

Canon *by Intervallic Augmentation*

Achilles and the Tortoise have just finished a delicious Chinese banquet for two, at the best Chinese restaurant in town.

Achilles: You wield a mean chopstick, Mr. T.

Tortoise: I ought to. Ever since my youth, I have had a fondness for Oriental cuisine. And you—did you enjoy your meal, Achilles? Achilles: Immensely. I'd not eaten Chinese food before. This meal was a splendid introduction. And now, are you in a hurry to go, or shall we just sit here and talk a little while?

Tortoise: I'd love to talk while we drink our tea. Waiter!

(A waiter comes up.)

Could we have our bill, please, and some more tea?

(The waiter rushes off.)

Achilles: You may know more about Chinese cuisine than I do, Mr. T, I'll bet I know more about Japanese poetry than you do. Have you ever read any haiku?

Tortoise: I'm afraid not. What is a haiku?

Achilles: A haiku is a Japanese seventeen-syllable poem—or minipoem rather, which is evocative in the same way, perhaps, as a fragrant petal is, or a lily pond in a light drizzle. It generally consists of groups of: of five, then seven, then five syllables.

Tortoise: Such compressed poems with seventeen syllables can't much meaning ...

Achilles: Meaning lies as much in the mind of the reader as in a haiku.

Tortoise: Hmm ... That's an evocative statement.

(The waiter arrives with their bill, another pot of tea, and two fortune cookies.)

Thank you, waiter. Care for more tea, Achilles?

Achilles: Please. Those little cookies look delicious. *(Picks one up, bites I into it and begins to chew.)* Hey! What's this funny thing inside? A piece of paper?

Tortoise: That's your fortune, Achilles. Many Chinese restaurants give out fortune cookies with their bills, as a way of softening the blow. I frequent Chinese restaurants, you come to think of fortune cookies

less as cookies than as message bearers Unfortunately you seem to have swallowed some of your fortune. What does the rest say?

Achilles: It's a little strange, for all the letters are run together, with no spaces in between. Perhaps it needs decoding in some way? Oh, now I see. If you put the spaces back in where they belong, it says, "ONE WAR TWO EAR EWE". I can't quite make head or tail of that. Maybe it was a haiku-like poem, of which I ate the majority of syllables.

Tortoise: In that case, your fortune is now a mere 5/17-haiku. And a curious image it evokes. If 5/17-haiku is a new art form, then I'd say woe, 0, woe are we ... May I look at it?

Achilles (*handing the Tortoise the small slip of paper*): Certainly.

Tortoise: Why, when I "decode" it, Achilles, it comes out completely different! It's not a 5/17-haiku at all. It is a six-syllable message which says, "0 NEW ART WOE ARE WE". That sounds like an insightful commentary on the new art form of 5/17-haiku.

Achilles: You're right. Isn't it astonishing that the poem contains its own commentary!

Tortoise: All I did was to shift the reading frame by one unit-that is, shift all the spaces one unit to the right.

Achilles: Let's see what your fortune says, Mr. Tortoise.

Tortoise (*deftly splitting open his cookie, reads*): "Fortune lies as much in the hand of the eater as in the cookie."

Achilles: Your fortune is also a haiku, Mr. Tortoise-at least it's got seventeen syllables in the 5-7-5 form.

Tortoise: Glory be! I would never have noticed that, Achilles. It's the kind of thing only you would have noticed. What struck me more is what it says-which, of course, is open to interpretation.

Achilles: I guess it just shows that each of us has his own characteristic way of interpreting messages which we run across ...

(Idly, Achilles gazes at the tea leaves on the bottom of his empty teacup.)

Tortoise: More tea, Achilles?

Achilles: Yes, thank you. By the way, how is your friend the Crab? I have been thinking about him a lot since you told me of your peculiar phonograph-battle.

Tortoise: I have told him about you, too, and he is quite eager to meet you. He is getting along just fine. In fact, he recently made a new acquisition in the record player line: a rare type of jukebox.

Achilles: Oh, would you tell me about it? I find jukeboxes, with their flashing colored lights and silly songs, so quaint and reminiscent of bygone eras.

Tortoise: This jukebox is too large to fit in his house, so he had a shed specially built in back for it.

Achilles: I can't imagine why it would be so large, unless it has an unusually large selection of records. Is that it?

Tortoise: As a matter of fact, it has exactly one record.

Achilles: What? A jukebox with only one record? That's a contradiction in terms. Why is the jukebox so big, then? Is its single record gigantic -- twenty feet in diameter?

Tortoise: No, it's just a regular jukebox-style record.

Achilles: Now, Mr. Tortoise, you must be joshing me. After all, what I of a jukebox is it that has only a single song?

Tortoise: Who said anything about a single song, Achilles?

Achilles: Every- jukebox I've ever run into obeyed the fundamental jukebox-axiom: "One record, one song".

Tortoise: This jukebox is different, Achilles. The one record sits vertically, suspended, and behind it there is a small but elaborate network of overhead rails, from which hang various record players. When push a pair of buttons, such as B-1, that selects one of the record players. This triggers an automatic mechanism that starts the record player squeakily rolling along the rusty tracks. It gets shunted alongside the record-then it clicks into playing position.

Achilles: And then the record begins spinning and music comes out -- right?

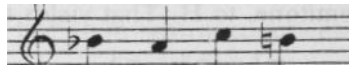
Tortoise: Not quite. The record stands still-it's the record player which rotates.

Achilles: I might have known. But how, if you have but one record to play can you get more than one song out of this crazy contraption?

Tortoise: I myself asked the Crab that question. He merely suggested I try it out. So I fished a quarter from my pocket (you get three plays for a quarter), stuffed it in the slot, and hit buttons B-1, then C-3 then B-10-all just at random.

Achilles: So phonograph B-1 came sliding down the rail, I suppose, plugged itself into the vertical record, and began spinning?

Tortoise: Exactly. The music that came out was quite agreeable, based the famous old tune **B-A-C-H**, which I believe you remember.



Achilles: Could I ever forget it?

Tortoise: This was record player B-1. Then it finished, and was s rolled back into its hanging position, so that C-3 could be slid into position.

Achilles: Now don't tell me that C-3 played another song?

Tortoise: It did just that.

Achilles: Ah, I understand. It played the flip side of the first song, or another band on the same side.

Tortoise: No, the record has grooves only on one side, and has only a single band.

Achilles: I don't understand that at all. You CAN'T pull different songs out of the same record!

Tortoise: That's what I thought until I saw Mr. Crab's jukebox. Achilles: How did the second song go?

Tortoise: That's the interesting thing ... It was a song based on the melody **C-A-G-E**.

Achilles: That's a totally different melody!

Tortoise: True.

Achilles: And isn't John Cage a composer of modern music? I seem to remember reading about him in one of my books on haiku.

Tortoise: Exactly. He has composed many celebrated pieces, such as 4'33", a three-movement piece consisting of silences of different lengths. It's wonderfully expressive-if you like that sort of thing.

Achilles: I can see where if I were in a loud and brash cafe I might gladly pay to hear Cage's 4'33" on a jukebox. It might afford some relief!

Tortoise: Right-who wants to hear the racket of clinking dishes and jangling silverware? By the way, another place where 4'33" would come in handy is the Hall of Big Cats, at feeding time.

Achilles: Are you suggesting that Cage belongs in the zoo? Well, I guess that makes some sense. But about the Crab's jukebox ... I am baffled. How could both "**BACH**" and "**CAGE**" be coded inside a single record at once?

Tortoise: You may notice that there is some relation between the two, Achilles, if you inspect them carefully. Let me point the way. What do you get if you list the successive intervals in the melody **B-A-C-H**?

Achilles: Let me see. First it goes down one semitone, from B to A (where B is taken the German way); then it rises three semitones to C; and finally it falls one semitone, to H. That yields the pattern:

-1, +3, -1.

Tortoise: Precisely. What about **C-A-G-E**, now?

Achilles: Well, in this case, it begins by falling three semitones, then ten semitones (nearly an octave), and finally falls three more semitones. That means the pattern is:

-3, +10, -3.

It's very much like the other one, isn't it?

Tortoise: Indeed it is. They have exactly the same "skeleton", in a certain sense. You can make **C-A-G-E** out of **B-A-C-H** by multiplying all the intervals by $31/3$, and taking the nearest whole number.

Achilles: Well, blow me down and pick me up! So does that mean that only

some sort of skeletal code is present in the grooves, and that the various record players add their own interpretations to that code?

Tortoise: I don't know, for sure. The cagey Crab wouldn't fill me in on the details. But I did get to hear a third song, when record player B-1 swiveled into place.

Achilles: How did it go?

Tortoise: The melody consisted of enormously wide intervals, and we **B-C-A-H**.



The interval pattern in semitones was:

-10, +33, -10.

It can be gotten from the CAGE pattern by yet another multiplication by 3%3, and rounding to whole numbers.

Achilles: Is there a name for this kind of interval multiplication?

Tortoise: One could call it "intervallic augmentation". It is similar to the canonic device of temporal augmentation, where all the time values notes in a melody get multiplied by some constant. There, the effect just to slow the melody down. Here, the effect is to expand the melodic range in a curious way.

Achilles: Amazing. So all three melodies you tried were intervallic augmentations of one single underlying groove-pattern in the record:

Tortoise: That's what I concluded.

Achilles: I find it curious that when you augment **BACH** you get **CAGE** and when you augment **CAGE** over again, you get **BACH** back, except jumbled up inside, as if **BACH** had an upset stomach after passing through the intermediate stage of **CAGE**.

Tortoise: That sounds like an insightful commentary on the new art form of Cage.