Dear Professor Chomsky,

While your political and linguistic work has had a major impact on me, the purpose of this letter is mainly to let you know about the profound effect your wife’s work is currently having on the learning of a growing community of students, teachers and tutors around the world.

Let me explain.

My name is Pete Bowers. I am a teacher and researcher who earned my PhD studying the effect of teaching about morphological structure and how it interrelates with phonology in oral and written English from the beginning of schooling. The essential premise of this work is simple and should be obvious: Children attempting to learn to read and write deserve instruction that accurately represents how their writing system works.

Given the evidence presented by yourself, Carol Chomksy, Venezky and others, we can state some basic principles that could be used to guide the on-going refinement of our instruction of the written word. For example, we can assess how well our instruction facilitates the following understandings:

1) The primary job of English spelling is to represent the meaning of the language to those who already speak the language.

2) English orthography is so well ordered for this purpose, that the spellings of words can be investigated through scientific inquiry.

Certainly Carol Chomsky played an important role in helping clarify the logic of spelling, but her special role in terms of innovative instruction going on right now needs more explaining.

For 9 of my 10 years as an elementary teacher, I was a terrible speller (I’ve been told by many that I’m dyslexic). Every experience I had as a student, then later in teacher training and with teacher resources functioned to block my ability to imagine those two principles as a possibility. Like every teacher, student or parent I knew, I assumed that the purpose of spelling was to represent the sound of words, but that English spelling had many spelling exceptions for that purpose. Based on this false assumption, the only thing we could do in schools was rely heavily on rote memorization to teach children to read and spell. After all, an irregular system does allow for productive scientific inquiry.

In my 9th year as an elementary teacher, I encountered a teacher resource called Real Spelling that allowed me to start dropping my untested false assumptions.

The author of Real Spelling, Michel Rameau, is a linguist with an incredibly deep understanding of English spelling. He is also particularly effective at communicating that understanding to whoever was interested.

(I suspect that you and Michel Gondry would both appreciate the use of a kind of animation to explain orthography in the films in this on-line Real Spelling gallery.)
When I started to work with Real Spelling, Michel frequently expressed how crucial Carol Chomsky’s 1970 paper “Reading, Writing, and Phonology” was for his understanding and subsequent work. This article is regularly cited in the research along with the message that “English spelling is more ordered than commonly assumed.” However, as far as I can see, the educational significance of her abstract concept of a “lexical spelling” was missed by just about everyone other than Michel -- until recently.

Since I understood that English spelling was well ordered from working with Real Spelling, and since I could not find a digital copy of this paper, I was just lazy enough not go to the library to look it up. Then in 2010 I read a review about morphological instruction by Joanne Carlisle. She addressed Carol Chomsky’s concept of a “lexical spelling” and then at the end of her discussion, she wrote this:

In rereading Chomsky (1970), I realized that I had forgotten how detailed and thoughtful her suggestions were for ways that students might benefit from instruction in morphological awareness. I was further struck by how little has been done since 1970 to investigate the nature and value of instruction in morphological awareness (Carlisle, 2010, p. 481).

I had seen that article cited countless times, but this was the first time I had seen anyone mention that Carol Chomsky had made instructional suggestions. I went to the library, found the journal, pulled it off the shelf and started to read the abstract. I ended up reading the whole damn thing standing right there in the stacks. Just as my friend Michel had always told me (and anyone who would listen), nothing in Real Spelling is new. Every key concept about English spelling that I had learned from Real Spelling was planted in that short article -- including strategies that are now central to a growing community of teachers and students around the world. How did this happen?

My mentor, Michel Rameau did his doctoral work at Cambridge studying medieval Hebrew (where he tells me work by your father was critical for him also!). During his studies, he encountered something that can be understood as a morphological matrix in Hebrew. Combined with his reading about Carol Chomsky’s concept of a lexical spelling, Michel was inspired to offer teachers a tool called the morphological matrix in English (see examples on the next page).

My colleague Gina Cooke and I argue that analysis of the morphological structure and related written words with the word sum and the matrix makes it possible for young children and teachers to work with a concrete representation of Carol Chomsky’s concept of a lexical spelling. With a concrete representation to her abstract concept, even young children (and teachers like myself) were finally able to test and reject hypotheses about how spelling worked.

My introduction to Real Spelling was a 45 minute workshop in which matrices and word sums were used to make sense of many words that I had previously been explicitly taught not to wonder about -- but to memorize because they were “irregular” and therefore not understandable.
For example, every educational resource or research I have seen that addresses the word <does> in the context of instruction calls it an “irregular” spelling. Nonetheless, the word sum and matrix can be used to make it clear to even young children that this spelling is totally logical and understandable. Indeed investigating these families of words is a means of introducing children to the basic principles of how their morphophonemic oral language is represented in spelling -- with consistent spellings of the meaning bearing structures despite pronunciation shifts.

Consider this quote from your wife’s 1970 paper that I regularly share in my research work and workshops with teachers. It helps me clarify that studying word structure with word sums and matrices is simply a way to finally take advantage of the long standing recommendations from linguistics to which Carlisle was referring.

“As soon as the children’s vocabulary permits, they could take up words like major-majority, history-historical-historian, nature-natural, etc. to see how one and the same root [base or stem] changes its pronunciation as different endings are added to it. They might even profitably be introduced to the idea … that the root [base or stem] alone doesn’t really have a specific pronunciation until you know what ending goes with it.”

Inspired by this understanding, children and teachers around the world are learning to refer to morphemes not by pronouncing them, but by naming them with their spelling. Why? Because we don’t know how bases like <do>, <cause> or <nate> are pronounced until they are in a word.

The matrix and left side of a synthetic word sum reveal the a concrete form of the “lexical spelling” -- the underlying morpheme. In the word sum, conventions can be used to mark the suffixing changes that occur during word formation. This lets us inspect the full lexical spelling on one side of a word sum, and how that relates to the surface realization of that spelling on the other.

The research in morphological instruction has been growing, and the initial meta-analyses have found that not only does morphological instruction benefit all learners, the largest benefit is for the youngest, and less able students. This is in direct contradiction to over two decades of the untested assumption in the research that morphological instruction should be postponed for less able and younger students.
These findings are also despite what I consider to be deficient morphological instruction. We studied 22 morphological interventions in our meta-analysis (Bowers, Kirby, & Deacon, 2010). Only five of those studies even addressed the central fact (highlighted by the “lexical spelling” concept) that written morphemes are consistent in spelling despite pronunciation shifts. My own intervention was the only one of these studies to make use of the word sum and matrix.

Although there are exciting developments in the research on this instruction, for me the most exciting result of Carol Chomsky’s work is how Real Spelling leveraged her understanding as a way to facilitate the formation of a world-wide community of learners (students and teachers) who are joyously diving into developing their understanding of our writing system through scientific inquiry. My work with this instruction has taken me to schools in almost every continent.

Here are some examples of this learning that I think would bring a smile to your face…

- See this video from a Grade 5 class in a public school in Wisconsin in which students explain why they love studying orthography.

- At this link is a video of a Grade 2 student working with matrices and word sums to analyze families of the words <please> and <image> with the author of Real Spelling.

- This link is to a blog by Lyn Anderson in Indonesia who is the world expert on offering the youngest students an understanding of English spelling through scientific inquiry.

- My own website for teachers points to examples of this work from all around the world.

I know that anecdotal evidence and testimonials should be considered very skeptically. Nonetheless, I want to share just one recent email from a parent of an 12-year-old autistic child labelled with reading and spelling problems that I tutored for 5 sessions via video conference.

It [this work] changes a person on a fundamental level; it is like coming out of a cave and seeing the world. It touches everything. One of the best parts is how fired up we all feel when we see a word. You can grab the word by the tail and take it as far as you like in bits and pieces and on the journey things unfold in multiple ways that you can’t foresee. It is also unifying for a family because we have a shared history of word exploration. Last night, when my husband was reading bedtime story, I heard him begin to ask the kids about a possibly tricky word meaning <miscreant> and even he, on the periphery of our learning, exclaimed, “Wait a minute! You are word scientists! What can you do with this word?” It was awesome because Nemo and Sigourney dug in with gusto and were so excited to discover that the character was wrongly created, but Nemo wisely suggested that we look at etymonline in the morning to be sure (turned out to be from a different Latin base [root]). All day words call to us, to dig deeper, to draw the rewards of digging and sifting and knowledge and connection is the treasure.

This comment signals the kind of thing that only can happen when learners are introduced to the logic of English spelling.

I’m convinced that none of this would have been possible if it were not for the fact that one day Michel Rameau read Carol Chomky’s 1970 paper.
I have been meaning to send some sort of message to you on this for years. The spark that finally made me do it was watching Michel Gondry’s astonishing film about you and the ideas you’ve been working on throughout your life. The principles of scientific thinking that you discuss are profound and clarifying.

In that film, you describe how the long-held overwhelming assumption that things fall to the ground because that is their “natural state” prevented us from wondering why that should be the case -- and that being able to wonder about such a question was the necessary step for learning about gravity. It seems that a similar process has been at work in literacy education. Acceptance of the assumption that spelling is mainly about sound and that it is full of exceptions blocks understanding. One result has been decades of research that has been overwhelmingly focused on trying to refine instruction within the artificially isolated frame of phonological issues.

Accepting the untested assumption that many spellings are “exceptions” negates science. If our hypothesis fails to explain the data -- we are supposed to question our hypotheses, not the data. However, until we are able to wonder whether spelling might not be primarily about marking sound, we can’t move forward in our understanding.

Most people would see my work with children and teachers as primarily about literacy instruction. In fact, my real passion is trying to offer an experience of deepening understanding about the world through scientific inquiry. It was that experience that turned my own understanding upside down after having been blinded by assumptions about spelling for my whole life as a student, and most of my career as a teacher.

Ironically, the ubiquitous misunderstanding of spelling in schools makes it a particularly rich context for learning through scientific inquiry -- and the insight that it might be productive to wonder about alternatives to our long held assumptions.

One way I try to illustrate this is by sharing this entry from my Oxford:

- tion ʃ(ə)n
  suffix
  forming nouns of action, condition, etc., such as completion, relation.

With the help of word sums, even Grade 1 students can be helped to understand that these examples of words with a <-tion> suffix must be false.

*comple + tion ➔ action
*rela + tion ➔ relation

The word sum reminds us that that we don’t have evidence for <comple> or <rela>. Rejecting that hypothesis encourages us to attempt an alternative analysis.

complete/ + ion ➔ action
relate/ + ion ➔ relation

Now we can contrast the clarity of analysis with an <-ion> instead of a *<-tion> suffix based on evidence we understand -- regardless of the source of the hypothesis.
There is good evidence that introducing instruction about morphology brings literacy benefits. But literacy learning is not actually my central goal of my work trying to reframe instruction about the written word as scientific inquiry of how orthography works. It seems to me that an even deeper lesson than literacy learning is made available when children in Grade 1 can use scientific inquiry to learn that even authoritative references like the Oxford dictionary can make mistakes. With such an experience, students and teachers may be more willing to wonder about and investigate assumptions presented in textbooks and in the news media. That's a big transfer to shoot for, but I think stories like the one from that mother attest to the fact that it is possibility.

My current favourite line of yours from Gondry’s movie was “If we are willing to wonder, we can learn.”

Carol Chomsky’s work, and your own planted seeds of understanding that made it possible for an incredibly rich, non-hierarchical community of students and teachers around the world to behave like scientists and wonder about ways we can deepen our understanding and teaching of the written word.

I wanted to make sure that you were aware that Carol Chomsky’s 1970 article was a particular catalyst for this kind of scholarly learning that is happening with students and teachers around the world.

This experience also offers an object lesson for the fact that scientific inquiry is a means to understand the world, and that it is dangerous to accept conventional wisdom without actually taking the basic step of wondering, “why should it be that way and not some other way?”

With my deepest gratitude and respect to you and your late wife for truly changing my life, that of my family -- and countless others.

Sincerely,

Pete Bowers