The clock allowed humans for the first "time" (with regret) to detach time from conditions of the physical world.

Bluedorn defines *epochal time* as the perception that time is *in* the event, not the event occurring *in* time: "When time is in the event itself, the event defines the time" (p. 31). "Time for lunch," he illustrates, is determined by hunger, therefore epochal. But "lunchtime" means noon, hungry or not.

Compare *epochal* time with the following rival definition by Sir Isaac Newton: "Absolute, true, and mathematical time, in and of itself and of its own nature, without reference to anything external, flows uniformly and by another nature is called 'duration.'"

Newton was of course flat out wrong; the speed of time is distorted by gravity. That aside, the distinction of Newton's definition is that time is "uniform" and exists "without reference to anything external." Bluedorn has applied the term "fungible" to this idea.

Fungible time is whatever we define it to be--in Newton's case *uniform*. There is no natural reason why a second could not be defined as a shorter duration, or longer, than the standard. Who said that clocks couldn't run counterclockwise? What higher authority determined that *clockwise* must be this way, not that? In truth there *is* no natural reason. Our conception of "correct" is (in this instance) a construct.

The French revolution, unparalleled in its zeal to deconstruct the social order, went so far as to "define" the day as having ten hours, each hour with 100 minutes, each minute with 1000 seconds. So as to illustrate fungible time more vividly, I've done a bit of deconstruction myself; but I'm certain you've *already* discovered what's wrong with the clock to the right? Does the division of five-second increments into four equal parts, or a minute in 48 seconds bother you? Willy-nilly substitution of one uniform duration for another, without doing irreparable harm to the psyche, proves the fungibility of clock time.

For Newton (and French revolutionaries) humans are relevant only insofar as we *define* time. Having defined it as autonomous and uniform, we become irrelevant; time exists without cognizance of us. Thus we create a term that removes itself from its creator, separating us from perceiving the interconnectedness of the term itself, the contingency of the term, its dependency upon external factors for its existence.⁸ As noted earlier, this is a *technological*

⁸ Dissociation is a real tendency of technology, one that we need to exercise ourselves to overcome. The average food item is now produced 1,400 miles away from the place where it is consumed. I can go to my grocery store in Yachats and buy a loaf of bread made "fresh" in La Brea, California, 1000 miles to the south. Or, I can go to the Yachats farmer's market on Sunday and buy a loaf of basil bread from Carol, the grandmother who grew the basil, and baked the bread yesterday. Community Supported Agriculture (CSA) contributes not only to a sustainable environment, but also human relationships, the family farmer, and healthy living. Whereas technology teaches young people that eggs come from cardboard cartons, in CSA they discover that eggs come from farmer John's chicken, which came from an earlier egg up the street, and

(versus *teleological*) way of thinking about time.

But we know from experience that time is neither uniform nor autonomous. Our role in relation to it is one of perception, not definition. Time does not exist by virtue of our having given it a name, fungible duration, or technological means of measurement; its existence can only be perceived. Life is the business of perceiving time, and so is listening to a fugue.

Meaningful Only in Time?

Because it regards "all times as the same," fungible time could just as well move backward. There is nothing inherent in any given minute that says it must come before, or after, any other minute. But this does not ring true of music. The perfect authentic cadence that closes this fugue becomes, in retrograde, incapable of closing a thing. The backward cadence is deceptive.

So the *meaning*, the *musical significance* of the cadence, depends on the order of its events. Musical meaning is teleological, proving Alfred North Whitehead's observation that: "'Significance' is the relatedness of things...it is thus out of the question to start with a knowledge of things antecedent to a knowledge of their relations."

Musical meaning is not determined in the isolation of parts, but their relation to the whole. The moment when the fugue's exposition stops, and its development begins, represents a case in point. Measure 13 is *time for development*. The uniqueness of this moment is signaled by the precedence of a cadence, the onset of tonal instability, motivic fragmentation, and sequencing. Musical conditions reveal how time is in the event. *Development time*, without regard to the internal conditions of the fugue, would locate the development in m. 13 of every fugue.

Meaning is likewise found in the fugue's tendency toward variation and typical asymmetry of its events. Although this particular fugue is unusually symmetrical in its first and second developments, even here *Que no son todos los tiempos unos*. The second development transforms the first by triple counterpoint--melodies heard first in the low voice are now heard in the middle, then the middle as low, and the high as lower still.

But, you ask, what about measures and beats? Do not the score and timeline cursors advance "like clockwork," while the fugue's so-called "motor rhythm" (continual pulse of a short duration) migrates from voice to voice? Doesn't Newton's word "uniform" apply here? Is not fugal time metrically and rhythmically fungible?

In truth it does not. While it may be difficult to perceive, the beats and measures of a fugue, like your heartbeat and circadian rhythms, continually compress and contract in time. Doctors tell us that the heartbeat of one prone to attack is disquietingly uniform, while a healthy heart adjusts quickly to local conditions--a stairway, the sudden smile of a beautiful woman. The sick heart, having lost its ability to adjust, beats metronomically.

So performers give meaning to music by speeding up, or slowing down, in

that you're welcome to help feed farmer John's flock nibblets of corn grown on farmer Bob's spread two miles in the opposite direction.

response to local conditions. This may be ever so slight, but the slightness itself conveys meaning. Just listen to Dr. Korevaar's nuanced anticipation of the first subject entry since the exposition! Finessed interpretations like this remind us of what is so unsatisfactory about many MIDI renditions, where clock time determines tempo without regard to what's happening in the music.

Michael Praetorius reminded Bach's ancestors (*Syntagma Musicum*) that any given motet should take a different tempo in the morning than in the evening. Arguably, the most important facet of musical "interpretation" is tempo. That we can "interpret" tempo, but clocks cannot, reveals how epochal musical time really is.

But the deepest meaning of a fugue is in its development, where Bach exploits the germinal possibilities of his subject. Developments often assume the double duty (as in this fugue) of clarifying ambiguities, or resolving musical problems. This type of meaning, too, can happen only when time is perceived "in the event." In the following example we shall see how all resolution, of anything, is epochal in time.

The subject of this fugue poses two musical problems: first in its out-of-phase relationship between motive and meter, and second in the dilemma of its leading tone. The first pitch, a trilled leading tone, anticipates the dilemma.

I'm sure you've noticed how the subject begins midway through the measure, a clue from the get go that we are dealing with something out of phase. Its beginning, ti-do (leading tone to tonic), trills the leading tone on a weak beat, resolving to the tonic on a strong. In m. 2 the leading tone is inflected downward, ti becoming te (now heard on the strong beat).

Whereas the tendency of ti is to resolve *up* by step, te is inclined to go *down*. The problem of the fugue, and the source of one of its richest meanings, is to determine which tendency will prevail, that of ti or te? The dilemma is resolved, in subsequent development, by the *entrainment* of motive. Here's how it works.

Entrainment involves the convergence of rhythms, usually the more powerful of two capturing the weak, putting it into phase with itself. The stronger oscillation of this fugue is represented by its slow trochaic meter: an accentual rhythm of two beats, with the first strong and the second weak.

A subsidiary oscillation is heard in what I will call the primal motive. Here the rhythm is iambic, weak moving to strong. In the fugue's subject, the primal motive (weak/strong) is out of phase with the meter (strong/weak). This relationship gives the fugue momentum, like a swing. To swing forward you must lean back, and to swing back you must lean forward.

Entrainment occurs in the fugue's development, where the primal motive is transformed to begin on a strong beat. This happens not once, but four times, in four keys! To make sure that we get it, Bach has reinforced the entrainment by *augmentation* and *diminution*--the doubling and halving of durations in the motive.

Entrainment also resolves the battle of ti and te. The primal motive, always heard in the subject as sol-la-te, is developed as la-ti-do. Thus the meter

captures the motive, conforming it to its more powerful oscillation, and resolving the musical problem posed by the fugue's subject. In a moment I shall explain why this motive was predestined for development in this particular manner. For now let's just enjoy how the development gives the fugue meaning by solving the problem of its subject. Let's appreciate, too, how this meaning, epochal and teleological, can't breathe in a temporal vacuum. It needs the oxygen of time.

Compressed or Protracted?

I admire short books, the well-turned phrase, the clause that packs a punch; Strunk & White are my heroes. At 119 pages, Stravinsky's *Poetics of Music in Six Lessons* is the good book's model. Minimalist poetry, when compared to *The Brothers Karamazov*, is like a fugue beside Mahler's Third. The fugue says it all, in less time.

Because the fugue is compact, it requires the listener to engage in a high degree of what Michael Flaherty calls *conscious information processing*. As we shall see, the degree of thoughtfulness one brings to the listening experience has dramatic implications for the rate at which "fugal time" is perceived to flow.

Not only does time flow, but it also flies, we say, when you're having fun. In this figure of speech we confess the common perception that the passage of time is variable. More than a century ago William James noted that "time filled with varied and interesting experiences seems short in passing, but long as we look back." Paradoxically, "a tract of time empty of experiences seems long in passing, but in retrospect short."

Flaherty has recently supplied evidence (1999) for what he calls *temporal compression* and *protracted duration*. His research refines James's contention that the determining factor is "varied and interesting experiences." Flaherty learned that what actually makes time slow down is "the extent to which the individual engages in conscious information processing." Bluedorn explains: "When the amount of such processing is high, time appears to slow down (protracted duration)...when such information processing is low, time appears to speed up (temporal contraction)."

Flaherty's theory has obvious relevance (but I am repeating myself) to how we perceive time in music. As we all know, there are musical styles that do, and do not, engage the mind. The latter would (in theory) mitigate toward temporal compression, the rapid flow of time. By comparison, the fugue, which demands a high degree of attentiveness, would cause time to slow down.⁹ As to the implication that one style flies because it is fun, I'll leave the reader to draw his own conclusion.

Another of my favorite short books is by the Argentine poet, Jorge Luis Borges. In *This Craft of Verse* (a series of lectures delivered at Harvard in the late '60's), Borges theorized that most poetic metaphors descend from but a half-dozen archetypes, among them: life and the dream, stars and eyes, flowers and women, sleep and death, time and the river. The "flow of time," a metaphor

⁹ Bluedorn notes (p. 197) that emotional intensity also contributes to the sensation of protracted duration.

employed in Newton's definition of time, is born of "time and the river."

Upstream, where the river has been, represents its past, with its future waiting downstream. This is the impression of anyone who has floated down a river. We are *in* the river, experiencing time like the river itself (experiences time). Moving *with* the river, we perceive the past in what lay behind and the future in what lies ahead. The timeline cursor (advancing to the right) is exactly such a representation. Following the cursor is to be "in the river," with the past being where the cursor has been, and the future where it will go.

But the same flow that carries the river downstream and away, also brings, from upstream, the future supply of water, carrying downstream the spent flow. From this perspective we are not *in* the river, but standing on its bank, waving "Hello!" to all who float our way, and "Goodbye" as they pass. Here "the flow of time" allows for the opposite meaning. In the first interpretation, the past was upstream and the future down. Now the past is downstream and the future up.

Let's illustrate. Pick any point and plunk yourself on the fugue's "riverbank." Suppose you choose m. 5. The animation reveals how everything in m. 5 comes from ideas in m. 1 and m. 4. The subject, being the fugue's "source," is therefore *upstream* of m. 5. Every time you see a red or green motive emanating from "the source," you experience time from the fugue's riverbank. The subject contains the fugue's future.

The loveliness of "time and the river" is that it helps us to understand that the future is *in* the past, and the past *in* the future, a thought that we shall develop more fully in a moment. The beauty of the fugue is that it illustrates the metaphor artistically and vividly. Listening to a fugue is to understand that the future is in the past, and the past in the future.

English has an elegant way of expressing the foregoing concept; we call it the *future perfect tense*. Were I to tell you that in one year I *will have completed* this study, that would be speaking of the project's future as if it had been in the past. To experience time fugally is to know the future perfect tense. The fugue promotes both temporal compression *and* protracted duration--not as one and the same, but in simultaneity.

Returning to the Future?

The future ain't what it used to be.
Yogi Berra

The legendary Berra, beloved as much for his "Yogi-isms" as baseball, is also reported to have quipped, "It's tough to make predictions, especially about the future." Berra's humor tells a profound truth--that we exist in time and are particularly interested in how it will unfold. Life has a beginning, middle, and end, with the timing of the end being of great mystery and concern.

As in a good fugue, we hope that the end will defer itself until every hint of potentiality has been discovered and explored--every sighing figure savored to the max. In good faith we trust this will happen with grace and artistry, as Bach has accomplished here. Only then can the fugue close with assurance that

nothing needs doing that should have been done.

Were I to drop the needle on this fugue, playing disconnected snippets at random, it would make no sense. As in real life, where relationships become meaningful only in a chronological context, the sense of a fugue depends upon our ability to connect what we hear now with what we heard before, using both to anticipate what we might hear next.

Bach himself imagined the fugue as an exercise in divining the future. This imagination reveals itself not only in how he composed fugues, but also in how he listened to the music of others. Writing of his father, Carl Philipp Emanuel observed that:

When he listened to a rich and many-voiced fugue, he would soon say, after the first entries of the subjects, what contrapuntal devices it would be possible to apply, and on such occasions, when I was standing next to him, and he had voiced his surmises to me, he would joyfully nudge me when his expectations were fulfilled."

Carl Philipp Emanuel's recollection reveals two facets of the fugal experience. It helps us to appreciate his father's fixation on motives predisposed to idiosyncratic development and figures preordained for elaboration in particular ways.

Earlier I alluded to the fact that the head motive of this fugue is always heard, in the subject, as sol-la-te, where it resolves to a chord of pre-dominant function. Psychologically, this "open" formation demands continuation. And, as noted earlier, it presents a musical problem--a problem solved by ingenious elaboration of the head motive in the modulating sequences of mm. 13-19 and 45-51. Preserving the interval content of the motive (whole step followed by half), Bach transforms sol-la-te into chain links of la-ti-do, each link closing toward chords of tonic function concluding with restatement of the subject in related keys. The successive trichords of each link comprise a scale of more than two octaves, terminating on B, where it began. Here is a brilliant circle of both tonality *and* time!

mm. 13-19: B-C-D, E-F-G, A-B-C, D-E-F

mm. 45-51: E-F-G, A-B-C, D-E-F, G-A-B

It is precisely because the fugue could not have been developed in any other way that Bach was able to make his famous predictions. He knew that his head motive would stir expectations of development. Carl Philipp Emanuel hints that his father was able, before writing a note, to envision details of that development, worked out by repetition of the motive in rhythmic augmentation and diminution. Upon realization of his expectations, if Bach enjoyed ribbing his son, we too might joyfully anticipate the unfolding of plans that we have made. The present is comforting when we know that the past exists to prepare the future. When the future is seen as disconnected, beyond our power to shape, it is a fearful thing indeed.

So we "relate" to the fugue because it reinforces our hope for time. It confirms our belief that the past, present, and future derive meaning from each other. The fugue is not *about* time, but an experience *in* time. To listen to a fugue is to perceive the past, present, and future in the act of giving meaning to each other.

But we've not answered the most important question. We know that Bach could foretell the fugue's future, but how? What was his secret? Intuition? Some kind of formula, or a lucky guess?

Bluedorn proposed that we answer that question by visiting Oxford, England, home to one of the world's great universities. About a hundred years after Bach died, New College, Oxford, found itself in need of massive beams to replace the ceiling of its ancient College Hall. The problem was solved by cutting down 500-year old oak trees. This may strike the modern ecologically minded sensibility as wantonly destructive, but for one detail--the oaks had been planted for that very purpose. In replenishing the borrowed trees, the builders provided for the first 1000 years!

Can you imagine yourself twenty-five years from now? Fifty? Are you able to envision a time when there will be no United States, no France, no China? How about nobody who can speak English? All of these scenes are, in the scale of human history, virtually certain. On the scale of geological time, there will be no Pacific Ocean, no Africa, no Earth. Yet most of us find these inevitabilities far beyond our ability to comprehend. It is especially difficult to imagine the *deep future*, a time that we perceive to have no connection with us, therefore devoid of meaning and reality.

Relationship is key. All meaning comes of relationships. "All understanding," writes Karl Weick, "originates in reflection" (Bluedorn, 124). Listening to the fugue is about reflection. The fugal essence is found in relationships. This is because the fugue is ultimately about meaning and purpose.

Bluedorn tells the story, in Japan there was recently buried a time capsule with instructions to be opened in 5000 years. Japanese culture, with its deep historical roots, has a commensurate concern for the deep future. By contrast, Americans have what Bluedorn identifies as a "temporal horizon" of about ten years.¹⁰ Our awareness of time is shallow. Ask the average American when a hypothetical time capsule should be opened and you'll get, "In 100 years." Bluedorn quotes Lewis Mumford (p. 253):

No generation before our own has ever been so fatuous as to imagine it possible to live exclusively within its own narrow time-band, guided only by information recently discovered; nor has it ever before this accepted as final and absolute the demands of the present generation alone, without relating those demands to past

¹⁰ *Temporal horizon* refers to the length of time that a person is aware of the future. Because the temporal horizon is deepened by awareness of the past, Bluedorn focuses upon *temporal depth*, which he defines as "the temporal distances into the past and future that individuals and collectivities typically consider when contemplating events that have happened, may have happened, or may happen." (Bluedorn, p. 114)

experience or future projects and ideal possibilities.

The remedy for a shallow temporal horizon is to imagine the future. And the secret of seeing into the future, really no secret at all, is to remember the past. This is common wisdom:

The longer you can look back, the farther you can look forward.
Winston Churchill

He who controls the past controls the future; he who controls the present controls the past.

George Orwell

More than folk wisdom, Omar El Sawy (1983) supplied proof that that the ability to imagine the future correlates with remembrance of the past. El Sawy asked high-tech CEO's to name and date ten events in the past and ten in the future. Half were required to name the *future* events first, with the others naming *past* events first. The group that thought first of the past was able to project nearly twice as far into the future! There was no difference, for either group, in the temporal depth of past events.

What might we learn from this? First, there is great wisdom in knowing history. The second lesson is this: Reflecting on the past will influence the future; worrying about the future will not influence the past. Moreover, the more deeply one reflects on the past, the more able he is to project the future, with greater specificity both to the timing and nature of events. So Berra was wrong...the future really *is* what it used to be.

In answer to the question--how Bach could foretell the fugue's future--he understood that the future is found in the past, with the fugue's subject foretelling all that will happen in its future. He was deeply aware that, if his fugue were to have any future, he would need to make good decisions now, in the composition of his present subject. Bach's interest in the past is also revealed in his love for "antique music" (the *stile antico*). In learning to appreciate this music, Bach came to realize that the contrapuntal ideals of the Renaissance, out of fashion in his day, would attract a great following in the future. He was thinking about you and me, right now, listening to the F-Sharp Major fugue of the *Well-Tempered Clavier*. And, in listening to the fugue, you and I are preparing our future by reflecting on our past.

In composing the *Well-Tempered Clavier* Bach was there, planting oak trees with the Oxford dons in 1386, providing for the building's first 500 years. In listening to Bach, we fell those trees, hewing of them great oaken beams that will provide for the building's next five hundred.

This analysis is dedicated to Hal Hinkle,
devoted to the fugue's next 500 years.