Some observations on the nature of the inquiry in "structured word inquiry"

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A recent discussion about the word "omnipotent" in an SWI Facebook group grabbed my attention. The **quest**ion that sparked this "**struct**ured word inquiry" was my favourite kind of spelling question -- a scientific one.

What do I mean by that?

First I'll share the exchange, and then I will share my observations about how this discussion provides a helpful context to understand what I mean by "inquiry" in the phrase "structured word inquiry" that I introduced in to describe the instruction in our vocabulary intervention study (Bowers & Kirby, 2010) with Grade 4 and 5 students.

I start off with my response and share those of my colleagues that provide such a rich context for studying the nature of inquiry in structured word inquiry.

The joy of inquiry-led learning...

As is often the case, I came here [the FB group] looking for something, and got captured by a wonderful correspondence. I started to respond in the string, but decided to make a new post that is less likely to get lost in the shuffle. The example of inquiry-led learning and the concepts discussed here are so rich, I may use this text for a post on Real Spellers to share with the wider public SWI community.

This string started with a rich question from my old friend Jenna Melberg who wrote…

Jenna Melberg

When working with the word omnipotent, I have determined that it is a compound word from two separate Latin roots. <omnis> with the sense of all or many and <potentis> with the sense of powerful. If I were to make a list of words that are morphologically related to omnipotent, would the words have to include roots in both omnis and potentis? Could my English base be just <omni>? Or must I include something to reflect both roots? I.e. could omniscient be considered a morphological root of omnipotent? Thanks!

Another old Friend, Lisa, provided a perfect response to push Jenna to revisit her word with a new perspective...

Lisa Klipfel

If I understand your question, a matrix is built around one base. There may happen to be other bases in the matrix that are fixed to it. I think to answer your question is to sketch it out on paper. Also, I would ask how did you derive the English base <omni> from the Latin root <omnis>?

What a great response! Lisa did not just tell Jenna all she new about the structure and history of <omnipotent>, she simply provoked Jenna to consider other possibilities. I was most impressed at how effective the subtle poke in Lisa's last sentence was picked up by Jenna. Can you see how highlighting the link between the Latin root "omnis" Jenna's hypothesized base <omni> poked Jenna into her new hypothesis if this base?

Jenna responded...

Jenna Melberg

I think that I would rethink my English base to be <omn>. My spelling would then be <omn + i + sci + ent>. Would these two words be etymological relatives because they both share the same Latin root <omnis>? Would these two words be morphological relatives because they both share the same English base <omn>?

An aside...

Before my response to Jenna and Lisa, I highlight some notes on conventions I use when writing about orthography. I've re-written this section to be as explicit and clear as possible.

There are key conventions that allow us to be clear when I am writing about historical roots vs. present day English structures. I write historical roots in *italics* which reflects the convention we see in etymological references like Etymonline. This functions to distinguish historical roots from present day English morphemes. (Neither Jenna nor Lisa could use this convention in Facebook.)

The linguistic convention for writing orthographic information is to use angle brackets. So if I want to refer to a written morpheme, I avoid italics and always represent that orthographic structure in angle brackets. Whether I am referring to a morpheme, a grapheme, or just a letter sequence I write them in angle brackets. This is intended to signal the reader to **spell-out** the letter names in the angle brackets instead of trying to pronounce them. If I want to refer to a word that I expect the reader to read as a word ("pronounce" in their head, not spell-out) I use quotation marks. Consider this paragraph on an unrelated orthographic discussion:

> The word "pleasure" is constructed from the base <please> and the suffix <-ure>, which replaces the final, non-syllabic <e>. The <ea> digraph represents the phoneme /iː/ in the word "please" but the phoneme /ɛ/ in Pleasure. The base <please> and all of its morphological relatives go back to the Latin root *plac(ere)* for "to be acceptable, be liked, be approved" according to Etymonline.

If you were to read this paragraph out-loud, the words in quotation marks, "pleasure" and "please" would be pronounced. But when you get to the base of that word in angle brackets, you would not say "please" you would spell-it-out-loud. Those who choose to use my recommendations for how to spell-out-orthographic structure (see here) would also highlight the orthographic structures in the base this way "p - l - ea - s - e". I encourage the reader to try and read the rest of this document according to these conventions. You will see that I address this topic in response to Jenna's question too.

Back to the discussion as written in the FB post...

Great investigating, Jenna! And good clarifying question to explore about compounds.

First of all, good on you for discovering that the first base in <omnipotent> is the bound base <omn> and that the <i> that often follows that base is actually a connecting vowel letter <-i->. One cue for that is in the Latin root *omni* which can be analyzed in Latin to show the Latin suffix in parentheses like this: *omn(is)*. This helps us see that our present day English base derived from the Latin stem *omn-* of the root *omn(is)*. I am confident that this is the understanding Lisa had that she reflected even more subtly than I have in her question.

And it turned out Lisa aimed her response perfectly at your "zone of proximal development." She gave a very small signal that allowed you to do the problem-solving yourself! My use of parentheses above is something that one might do if that first subtle cue didn't grab your attention.

Note, however, even though we can show that the full analysis of <omnipotent> has a base spelled <omn> not <omni>, the following word sum is valid:

omni + potent → omnipotent

This is valid morphological analysis -- it just is not complete. Until you have evidence that you can analyze the <omni> and the <potent> more deeply this is the analysis you should stop at. Scientists should not draw conclusions deeper than their understanding.

This analysis does not violate the structure of any morpheme (it is not a false analysis). It is productive because you could build many words from the "basal construction" <omni>. When your best evidence was that <omni> was a base, it was totally appropriate for you to refer to it with that term. But now that you know <omn> is the actual base, it is your challenge to not refer to <omni> as a base when you refer to that letter sequence as a structure in other words. Look at the first sentence in this paragraph. See how I referred to these complex morphological structures without using the term "base"? That is just one way I deal with this issue. I could also say…

What do you suppose the <omni> structure in "omnipotence" means?

or

Good on you for finding the <omni> basal construction in "omnipotence".

If the basal construction in question is a word, like the <happy> in <happiness> I have another possibility if a student notices the morphological connection between these words. I could say…

Excellent! You are absolutely right. The word <happiness> is build on the word "happy".

In all of these cases, I am celebrating valid morphological analysis without imposing my knowledge of the actual deeper analyses of these words. This is like what Lisa did. It's a way of giving subtle cues without worrying if the person I give them to picks up on them right away. After working with people for a while, they can begin to

notice these subtle cues. But in all cases, it provides a path for the learner to have more agency over their learning. It could be that the incomplete analysis is the most productive understanding for the learner in that moment. To take that generative learning moment and slam it with an additional subtle point may actually have the effect of hindering the original learning. If a subtle cue is missed by the learner, that is reasonable evidence that they were not ready at that moment for this additional information. But crucially, I have not mislead the learner by fixing the thinking of <happy> as a base by using that term. I might plan a future lesson where we investigate a word like <happy> and plant words like "happen" or "perhaps" to see if that sparks an awareness, but as we know, scholarship is about leisure, and there is no need to rush people into ideas that took us a long time to get our heads around!

That is the other challenge you now have as a teacher with this new knowledge. You now have to decide if, when and how to offer your new understanding on those you study with. The reader should consider how much richer Jenna's learning experience is because she identified the bound base <omn> that she first thought was <omni>. It was her own problem solving that got her to this new understanding based on a subtle, well-placed comment by Lisa. Contrast the learning experience Jenna would would have had if Lisa had said with the best of intentions -- "Actually, <omni> is not a base, but a complex structure with a base <omn> followed by the connecting vowel letter <-i->. Part of the evidence for that is from the Latin root *omnis* from which this base derived."

There is nothing "wrong" with that possible detailed response. And at the end of it Jenna would have been presented with the same set of linguistic facts. My guess, however, is that the depth of Jenna's understanding, not only of this word, but the nature of the relationship between etymology and morphology is deeper because she was given the minimal "scaffolding" needed for her to put these pieces together herself. That process likely provides more confidence for noticing and working with these morphological and etymological cues on her own now.

There is no rulebook for these kinds of "teaching choices" about how much to tell in any given moment. There are many cases where I simply tell people I'm studying with orthographic facts that I think are essential for them to understand the most generative concept at hand. If you read on, you'll see plenty of examples of simply "telling" specific facts. There are also plenty of cues planted in what follows that you may or may not notice!

The phrase I use to guide my responses to questions like this is to ask myself:

> What is the most generative aspect of this spelling to address for this audience at this time?

I don't always get it right, but it does remind me to be aware of this aspect of instruction. And it's nothing new. It's just a restatement of the concept of "zone of proximal development".

And finally, to Jenna's actual question!

Jenna asks, "If I were to make a list of words that are morphologically related to omnipotent, would the words have to include roots in both omnis and potentis? Could my English base be just <omni>? Or must I include something to reflect both roots? Could omniscient be considered a morphological root of omnipotent?"

First, we need to unpack a terminology issue in this final sentence, and orthographic conventions for posing such questions in writing.

Jenna writes:

"...could omniscient be considered a morphological root of omnipotent?"

We must avoid this phrase "morphological root". One of the principle confusions around morphological analysis is confusion between morphology and etymology. This is why in SWI, we reserve the term "root" ONLY for etymological concepts. I have been working at picking up on a suggestion by my friend Gail who likes to say "historical root" as a way to making it clear that whatever follows is not English, but the historical source of what ever English word we are studying.

(If this is a topic the reader is interested to dive into more, here is a film on this topic: https://www.youtube.com/watch?v=R233ynnGyGc&t=13s_)

We also have to decide how we want the reader to process our question. In SWI we are always referring to words, morphemes, graphemes etc in our writing. I find it extremely important to mark when something in our sentence is NOT part of the syntax of the sentence, but an object of study.

Here are two options for how I might re-write this sentence to address both of these issues:

"...could "omniscient" be considered to share a morphological base with "omnipotent"?"

or…

"...could <omniscient> be considered to share a morphological base with <omnipotent>?"

In the first case, I expect the reader to pronounce the words "omniscient" and "omnipotent" when they read this sentence. In the second case, I am signalling that they should spell-out those words, as the angle brackets signal orthographic information. Either is fine, but I avoid letting the word/orthographic structure being written about looking like any other word in the syntax of the sentence.

So what about the content of this question!

I think you've already got to it, but it is well worth using this question to define what it means to say two words are in the "same morphological family" that can be represented in the same matrix. This is simply asking if the two words share a same base element. And to share the same base element, both words must be traceable back to the same historical root.

Here are two valid word sums for your two words:

omn + i + sci + ent ➔ omniscient

onm + i + potent ➔ omnipotent

If we study the etymology of these words, we will find both can be traced back to the historical Latin root *omn(is)* for "all, every, the whole, of every kind."

So indeed, we have the evidence to conclude that your two words are in the same morphological family. The fact that both of these words are compounds (have more than one base) does not negate the fact that they do share one base element in common. Similarly, the words "house" "housing" "housed" and "doghouse" are all in the same morphological family even though one of those words has a second base. They are all members of the <house> morphological family. Only one of them is in the <dog> morphological family.

Finally, I've pasted a screen shot of a favourite "word net" from Real Spelling. This net is on <sci> which derives from the historical Latin root *sc(ire)* for "to know". I've marked all the bound base elements in this word net with a red rounded rectangle. You'll see that your hypothesis of a bound base <omn> is corroborated, and you may now be curious about investigating other bound bases this image may provoke you to notice.

Hope that helps! I love how the richest learning is often not actually about the the specific question posed. Instead it is the generative learning opportunities that present themselves by posing a rich question. The key is being open to reconsidering our thinking as we accompany each other on our orthographic learning journeys.

Sincerely,

Pete Bowers

www.wordworkskingston.com
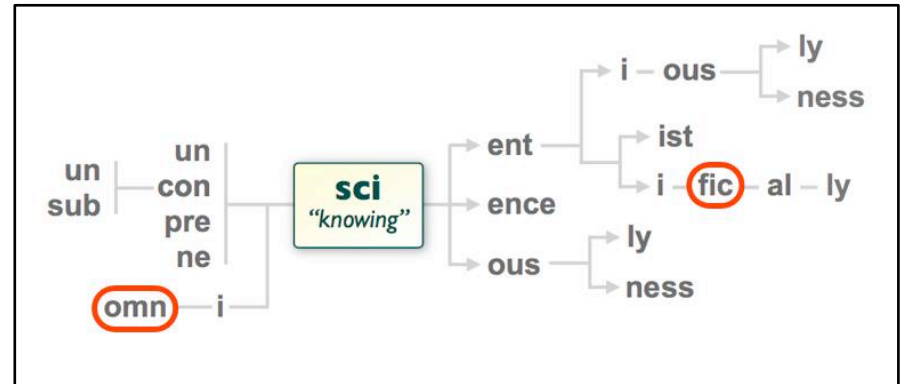
Afterword...

This discussion provides a helpful context to address the source and intended meaning of this phrase "**struct**ured word inquiry." The short story is that this is the phase I used to describe the in**struct**ion in my Grade 4-5 vocabulary intervention that targeted morphology and it's relation to phonology with the use of matrices and word sums (Bowers & Kirby, 2010).

But why this phrase? As a student in the faculty of Education at Queen's University, and then in my 10 years as an elementary teacher, the role of "inquiry" in learning and instruction was a prime interest for me. At the same time, I regularly saw what I judged to be extremely problematic instruction in the name of inquiry. Too often educators mistake "inquiry" or "discovery learning" as meaning that they should not destroy the learning experience with explicit instruction. I hope to make it very clear that explicit instruction about how the orthography system works is an absolute necessity in SWI. Explicit instruction is a crucial aspect of any rich

inquiry. This issue is choosing what to be explicit about in any given moment with a given audience.

I remember a wise critique about this issue from my teacher college days that always stuck with me. To facilitate effective inquiry, the teacher has the responsibility to *structure* inquiry into any topic so that students have access to the concepts that are necessary to make the targeted learning accessible. That critique used the phrase "structured inquiry" to provide a distinction of just general "inquiry."

Consider an example from a math instruction context. I have great lessons to help children inquire into what happens when you multiply a whole number by a decimal less than one. Children who not know their multiplication tables, however, can not engage with this lesson unless they are given a calculator. Often concept A is required to be able to inquire about concept B. If we don't ensure learners have access to concept A, there is zero value in "inquiring" into concept B.

In Lisa's response to Jenna, she poses the **quest**ion, "Also, I would ask how did you derive the English base <omni> from the Latin root <omnis>?" As evidenced by Jenna's follow-up comment, Lisa targeted this question perfectly. The same question to a novice in SWI, however, would be meaningless and frustrating.

This background about the difference between "inquiry" and "structured inquiry" explicitly informed my phrase "structured word inquiry" to describe the instruction in my intervention study. This instruction is about not *just* about structuring inquiry with a scientific approach, it is also about inquiry into the structure of written words.

The idea of structured inquiry is just a re-statement of Vygotsky's concept of "zone of proximal development" which I referenced in my response to Jenna and Lisa. This is the view that instruction should provide enough information needed to problem solve successfully, but not so much that the student does not need process the new understanding through problem-solving. The ideal instructional "zone" targets concepts beyond what a student could understand independently, but not so high that they do not have the capacity to understand.

Click HERE for an article on cognitive load theory by Schnotz and Christian Kürschner (2007) that informs SWI and explicitly invoked the role of zone of proximal development.

The reason I was so pleased with the discussion I saw between Jenna and Lisa is that it seemed to me that they provided a brilliant exemplar of the kind of inquiry I hope to facilitate with those studying through structured word inquiry. Crucially, this inquiry needs to be understood as *scientific in**quiry**.*

Jenna posed a scientific question about the structure and meaning of this word, and how it might relate to other words words with similar spellings. What made it a "scientific" question?

She provided detailed evidence to support her hypotheses, and she identified what parts of her investigation she knew she did not understand. I often argue that this is a genre of writing I would love to see explicitly targeted in schools -- the genre of posing a "scientific question."

Jenna was motivated to ask this kind of detailed scientific question because she works with a clear understanding of the fundamental fact that English orthography is an extremely reliable system that makes sense. What teacher would continue to investigate spelling scientifically for years if doing so wasn't resulting in ever-deepening understanding, and improvement of their instructional practice?

It's the false assumption that English spelling is irregular that prevents most people from even conceiving that they could ask a scientific spelling question.

Because Jenna has been studying spelling scientifically for years, she is able to notice subtle orthographic cues and investigate quite far before she identifies what she doesn't understand. The question she asks is evidence of a rich knowledge of morphology and etymology and how they inform the structure-meaning connections in English.

It is that on-going experience that allows her to pose an excellent scientific orthographic question. This is not a question one asks in the early stages of working with structured word inquiry -- but one can't get to that level of knowledge without starting somewhere. It is the detail in her question that allows another colleague, Lisa Klipfel, to provide a short, extremely productive response that doesn't "tell" Jenna the answer she's looking for. Instead Lisa's response provides just the information Jen needed to rethink her hypothesis and come to a deeper understanding. Yes she learned more about the spelling-meaning connection of the words she was studying. But far more importantly, the detail she put into her question allowed first Lisa, and then me, to explicitly target

concepts and conventions that we could see she needed support with.

Big fat juicy mistakes! (The joy of falsification)

Note how crucial Jenna's "mis-takes" were for Lisa and me to explicitly target what we judged to be the most generative concepts for Jenna at this time. Of course falsification is essential to any scientific inquiry. Thus I work to ensure that people trying to understand English orthography scientifically become totally comfortable with having their misunderstandings addressed in a constructive way.

Scientists should delight in having someone identify a flaw in their assumptions. We do not want to continue thinking something that is not true, so we celebrate having others show us the evidence that our original thinking was flawed, and that there is a better, more elegant, way of understanding something. This is why I try to celebrate "big fat juicy mistakes" with the students and teachers I work with. If we treat "mistakes" as embarrassing or things to be avoided, you very soon stop getting people posing questions! Jenna was open to risking sharing her thinking in a FB forum. Lisa was skilled at provoking Jenna to identify and refine her thinking in a way that brought the joy of new understanding with not a whiff of embarrassment at any "mistakes."

And because both Jenna and Lisa were happy to give their permission to share their thinking in this public forum, we all get to learn from their brilliant example of structured word inquiry.

And finally…

As you were reading, you may have noticed bolding of certain structures along the way. On this page I have included some representations of orthographic families related to that bolding for you to in**vestig**ate. Perhaps exploring these will give you new orthographic insights that deepen your understanding of the sense and meaning of those words.

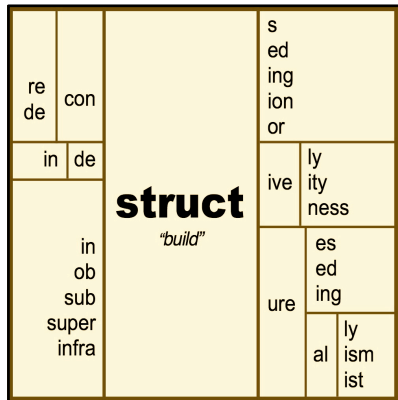See the newly available on-line version of the Real Spelling Tool Box 2 if you are interested in resources like the 70 matrices resource and the incredibly rich orthographic themes in that reference.
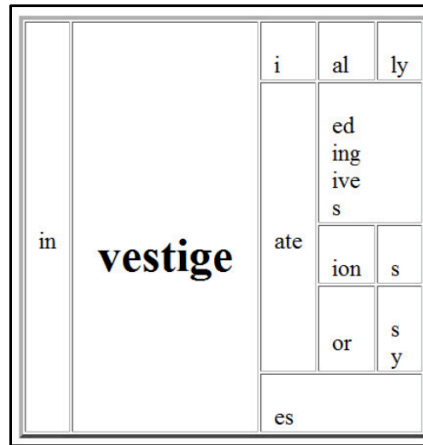
Following the "footprints" of orthography to find the base of <investigate>

The matrix at left was constructed by a young student who decided to investigate the word "investigate." This was how I was introduced to the fact that the base of that word is the free base <vestige>! If you want to find the orthographic denotation of this base, you can follow the trail in Etymonline, or read this old post from the Old Grouch on Real Spellers.

in	vestige	i	al	ly
		ed ing ive s		
		ate	ion	s
			or	s y
	es			

These matrices for <struct> an <take> are from the Real Spelling 70 matrices resource.

re de	con			s ed ing ion or	
in	de		ive	ly ity ness	
		struct "build"			
in ob sub super infra			ure	es ed ing	
				al	ly ism ist

struct + ure → **struct**ure

in + **struct** + ion → in**struct**ion

Base <struct> from
L. *stru(ere), struct(us)* "build"

re			s	
un	mis		er able ably	
in over under up breath care		**take**	en	ly
			ing	s
			away over	

mis + take ➔ mistake

To "mistake" something is simply to "take" it the wrong way!

inquisitive
requisite
acquisition

conquer

| un in re con | **quest** | s ing ed | |
| | | ion | able s ing |

| in re ac | **quire** | s ing ed y | |
| | | ment | s |

Latin Root

quaer(ere)
'ask, seek, gain'
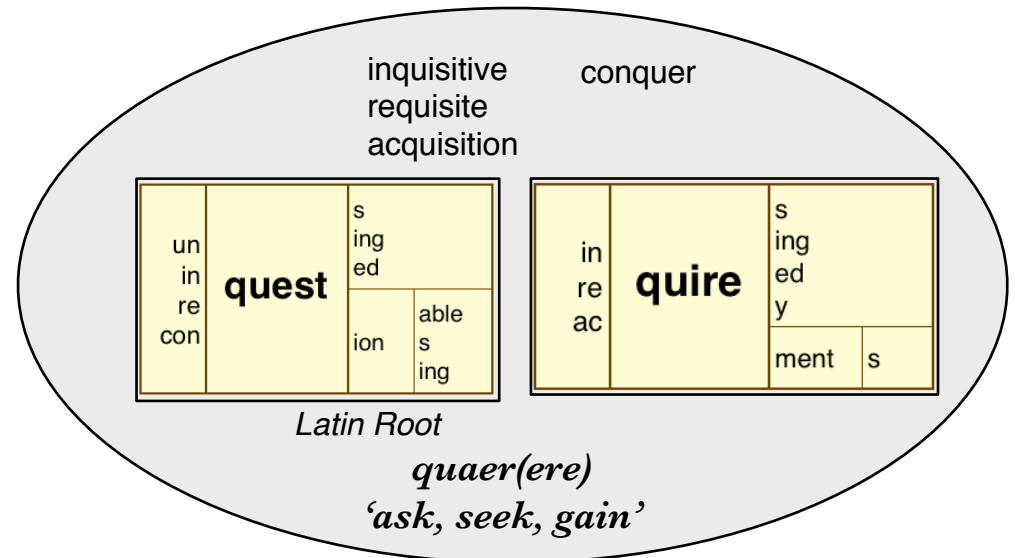
Click HERE to see a YouTube video addressing the interrelationship of morphology and etymology and how to read this diagram of that relationship.