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**Stalking the Brazen Hussy:
Computer-aided Lexical Analysis of Participial
Adjectives using the Tc1 Programming Language**

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Introduction

Main Entry: braze
 Pronunciation: 'brAz
 Function: transitive verb
 Inflected Form(s): brazed; braz·ing
 Etymology: irregular from brass
 Date: 1602
 archaic : HARDEN.

-- Merriam-Webster on-line dictionary

Well, imagine the author's surprise. It turns out "brazen" is not the past participle of "braze", and is therefore *not* a proper participial adjective. So the first thing we discover in this paper is that its title is based upon a misconception! But, as our parents should have warned us, when you go stalking brazen hussies, you're bound to be disappointed. But they're still more fun than your garden-variety hussy; so the title stays...

Participial adjectives are adjectives derived from the present and past participles of verbs. It is perhaps easiest to demonstrate. Consider this sentence involving the transitive verb "complicate":

The lack of documentation complicated the resolution of the estate.

"Complicate", generates the present and past participles; "complicating" and "complicated", respectively. It so happens that these can be used fairly freely as adjectives:

There was a complicating lack of documentation.

It was a complicated estate resolution.

In the spring of 2002, the author was teaching a second-level ESL grammar class from a

useful exercise book by Azar. At the time, we were looking at Participial Adjectives [Azar, p. 235]. Zealous to get the students “ramped up” on these wonderful things, the author made the mistake of assigning the following task to be performed by the students as an in-class exercise: Pick a verb out of the blue, and create two companion sentences using adjectives derived from its participles (present and past). The poor students whipped out paper and pencil and began, practically in vain as it turns out, to trudge through verbs in search of one that would prove amenable. When the author saw their grief, he took a moment out to try the exercise himself. In fact, the assignment was much harder than expected, and rightfully so.

So: How many participial adjectives are there? How far-flung are they in English “verb space”? Would a study turn up any interesting and useful observations or rules regarding when and where one can expect to find or use them? Or is their distribution in our lexico-grammatical space strictly culture-bound and idiomatic; that is to say chaotic; in a manner akin to irregular verb conjugations, prepositions or idiomatic expressions? Are there variant, or even “false” participial adjective forms?

An effort to come to a greater understanding of the place and scope of participial adjectives led to the use of a computer and a free on-line English lexicon, and ultimately to the writing of this paper. And, as it so often turns out, much of the discovery took place during data entry; *en route* to the “hard” data conclusions.

John Ousterhout’s Tc1 programming language

Dr. John Ousterhout developed tc1 (Tool Command Language) in 1987. This started

out as a simple *scripting* language interpreter that could be easily embedded in applications written to facilitate integrated circuit design. In 1990, he started providing the source code to academics and interested industry people. Largely in response to a perceived need to compete against other general-purpose scripting languages like Perl and Python, `tcl` was extended and generalized, and by 1997 evolved to its present form as a precompiled (optimized for speed) scripting language, suitable for use in high-level quick-turnaround components of larger complex systems, or for small-to-medium scale application development.

`Tcl` is simple and powerful. The simplicity lies in the fact that, even after over ten years of evolution, the core language still consists of 11 simple parse rules. Its power lies in the productivity that comes from that simplicity, coupled with a large command set that covers many "standard" data processing needs; flow control, list variables and list processing, associative arrays (a quick and simple dereferencing mechanism central to the applications cited in this paper), math, system services access, and string processing. In addition to these basic services, `tcl` also comes with a plethora of "third party" packages that provide many additional functions. However, the computer-aided tasks described in this paper used the most basic, built-in functions of `tcl`. While the author did his work on a SunOS™ system running Solaris™ on Sun Microsystems™ hardware, this work could have been done anywhere, as `tcl` is very portable; that is, it runs on most computers. The work could have even been done on a Windows™ system, although somewhat less conveniently.

Why not “off-the-shelf” corpus analysis tools?

There are many, many corpus analysis tools available for low- or no-cost [Hockey]; why “roll your own” using `tcl`?:

- The `tcl` language is simple; it really isn’t difficult to learn.
- Some of these third-party analysis tools feature custom languages for control and manipulation. Given that you may have to learn a language anyway, why not learn a language that gives you control at all levels?
- It affords a degree of control that you might not get from something off-the-shelf:
 - Third party offerings might not offer functionality you need.
 - In conjunction with a system that facilitates system integration (e.g., Linux, or some other flavor of Unix), you are not prohibited from using `tcl` as a “glue” to integrate third party subsystems, saving development time and energy.

“Free Beer!” Using an online word list

Computer-based lexical analysis needs a computer-based lexicon to work with, and the author found an excellent one maintained by Australian Luke Metcalf [Metcalf]. A little pre-processing of the captured exhaustive list of words, abbreviations, symbols and so forth produced a simple Unix “flat” text file, one word per line. This was the starting point for further research.

But first: A Bit of Fun

When you have access to an exhaustive word list and the means to process it, there is a natural inclination to try one’s hand at more playful tasks. Word puzzles provide a natural field for algorithm exploration in the lexical processing domain.

In response to a posting in the `alt.anagrams` newsgroup, requesting single-word anagrams, the author wrote a short program to ferret out these anagrams from the word list, and

posted both the program and results on his website at UTD [Zajac; "...here..."]. Then, the author wrote a program to solve "word merge" puzzles, where the task is to transform one word into another, changing one letter at a time, using the smallest number of steps.

Here are some examples of results from this program:

dog	si t	tal k	beer	roof	bi rd	bl ack
do <u>t</u>	fi t	tan <u>k</u>	bee <u>s</u>	ro <u>l</u> f	gi rd	cl <u>i</u> ck
co <u>t</u>	fa <u>t</u>	tan <u>g</u>	be <u>t</u> s	ro <u>l</u> e	gi r <u>t</u>	chi <u>c</u> k
ca <u>t</u>	fa <u>y</u>	sa <u>n</u> g	ne <u>t</u> s	to <u>l</u> e	gi <u>s</u> t	chi <u>n</u> k
	fl <u>y</u>	si <u>n</u> g	nu <u>t</u> s	ti <u>l</u> e	fi <u>s</u> t	chi <u>n</u> e
					fi <u>sh</u>	whi <u>n</u> e
						whi <u>t</u> e

word merges from the "wordge" tcl program

Stalking the Brazen Hussy

Back to the matter at hand. How does one start with a word list and programming language and arrive at useful information about Participial Adjectives? Following is a blow-by-blow of the author's computer-aided ruminations:

1. Finding the Verbs

First, you must winnow out the non-verb parts-of-speech words in the word list. The algorithm used was simple: Since the "-ing" rule for present participles is one of the few "hard" rules in English, it was easy to scare up most (if not all) verbs by a simple process of identifying words in the list which also had an "-ing" suffixed counterpart also in the list. Subsequent to this, a quick visual scan to find and eliminate "false findings" was done. For example, the fact that "m" (noun; the letter "M") and "ming" (noun; the

Chinese dynasty) exist in the master word list resulted in the proffering of “m” as a verb. This was manually deleted from the final verb list.

2. *“Pare down” the list*

The final verb list had over 10,000 entries. There was no way the author would be able to come up with transitive, intransitive, present and past participial attributes on that many verbs. Besides, for the purposes of statistical analysis, it would make more sense to work on a list of “mainstream” verbs. So the next step was to trim this list down to something a little more manageable. A short program called “pppicker” was written to trudge through the list, allowing the author to quickly select the most commonly used verbs from the vast herd of lesser-used, obscure verbs. At the end of this process, a smaller list of 2,630 verbs was arrived at.

3. *Map these verbs to present and past participles*

This next step wasn’t absolutely necessary, and involved a bit of “busy work” in that some hand-picking of past participles was required. Nonetheless, the author felt it would aid in visualization during the adjective recognition phase to actually see the participles displayed on the screen. Besides, future projects might be able to use this information.

The author wrote a short program called “findpastp” which aided in identifying and mapping the past participles. Because the rule for past participles isn’t as straightforward as for present participles, the program would often have to ask the author to select one of several possible alternative past participles, or to type one in. It turns out that this algorithm wasn’t bulletproof; it automatically chose a number of illegitimate past

participles; some additional hand-preening of the list should be done before any future work which depends upon “clean” past participles.

4. *Manually assign attributes (trans., intrans., present-/past-participial adj.)*

At this point, the hard work of poring through the list and assigning attributes to each verb began. The attributes of interest are:

1. **Transitive.** Does the verb have a transitive form?
2. **Intransitive.** Does the verb have an intransitive form?
3. **Present Participial Adjective.** Is the present participle of the verb a generally useful adjective?
4. **Past Participial Adjective.** Is the past participle of the verb a generally useful adjective?

To accomplish this task, a program called “ppaugment” was written. This steps through the yet-unprocessed verbs, prompting the User for input on applicable attributes.

Here’s a partial console of a session, in which user input is shown in **boldface**:

```

]2;nova:/home/001/r/ra/razajac {nova:~} cd ppWORK/
]2;nova:/home/001/r/ra/razajac/ppWORK {nova:~/ppWORK} ls
mvAUG*                ppbiglist.out                ppcommon.tcl
mvREM*                ppbiglistORIGINAL.out       ppcommonlist.out
pp.tcl                ppbiglistREMAINS.out        pppicker*
ppaugment*            ppboiloff*                   ppuncommonlist.out
]2;nova:/home/001/r/ra/razajac/ppWORK {nova:~/ppWORK} ./ppaugment

abnegate                abnegating                abnegated
  [T]rans, [I]ntrans, p[R]esent part.adj, p[A]st part.adj. --> t

abolish                abolishing                abolished
  [T]rans, [I]ntrans, p[R]esent part.adj, p[A]st part.adj. --> ta

abort                aborting                aborted
  [T]rans, [I]ntrans, p[R]esent part.adj, p[A]st part.adj. --> ta

```

abridge	abridging	abridged	
[T]rans, [I]ntrans, p[R]esent part.adj,	p[A]st part.adj.	-->	ta
abscond	absconding	absconded	
[T]rans, [I]ntrans, p[R]esent part.adj,	p[A]st part.adj.	-->	i
absolve	absolving	absolved	
[T]rans, [I]ntrans, p[R]esent part.adj,	p[A]st part.adj.	-->	t
absorb	absorbing	absorbed	
[T]rans, [I]ntrans, p[R]esent part.adj,	p[A]st part.adj.	-->	tr
abstain	abstaining	abstained	
[T]rans, [I]ntrans, p[R]esent part.adj,	p[A]st part.adj.	-->	ir

Attributes are selected by typing in one to four letters (“tira”), each one indicating an attribute. The program then assigns the selected attribute or attributes to the verb. These are “Boolean” (true/false, yes/no) attributes; it simply indicates that the attribute **does** or **does not** apply. The facts, as might be expected, are much more complex and will be discussed below.

Results

A statistical breakdown of the results can be seen at the author’s UTD web site [Zajac; “Stalking...”]. This is a `tcl`-based CGI (Common Gateway Interface) program that is invoked via a simple browser access, just like a normal web interaction. The advantage here is that all future updates (additions, deletions, fixes) to the base verb data will be immediately reflected in this interface. It looks like this:

Stalking the Brazen Hussy: Participial Adjectives

Karnaugh map of verb attributes for 2630 selected verbs.		Present PA		Present PA	
		Trans	Trans	Trans	Trans
Past PA	Intrans	<u>50</u> _(1.9%)	0 _(0.0%)	0 _(0.0%)	<u>86</u> _(3.3%)
	Intrans	<u>59</u> _(2.2%)			<u>277</u> _(10.5%)
Past PA	Intrans	<u>70</u> _(2.7%)			<u>330</u> _(12.5%)
	Intrans	<u>70</u> _(2.7%)	<u>130</u> _(4.9%)	<u>90</u> _(3.4%)	<u>153</u> _(5.8%)

[Ron A. Zajac's UTD Homepage](#) < razajac@utdallas.edu >

Since each verb has four Boolean attributes, it makes sense that each verb can belong to only one of 16 possible categories. “Past PA” means there *is* a past participial adjective, and “Past PA” means there is *not* one. Since there is no such thing as a verb that has neither a transitive nor intransitive form, the middle four squares are irrelevant and ignored. The zero values in the top middle two squares reflect the fact that verbs for which there is no transitive form cannot possibly have a legitimate past participial adjective.

The numbers (e.g., “50”) are hyperlinked. You can click on these links to see the tallied verbs. For example, if you click on the “50”, you get this screen:

Stalking the Brazen Hussy: Participial Adjectives

Transitive
Intransitive
Present Participial Adjective
Past Participial Adjective

abdicate	connect	disturb	fold	hurry	seal
abstract	corrupt	drown	frighten	impose	soak
accelerate	crack	dry	fry	knit	stain
activate	crash	echo	gather	match	transform
age	cure	erode	grow	open	unwind
balance	curse	exhibit	hang	publish	vary
boil	curve	explode	heal	relax	want
hungle	darken	fade	heat	repeat	waste
burn	develop				

Ron A. Zajac's UTD Homepage <razajac@utdallas.edu >

And you can see the four attributes, followed by the 50 verbs. If you scrutinize these verbs, you'll probably find some errors, or at least dubious claims. Take, for example, "darken". We can think of many adjectival uses for "darkening" ("darkening sky") and "darkened" ("darkened [with age] parchment"). But is it possible to find one sentence with "darken" being used transitively, from which can be derived two substatements using the participial adjectives? Not likely.

Anything Interesting?

The most obvious conclusion one can draw from these numbers is the fact that generally usable present *and* past participial adjectives are derivable from verbs in only a significant minority of cases; 4.1%, in fact. This explains the above-mentioned exercise debacle in the ESL grammar class. Even if you're only interested in verbs that sport at least one participial adjective (present *and/or* past), 28.2% of the verbs polled meet the

requirement.

Before attempting to draw any more refined conclusions however, it would be right to draw attention to the many interesting “gotchas”, exceptions, variations and trivialities that popped up during data entry. These subtleties and exceptions highlight two things: That participial adjectives are more interesting and less amenable to a strict “rules-based” approach than expected, and that this complexity casts some aspersions on the otherwise well-intentioned Boolean approach to attribution described in this paper. Beyond the shadow of a doubt, mistakes of oversimplification were made.

Special Cases

Sense-based Participialization. Certain verbs might have participial adjectives in one sense, but not another. For example, "act" has the present participial adjective "acting" in reference to one's temporary function in an organizational role, as in "acting manager". However, the adjective "acting" is not used in reference to theatrical work (*"acting person". One uses "actor" or “actress”, instead). But of course, there are exceptions to everything, as evidenced by the merging of these two senses during the Reagan years in the popular expression “acting president”.

Another example:

He checked the radiator.

Does not lead to:

The checked radiator still seemed to be giving trouble.

However:

He checked off the task in the list.

Does allow for:

The checked task still appeared to have been left undone.

Related to this topic, consider this interesting fact about the verb "gather". Both participial adjectives are used, but one derives from the transitive and the other from the intransitive usages. Here's an example of the transitive:

He gathered the crowd together for the show.

Which produces the past participial adjective:

The gathered crowd waited patiently for him to start the show.

Whereas the intransitive usage:

The crowd gathered together for the show.

Produces the present participial

The gathering crowd waited patiently for the show to start.

It's important to observe that one would limit one's use of the present participial adjective to the intransitive sense, and the past participial adjective to the transitive sense.

Idiomatic restrictions. Consider that:

The fellow trusted the huckster.

Can easily refer to a "trusting fellow", but that:

The victim trusted the huckster

Does not readily refer to a "trusting victim".

There are strictly bounded acceptable uses for "amass" ("amassed fortune"), but an almost carte blanche acceptability for "amuse". There are an enormous number of "amusing" things which are amusing to many kinds of "amused" people, who evidence their amusement via "amused" expressions on their faces, "amused" verbal responses, and even "amused" silences.

<i>Verb</i>	<i>Participial Adjective</i>	<i>Acceptable Use</i>	<i>Un- or Less-Acceptable Use</i>
amble	ambling	gait	man
arrange	arranged	marriages	flowers
arrive	arriving	flight	couple
aspire	aspiring	actress	boy
bake	baked	potato	pie
ban	banned	books	language
bind	binding	resolution	doctor
bind	bound	collection	wound

There needed to be a feeling that a participial adjective was "generally" usable, in order for its attribute to be given to the infinitive.

"Meaning Shift". This is sort of like "Sense-based Participialization", except that the participialization is allowed for either sense, but may shift the meaning. Consider:

I practice juggling every day.

I am a practicing juggler.

In these sentences, the meaning of practice is different; in the first, I work on my abilities, in the second, I actually use my craft in a professional capacity. The meaning has shifted.

He practices medicine in Chicago.

He is a practicing physician.

In these sentences, the meaning is the same; the doctor plies his skills in the labor market.

Tense Override. Another oddity encountered in the course of data analysis was the case of "react":

The compounds react to produce the polymer.

Applying the participial adjectives rule in a normal way, one would assume the following result:

When reacting compounds produce heat, this is called an exothermic
reaction.

Which sounds fine. However:

The reacted compounds produce a pure product, which proceeds
immediately to the next stage in the manufacturing process.

...also sounds fine. In the first sentence one is talking about chemicals in the process of reacting, and the second concerns itself with the products of the finished reaction. This indicates a case where tense takes precedence over the subject/object distinction one

normally associates with participial adjectives.

Special-purpose Adjectives. Another way to look at whether a participial adjective exists for a verb is to check for a special non-participial adjectival form. If it exists, it appears to trump the participial form. For example, one might say:

He removed the rotted stump.

...but you'd be wrong, or at least perhaps a little behind the times. One should say

He removed the rotten stump.

Again:

He saw his doctor about his persisting cough.

Is almost acceptable, but not quite.

He saw his doctor about his persistent cough.

...is.

So the general rule here is; use participial adjectives only if 1) the usage is conventional, and 2) it isn't bested by a special-purpose non-participial adjective, designed for the job.

Phrasal Verbs. "Agree," by itself, is an intransitive verb and is not, therefore, in possession of an object to which a past participial adjective could apply. However, the phrasal verb "agree upon," is transitive. Consider this sentence:

The team captains agreed upon the rule prior to starting the games.

This can easily lead to this common usage:

The officials threw out the previously **agreed upon** rule in mid-game.

Other examples:

"alluded to [incident]"..."approved of [methods]"..."hoped for [results]"

Adverb “Kickers”. Sometimes, adverbs are idiomatically bound to a participial adjective, typically with a hyphen:

He bred horses on his ranch for sale.

Does not lead to:

He sold bred horses.

However:

He bred horses especially for the race track.

Might lead to:

He sold specially-bred horses to race tracks.

Here's another example. Consider:

He buttoned his spotless shirt.

Does not happily imply:

His buttoned shirt was spotless.

Whereas:

He buttoned his spotless shirt right up to the collar.

Can generate:

His buttoned-up shirt was spotless.

Also, one would never say "discovered land", whereas "newly-discovered land" is acceptable.

In all these cases, the key appears to be that, in normal use, the verb-noun connection is a little too *ordinary*; horses are almost always bred, shirts are almost always buttoned, the availability of land for exploitation was invariably preceded by its discovery. By themselves, they don't warrant being dignified with an adjectival role. However, it appears that the addition of an adverb or adverbial phrase adds enough of a "kick" to push the participle "over the edge" into usability as an adjective.

Artistic License. Another interesting sphere of influence over the appropriateness of specific participial adjectives involves artistic license.

While you would not say:

The cheating man was taken to the management office for questioning.

Hank Williams might say:

"Your cheating heart/will tell on you...."

While you would probably not say:

The giving man was thanked by the Salvation Army bell-ringer.

Shel Silverstein might entitle a book:

The Giving Tree

Idiomatic Indirection. It's interesting to note another guise under which the adjectival use of a participle is only apparent, and not a true instance. For example, the expression "bathing suit" does not imply that the suit, itself, bathes anything. Similarly, a "begging bowl" doesn't imply that a bowl can beg, neither should the expression "coloring book" be construed to imply that certain books can color. However, a "crunching sound" could be derived from the following sentence:

The sound of the child's candy wrapper crunched loudly in our ears.

And the expression:

We were pleased to find that the chairs folded and stacked very easily.

Can produce;

We were pleased to find that the folding chairs stacked very neatly.

However, from what can we derive the expression "a joking manner"?:

*His manner joked with the bemused crowd.

Or "pleased expression"?:

*Her little joke pleased his expression.

There are many cases of this kind of "indirection" in adjectival uses of participles. In the case above, her joke pleased the man, which translated into a "pleased expression". But, for the purposes of this study, this kind of indirection will not be cited as a strict example of a proper participial adjective.

Technical Overgeneralization. One spur to the free (or freer) adjectivization of participles seems to be related to the technical nature of the environment. Sometimes a usage which one would never encounter under ordinary circumstances can show up in specialized *milieux*. For example, one would not talk about an "attracting young woman", or say "I was an attracted man". But physics literature or lectures might refer to "attracting" or "attracted" physical masses, "emitting surfaces" or "emitted particles." This is probably because scientifically minded persons are used to finding general rules, then deriving things from those rules. When this tendency to rely on simple rules is applied to language, however, you wind up with "overgeneralization", which is acutely apparent to native speakers. But when you put a bunch of scientists or technicians together in a room, there will be a tendency to freely ply the participial adjective rule to generate handy pairs of usages for the purpose of discussion; they're not interested in grammar, they want to get on with the business of talking about the phenomena at hand. This may also go some way toward explaining the communication gap that sometimes opens up when non-technical people are listening in on a technical conversation. Even if the technical people take pains to cut out the specialized terminology, their discourse may still be heard as "techy". This may be due to overgeneralization in the area of participial

adjective generation, as well as other areas, and reflects a specialized style of communication that dips below the lexical “jargon” level.

The expression "a replied email" not only reflects an overgeneralization with respect to the production of a participial adjective, but also sheds light on a recent popular emergence of a transitive sense for the verb "reply", as in "he replied her email."

Conversely, MIS “automation speak” has fostered an intransitive sense for the word "update". When a system component changes its own data, “it updates.” In the telecom industry, there are "calling" and "called" parties in a phone call. In all these instances, function takes precedence over form in the minds of people who are just trying to find short, intuitive, and simple expedients to effective technical communication.

Does the willingness of knowledge professionals to engage in the free application of the participial adjective rule comment on the mentality of that group with respect to the technical (vs. humanities) aspect of their cognitive focus? Military experts talk about "occupying" armies or "occupied" territories in their shop talk, and drug control experts refer to "controlled substances". This might indicate a kind of technocratic bent in an area where one might have expected or perhaps preferred to hear a greater humanities orientation, since the focus of public service is supposed to be the "polity"; a group consisting largely of human beings.

A pattern

The author found that verbs with the prefix "mis-" are predominantly transitive and have generally usable past participial adjectives.

He was laboring under the **mistaken** notion that she actually cared.
He police let the **misidentified** man go.
The mayor had to deal with a **misinformed** public.
The salesman had work hard to recover from his **misinterpreted** remark.
She had to go to work without her **mislaid** watch.
She suffered a great deal as a result of her sadly **misplaced** trust.
He quickly corrected the response to his **misunderstood** statement.
She had to take the **misused** garden shears in for sharpening.

Implications for ESL Teaching

Moral: At the very least, it's important to point out to students that one does not use the participial adjectives rule to generate said adjectives at will. Rather, the rule explains the occasional existence of these adjectives. Correct usage still requires an acquired knowledge of acceptable forms in the same way one acquires forms for prepositions, orthographic (spelling) irregularities, irregular past tense conjugations, idiomatic expressions, and so forth.

More Work?

First of all, the current data reflects very subjective notions: When *is* a participle *truly* adjectival? Also, since this data was hastily put together and processed, there are plenty of outright mistakes.

This exercise naturally points to the possibility of the use of richer data structures to capture more of this subjective data, which could render the system more useful in applied linguistic fields such as ESL pedagogy.

For example, it might be fun and instructive to replace the simple Boolean attributions with lists. In the case of verbs with meaningful participial adjectives, this would be a list of applicable nouns forming conventional adjectival idioms (e.g.,

differing ⇒ opinions
views
perspectives

). In the case of verbs without such adjectives, a list of one or more suitable replacement "special-purpose" adjectives (e.g.,

responding ⇒ responsive

) could be given.

It might be interesting to do a corpus search and analysis of participial adjectives in real-world use. One application would be to pick out apparent participial adjective forms, and winnow genuine ("consenting adults") from the seeming ("bragging rights") instances. These results could feed the lists mentioned above, building up a base of proper participial adjectives usages, as well as the special-purpose forms that can eclipse them.

It is important to realize that the attributes assigned to the verbs in this study--with respect to whether or not they possess legitimate participial adjectival forms--was completely subjective. The determinations were made by the author, on the fly, based on his moment-by-moment, seat-of-the-pants evaluation of each verb in question. The resultant database is certainly flawed and, as such, can perhaps only shed some light on larger aggregate questions involving the relative prevalence of one form over another, or general apparent correlations between forms. Corpus analysis would help to reduce this kind of subjective error, and might also shed even further light on the nature of these fascinating adjectives.

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