

Orthographic Evolution and Complexity Theory, Notes

interdependent, diverse entities

adaptable to local and global environments

 this adaptation is directed/guided by metonymy/metaphor

unpredictable

 can produce large events

 can withstand substantial trauma, very robust

 reaction to stress frontshift rule

 loss of inflections

bottom-up emergent phenomena, including self-organization, the macro does not equal the micro

 spellers as agents

 agents driven by both sound and custom (roughly, native and classical)

produce near-perpetual novelty

 handling new words, pronunciations, etc.

at edge of chaos – not in equilibrium, not chaotic

 system states determined by interacting attractors

world in general is becoming more complex

 so is spelling: alphabetic becoming post-alphabetic is example

(adaptive) complexity does not equal (non-adaptive) complicatedness

phase transitions can involve drastic changes

nonlinearity

spellers are agents

spellings are solutions

a positive payoff occurs when people do the same thing

many regular spellings enter in an early century (prior to 16th) and persist through the centuries of short-lived variants. I'll call this persistence. Many persist through major changes in pronunciation.

Others enter late (during or after the 16th)

The late-comers must be more sensitive to the regularizing effects, whatever they might be.

Remember the two questions: How do we pronounce it? How do we spell that pronunciation? Is there maybe then a third question: How do we pronounce this spelling? The third would be sensitive to changing spelling pronunciations.

re: the pronunciation question. Pronunciation varies most with vowels. Varies least with initial or final consonants.

Climban appears in the 11th c.; *climben* appears in the 12th and continues into the 15th. Subtract the old infinitive suffixes – *-an* and *-en* – and you have the current spelling. Further, *climbe*, which appears to be *climben* with the suffix reduced to a final schwa, also starts in the 13th and extends into the 17th, by which time the use of diacritic final <e> had pretty much settled down.

Many different recorded spellings represent established old sound-to-spelling correspondences. For instance, early spellings of *church* (11th and 12th: *cirice*, *circe*, *cyrice*, *cyrce*) echo the OE convention of spelling [ch] with <c> followed by a front vowel. The <ch> spelling was introduced into English after the Norman Conquest by Norman scribes trained in French usage. Thus, in the 12th c. we find such spellings as *chiriche*, *chireche*, *chirche*. In OE the <i> was rounded in pronunciation to the [ü] and its long form, which after the Conquest came to be spelled with <u> in the French manner. This led, starting in the 13th century, to such spellings as *churiche*, *chureche*, and *churche*, which by the 16th century had simplified to *church*, which persists. (Notice how what was originally a three-syllable word shortened to a monosyllable.)

The chronotypes for *crock* illustrate some “losers”: *Crocca* (11th) and *crokke* (14th) employ <cc> and <kk> to represent the hard [k] sound. The final <e> in *crokke* suggests that the final <e> was still being pronounced and that the use of use <e> to mark long vowels had not yet established itself. *Krocke* and *crok* run counter to the emerging tactical pattern for the use of <k>. *Crocke* spans five centuries and has the correct tactics for <c> and <ck>, during the time that final <e> was nondiacritical and still pronounced. It overlaps with the modern *crock* so that the two of them extend from the 13th century to the present.

The *OED* lists 22 different spellings of *dark*, stretching from the 11th to the present. For the most part the great variety is due to variation in the medial vowel sound. Ignoring that for the time being, the 22 reduce down to the following canonic forms, with “V” representing the vowel:

1. dVrc
2. dVrck
3. dVrk
4. dVrke
5. dVrcke

Of these five, <dVrc> is a plausible candidate since word-final <c>=[k] is fairly common after a consonant: *tal*c, *disc*, *sync*, *zinc* – though the word-final string <rc> is quite rare:

arc, *narc* (a recent clipping), *ectosarc* and *perisarc* (recent technical formations), *marc* – none of which descend from native words. Numbers 2, 4, and 5 – <dVrch>, <dVrke>, and <dVrcke> all run counter to the emergent attractor, in which word-final [rk] in the native phase is spelled <rk>. Numbers 4 and 5 also counter the frugality demand, because of the superfluous final <e>. Ignoring for the time being the tangle of vowel spellings, *dark* emerges as the preferred, and correct, spelling.

“Max Planck often emphasized the difference between the two types of change found in nature. Nature, wrote Planck, seems to ‘favor’ certain states. The irreversible increase in entropy . . . describes a system’s approach to a state which ‘attracts’ it, which the system prefers and from which it will not move of its own ‘free will’. (Prigogine and Stengers, *Order Out of Chaos*, 121). In many systems, equilibrium is an attractor state.

In a physical system, a very simple attractor, such as that attracting a ball rolling around in a bowl and being drawn ultimately to the bottom, depends on the force of gravity, modified by friction and laws of momentum. The nature of the attractor is determined by the forces at work.

Similarly, in a symbolic system an attractor arises from a convergence of different demands. In early English spelling it would be the phonetic demand, together with the systemic demands for simplicity, economy, predictability, stability, etc. This is particularly true with the native phase of the spelling system. Probably at some point the demands of custom also enter in as people come more and more to spell words the way they see them spelled. In the non-native phase (with Latinate words, or French, or other adoptions) the etymological demand also enters in, usually overwhelmingly so.

From Cohen and Stewart’s *The Collapse of Chaos*:

“Attractors are emergent phenomena in dynamical systems. . . . The name ‘attractor’ appeals to mathematicians, but it carries the unfortunate suggestion that dynamical systems are goal-oriented – that states end up on the attractor because they know in advance that they have to go there. On the contrary, we only find out what the attractor looks like by watching where initial states go. . . . So when we use attractors as images for, say, evolution, we’re not trying to suggest that the system ‘knows in advance where it’s going’. All we’re saying is that the dynamical equations push it around according to certain rules” (207)

“Attractors, by definition, are stable; small disturbances that take the system off its attractor die away automatically as it heads back toward the attractor again” (386).

“Emergent simplicities are peaks in the landscape of the possible” (395).

“seeking attractors and settling on them” (419).

“A dynamic does not necessarily imply a purpose. Darwinian evolution has a dynamic, but organisms do not seek to evolve. The existence of attractors does not imply that

dynamical systems are goal-seekers: on the contrary, they are goal-*finders*, which only recognize what the 'goal' is when they have found it" (431).

"Dynamical systems have features that certainly seem to be emergent: attractors. . . the attractors emerge when you follow the dynamics, and this is often the only way to find out what they are" (436-37). This would seem to give credence to the tactic of looking at the regular tactical and procedural patterns of today as the attractors in the earlier centuries.

Kauffman's "'order for free' – self-organization that arises naturally". *At Home in the Universe*.

Whenever we use written words to make meaning, our performance is worked upon by two sets of demands – one set conservative, the other innovative. The conservative demands are the following:

the *demands of expression* (basically, the expectation that similar sounds will be spelled similarly and consistently from word to word),

the *demands of content* (the expectation that consistent semiotic content will be spelled consistently),

the *demands of history* (that the expression and contents of words and elements should reflect their etymological sources and subsequent histories),

and the *demands of systematicity* (such things as predictability, pattern, ruliness, endurance).

The innovative demands are the following:

the *pragmatic* (dealing with the users and their illocutionary intentions and perlocutionary results),

the *referential* (dealing with the world to which the words are used to refer), and

the *technological* (dealing with the medium and mode of realization).

Our relationship to these demands is another example of the familiar circularity: The demands immediately affect and define our performance, but since most of the demands are in large part the residue of past performances, our performance also affects and defines the demands.