Notes from the Claremont Shakespeare Clinic

Ward Elliott

The Claremont Shakespeare Clinic, a series of teams of undergraduate researchers from the Claremont Colleges, flourished between 1987 and 1994 and did many remarkable things which probably would not have been countenanced by most English Departments of the time. They were funded by the Sloan Foundation and reported to the Los Angeles-based Shakespeare Authorship Roundtable. Their charge was to find which of 58 Shakespeare Claimants' poems or plays, and which poems and plays of the Shakespeare Apocrypha and Dubitanda, actually matched Shakespeare's in style. They gathered and edited for computer analysis a large text archive of early modern poems and plays, using the spelling conventions of the then-newly-available electronic *Riverside Shakespeare.* They came up with 51 authorship tests, a third of them completely new, the rest major modifications of previously known methods. They found new ways to aggregate the test results and measure composite Shakespeare discrepancy rapidly and replicably. These tests turned out to be 95-100% accurate in distinguishing known Shakespeare passages of 3,000 words or more from non-Shakespeare. We reported the students' interim and final results in *The Shakespeare Newsletter* and elsewhere, and concluded that none of the 37 Claimants they could test, including the perennial favorites, Oxford, Bacon, and Marlowe, and none of the 20-odd plays and poems of the Shakespeare Apocrypha, remotely approached a Shakespeare match. That included *Funeral Elegy* by WS, which was then taking the Shakespeare world by storm. The Clinic's findings were vigorously attacked by Donald Foster, Michael Egan, and the Oxfordians, among others, but, in our view, the attacks have failed. Foster recanted (his 2002); Egan's case was unanimously rejected by the panel he demanded (Weiss, 2011); the Oxfordians fight on but, in our view, with little but fumes of rhetoric in their tank (Shahan and Whalen, 2010, Elliott and Valenza, 2004, 2010).

The Shakespeare Clinic was revived in the spring of 2010 to study various authorship questions from Shakespeare's early years, using computers. Much of the work is still under way. We have provided alumni and friends of the Clinic with periodic interim reports on the Clinic's progress and suppose that the latest of these might also be of interest to SNL readers. As with the original Shakespeare Clinics, 1987-1994, the client was the Shakespeare Authorship Roundtable, Santa Monica.

I. The 2010-11 Clinics:
new membership, texts, and tools.

1. **Students**. The 2010 Clinic consisted of three Claremont McKenna College (CMC) undergraduates, Jeremy Merrill (Captain), Heather Siegel, and Tova Markowitz. In 2010-11 six more students, Inayat Chaudhry (Captain), Ilsy Melendez, Patrick Paterson, Eli Coon, and Christian Neumeister, carried on the work as my research assistants, two of them, Inayat and Ilsy, as Dunbar Fellows from CMC's Gould Center for the Humanities.

2. **Tasks.** The students chose from a menu of possible tasks, including some new tests — new, unfinished, PC-based versions of the Clinic's traditional mainstays, Intellex and Textcruncher, and a parts-of-speech (POS) tagger made available by Northwestern University in 2009 — and new texts involved in the most recent Shakespeare authorship controversies. Jeremy Merrill got our POS
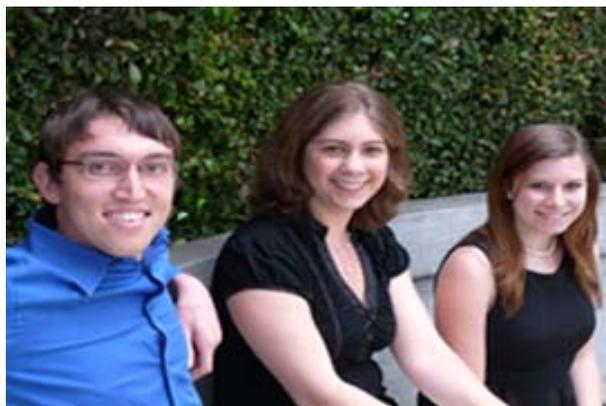
Claremont McKenna College undergraduates Jeremy Merrill (left), Heather Siegel, and Tova Markowitz

tagger, MorphAdorner, adapted to do quick-and-dirty modernizations of old-spelling texts, a very useful accomplishment, and to furnish a Brill List of words POS-tagged supposedly with 97% accuracy, to create new, POS-tagged Bundle of Badges (BoB) tests. The Brill List maker is functional, but the BoB testing, combining the features of MorphAdorner, Intellex and Textcruncher, has not yet been done.

We are also collaborating long-distance with Hugh Craig, of the University of Newcastle, Australia, whose work has most closely and independently paralleled our own. Goals: to iron out some

Block	Consensus	Our stylo Evidence	Golden Ears Sh%	Our best guess
Edw 3 4.04	Shakespeare	Prob. Not Sh.	57%	Sh. could-be?
Edw3 4.05-.09	Not Shakespeare	Sh. could-be	35%	PNS
Tit1A 1.01.258-end	Not Shakespeare	Sh. could-be	57%	Sh. could-be
Tit2A 2.01-.02	Not Shakespeare	Sh. could-be	37%	PNS
Tit4A 4.01	Not Shakespeare	Prob. Not Sh.	87%	Prob. Not Sh.?
1H6 2A 2.01-.03	Not Shakespeare	Sh. could-be	72%	Sh. could-be?
1H6 1C1.03.69-1.06	Not Shakespeare	Sh. could-be	82%	Sh. could-be?
1H6 4B 4.02 -.04	Co-authored	Co-authored	66%	Co-authored?

differences in methods and conclusions between our draft chapter on possibly co-authored "Shakespeare Fringe" passages and those in his and Arthur Kinney's *Shakespeare, Computers, and the Mystery of Authorship* (CUP, 2009). He has already independently confirmed our doubts that Shakespeare's vocabulary dwarfs all others (his 2011) and is taking ten of our "toughest-nut-to-crack" passages through his own marker-words tests, akin to our badges and flukes

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tests, but with more words and high expected discrimination between Shakespeare and non-Shakespeare. We may try some of his marker words in our badges and flukes or modal tests. Our most problematic "tough-nut" passages, post Golden-Ear, but pre-Craig and others, are:

3. **New Software.** Valenza, amid much rejoicing because the VAX version, like CMC's 1990s-vintage VAX micromainframe, has been on its last legs for years, has produced a beta version of Intellex for PC, INPC, available for downloading by anyone who would like to try it, http://cid-e799fd343a2335de.skydrive.live.com/self.aspx/.Public/Intellex.exe. We have spent much time spot-checking it to see whether it produces the same outputs as the old, VAX-based Intellex. This process is ongoing, but it now looks as though the outputs are almost, but not quite, the same because INPC has higher precision than INVAX. The biggest difference we have found is with high modal scores outside of our Shakespeare profiles. As far as we can tell now, this will not change our existing VAX-based Shakespeare profiles, or change many (if any) old rejections to passes or vice versa. What it will do, we think, is slightly change the degree of some of the firmest rejections. For the moment, we are using INPC as is, interchangeably with INVAX, and not trying to degrade its precision to old VAX levels to make a closer match with previous INVAX scores. Nate McMurtray '94 is working on an update of his Textcruncher, TC 2.2, in between making megadeals with his Hong Kong hank. It's not quite at the beta stage, but the older TC 2.1 is still functional, so it can wait.

4. **New texts, claimants, and test regimes.** The new texts included last year's controversies — some or all of six plays recently associated with Shakespeare, and a poem by the most recent Shakespeare claimant, Aemilia Lanier — and 27 early plays or parts of plays of uncertain authorship which are probably *not* by Shakespeare, but by someone else. Heather Siegel made major contributions to our massive, ongoing spreadsheet of equivalent-words tests on early plays not by Shakespeare, and none of the 22 newly-edited plays tests at all like Shakespeare, a relief because a Shakespeare match could have won the student who edited the play £1,000 pounds pursuant to our long-standing bet (III below).

If not Shakespeare, who else could have written these plays? Or, better, which of the 16 other known authors of the early 1590s could *not* have written them? As with the original Clinics, our hope has been to shorten the list of credible claimants to have written the unassigned plays and sections. This process is not complete, but the following paragraph gives one indication of what we are looking for:

5. **Equivalent words**. Shakespeare and most of his contemporaries preferred *while* to *whilst,* but a few did not. A few authors never used *whilst* at all. Some preferred *because,* some *since,* some *sith.* Some preferred *you,* others *ye.* Each of these words, and dozens more, are potential identifiers. If you are looking, say, for the true author of *Woodstock* to settle a £1,000 wager (see II, 2 and III below), it might be of interest to compare *Woodstock's* 231 ye's with Shakespeare's range of one to twenty per play. 231 *ye'*s seem far beyond Shakespeare's normal path, but not so far beyond Samuel Rowley, with 197 *ye*'s in his one known play. These are raw numbers. Standardized to *ye*'s per 20,000 words, they are 185 for *Woodstock,* 136 for Rowley's *See Me,* both far outside of Shakespeare's range, but in each other's neighborhood. By this test, and many of 61 others, Rowley seems to us a much more likely author of *Woodstock* than Shakespeare.

Our master spreadsheet, currently titled Heather Words 111.xls (for its maker, Heather Siegel), has not only the 48 tests applied by the old Shakespeare Clinic (see our 2004, Appendices), but also 57 new tests, applied to 55 of the earliest of our old plays and 22 new ones. The new tests abundantly reconfirm the tight Shakespeare profiles revealed by the older tests, and also the wide gaps between Shakespeare and others. The next step is to see how available profiles from smaller baselines of only four to six plays match our profiles for all 29 Shakespeare baseline plays. If the small-to-large profile match is close enough to be usable for Shakespeare, it might also be close enough for Marlowe, Peele, and Greene, with available baselines of 5-7 plays, and possibly even for Wilson, Munday, Heywood, and perhaps Kyd, with baselines of only 3-5 plays.

6. **Golden Ear panel.** Since 2008, we have been able to consult our Golden Ear panel, the 25 highest scorers on a battery of Shakespeare recognition tests. So far, it looks like a remarkable breakthrough for testing passages too short for computers. As a group, the panelists have been 90-95% accurate in identifying Shakespeare in texts of known authorship. They can recognize sonnet-length passages (100-150 words) which are much too short to classify by computer. They are slower, more virtuosic, and harder to deploy than computers, and they are so new that we haven't figured out exactly how to weigh them against other indicators, but we consult them routinely and lean toward giving them the same weight that we would to a machine test comparably validated. More details, taken from an earlier *SNL* progress report, may be found on http://www.cmc.edu/pages/faculty/welliott/ShakespearebyEar.pdf.

II. Outcomes

1. **Overview: Six Shakespeare-associated plays and a new claimant**. The six Shakespeare associations that have turned up in the last few years are: Two "Lost Plays," *Richard II Part I*/*Thomas of Woodstock,* and *Cardenio*/*Double Falsehood;* two 17th-century "Shakespeare" revisions of older plays, *The Spanish Tragedy* and *Mucedorus;* part of a play from the Shakespeare Apocrypha, *Arden of Faversham;* part of a modern fictional Shakespeare play, *The Tragedy of Arthur,* whose author got wind of the Clinic and wanted it tested; and a poem by Aemelia Bassano Lanier, the latest claimed True Shakespeare. Total: six whole plays, fourteen 1,500-word text blocks from the six plays, and one 1,500-word block from Lanier's *Salve Deus, Rex Iudaeorum.*

Current overall scorecard: *Wildly improbable:* all six whole plays, three 1,500-word blocks. *Improbable:* one block, *Mucedorus* revisions, one block from Lanier Poem, *Salve Deus. Improbable, but not impossible:* seven blocks of A*rden of Faversham,* Shakespeare's (first) half of *Double Falsehood. Unresolved:* one block (scenes 4-7) of *Arden of Faversham,* The 1602 *SpanishTragedy* revisions. *(continued on next page)*

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Could be Fletcher: two blocks from Fletcher's (second) half of *Double Falsehood.*

2. **Woodstock**. Michael Egan, in a 4-volume study, 2006, claimed that *Woodstock* is irrefutably Shakespeare's, from just before *Richard II (1595).* But it had 17-18 Discrete rejections and was in a different statistical galaxy from Shakespeare; *wildly improbable, both Discrete and Continuous Shakespeare resemblance too low to compute.* New equivalent-words analysis (I.5 above), consistent with MacDonald Jackson, likewise says it couldn't be Shakespeare, having fallen outside Shakespeare's profile in 44 out of 104 new and old tests, but more likely could be by Samuel Rowley, ca. 1605. See our SHAKSPER posting, The Shakespeare Conference: SHK 22.0236 Monday, 19 September 2011, http://shaksper.net/current-postings/303-september/28127-thomas-woodstock-; our brief, http://www.cmc.edu/pages/faculty/welliott/E&V%20brief%20211.htm, and our timeline notes, http://www.cmc.edu/pages/faculty/welliott/Elliott%20Wager%20timeline%20111.htm. Egan has for years demanded a panel of experts to hear his case. On Halloween, 2011, he bet us £1,000 — to nothing — that the panel would agree that *Woodstock* is by Shakespeare. We accepted. Retired Wall Street lawyer Larry Weiss set up a panel of himself and two members of the Golden Ear Panel to adjudicate, Dale Johnson and Will Sharpe. They handed down their verdict on August 31, 2011, unanimously in our favor. http://shaksper.net/documents/doc_download/274-egan-v-elliott.

3. **The Spanish Tragedy** **Revisions, 1602**. Kyd Editor Philip Edwards, 1969, did not rule out Shakespeare as a possible author of these revisions. Nor did Hugh Craig, who considers them much more like Shakespeare than like Jonson, Webster, or Dekker (Craig & Kinney, 2009, Ch. 8). Nor has Brian Vickers, by whose latest methods they seem "a definite [Shakespeare] ascription." (His 2012, 13). Nor does Marina Tarlinskaja, another of our favorite authorship authorities, who is better than we are at counting enclitic and proclitic microphrases. She agrees with Vickers (private e-mail, 27 May, 2012). We haven't ruled out Shakespeare, but are not yet ready to rule him in.

Our current results: one conditional Discrete rejection, too few open lines for 1602, not enough by itself to rule out the SPTR additions as Shakespeare's, plus a strong Golden-Ear rejection. Open or run-on lines are lines without punctuation at the end. For definitions of Discrete and Continuous rejections, see our 2004, 348-52. One Discrete rejection on one test is not enough to rule out a passage of this length on the numbers, and even this one rejection could fail if, as some suppose, the "1602" revisions were more likely written in 1599. Also, as Tarlinskaja reminds us, the jumbled, agitated lines themselves might explain the low percentage of open lines observed. Ten percent of the verse lines in the revisions are open by our rules, too few for Shakespeare after 1600, but not before. For 1,500-word verse blocks our Shakespeare ranges for open lines are 8-33% prior to 1600, 13-69% after.

On the numbers, we can't rule it out as Shakespeare's by either of our composite measures of Shakespeare discrepancy. On the other hand, our Golden Ear panel, which has been 90-95% accurate in

Research assistants and CMC undergraduates Heather Siegel, Inayat Chaudhry, Patrick Paterson, and Eli Coon,

identifying known Shakespeare, rejected it roundly. Only 14% of the panel thought it was Shakespeare; and only 10% of those who didn't recognize it. That, plus whatever is left of the open-line shortage after due discounting for dating and context, seems to us a real obstacle to a confident Shakespeare ascription. On the other hand, this is one of, several controversies where the dust hasn't yet settled. Our Golden Ear methodology is novel and not accepted by all. So is much of the new methodology applied to the *Spanish Tragedy* additions by others. Till the dust settles, it seems to us that the evidence is still mixed enough to count the Shakespeare ascription as unresolved.

4. **Mucedorus** **Revisions, 1610**. Edward Archer and MacDonald Jackson, 1964, think these could be by Shakespeare. Our contrary evidence is two Discrete rejections. *Improbable, but not impossible. Continuous analysis puts it in a different statistical galaxy, wildly improbable.* Passage has ten million years worth of Shakespeare discrepancy; our cutoff is two weeks. *Mucedorus,* taken as a whole, has 11 rejections and is wildly improbable as a Shakespeare solo work. GE Panel verdict: only 8% thought it was Shakespeare: *improbable.* Our bottom line: *somewhere between improbable and wildly improbable.*

5. **Double Falsehood,** **1613/1727**. This is complicated enough to address separately in a longer article, based on a letter to Ian Partridge, who directed a performance of Brean Hammond's new edition of the play in 2011. The gist of it, after testing for Shakespeare and Fletcher indicators and consulting our Golden Ear panel, is that there did seem to be two discernible stylistic halves, just as Hammond argued. The second half, supposedly taken from Fletcher, has a scene or two which could arguably be ascribed to Fletcher by our methods. No more than a sonnet's worth of Shakespeare could be found in the first half, supposedly Shakespeare's, too little for our stylometric tests to confirm or reject, but not too little to be judged

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by our Golden Ears, who roundly rejected it. *Double Falsehood,* taken as a whole, has 11 Shakespeare rejections and is wildly improbable as a Shakespeare solo work.

6. ***Arden of Faversham,*** **1592.** *ARDN* was one of only three plays of the Shakespeare Apocrypha which Gary Taylor (1987) thought might be partly Shakespeare. MacDonald Jackson, 2006, and Hugh Craig and Arthur Kinney, 2009, argue that parts of it are Shakespeare's; Brian Vickers argues that the entire play is Kyd's. Jackson, using LION links, says it's closer to Shakespeare than to Kyd. Within *ARDN,* Jackson's Shakespeare scene ascriptions have not always been on all fours with Kinney's, but Kinney's scenes appear to be the closest we have to Shakespeare could-be's, and Jackson himself now considers them the most likely Shakespeare scenes.

We divided the play into ten verse blocks of about 1,500 words, following Martin Wine's scene divisions (1973). Kinney apparently uses the same scene divisions of *Arden* (Craig & Kinney, 2009, Ch. 4), but our scenes are verse-only; his look like verse and prose; and ours are grouped in ten blocks, some of which combine short scenes or divide long ones to get the block sizes about the same. Kinney analyzes in two ways: first scene by scene without regard to block size (2009, p. 93), then in four blocks of about 2,000 words each. Our two last blocks, 14a and 14b, have three or more Shakespeare rejections and look highly improbable by our tests. They also look improbable by Kinney's tests, though he combines scenes 10 to the end into one improbable block (95). Scene 8 is the one that Jackson, 2006, originally thought looked most like Shakespeare. It has two Discrete rejections, 18 weeks worth of Continuous rejections (our cutoff is two). With that much Shakespeare discrepancy, Scene 8 looks improbable to us, as it does to Kinney. Kinney combines 8 and 9 and finds both improbable (95).

The other seven blocks, including 4-7, which Kinney, and, now, Jackson, think look most like Shakespeare, have one (or less) rejection apiece and are either Shakespeare could-be's or borderline by our rules (below). 4-7 has survived all of Kinney's tests, and all of our normal tests, but needs a recheck of proclitics, and whatever new tests emerge from our equivalent-words test. For now, it looks like a could-be for us, both by Discrete and Continuous analysis. In this case, our blocking is identical to Kinney's, though ours is verse-only. It looks like a Shakespeare could-be, both by our computer rules and his, and, hence, seems to be our closest approach this year to a validated Shakespeare discovery. But it's not quite there. The Golden Ear panel rejects samples from both blocks, Scenes 4-7 and 8, as Shakespeare's.

The remaining six blocks are either could-be's (1a and 10-13) or borderline (1b, 1c, 2-3, and 9) by our rules. 1c has two "when as's" very rarely found in Shakespeare, if they amount to "whenas": "When as my purposed journey was to him:" and "When as I saw his choler thus to rise." We would guess that both could be counted as "when, as's," not clear "whenas's," and don't help much toward ruling out the block. These blocks still need manual enclitic and proclitic counts and possible new tests, and what is true of each block is not necessarily true of all the blocks. For example, what are the odds of five *ARDN* blocks, 1a, 1b, 1c, 2-3, and 4-7 having 5 rejections between

them? Valenza says: "1.62E-02. This is more than ten times smaller than the discrete composite threshold, but not exactly in another galaxy, as you like to say." In other words, by our tests so far, they collectively seem improbable, but not impossible. But, except for 4-7, these are the same blocks, grouped differently (that is 1-3 and 8-9 for him), that Kinney's tests say don't match Shakespeare, and we generally defer to validated negative evidence, whether it's ours or not (below). All the tests at issue are too new to have yielded a settled way of reconciling conflicts, but our normal practice is to give negative evidence much heavier weight than positive, whether it's ours or someone else's. If our tests say *could-be* and Kinney's say *couldn't be,* his should normally prevail, and vice versa. *Couldn't-be,* in our book, is a much stronger finding than *could-be.*

Still needed for *ARDN:* further thought on reconciling tests and block divisions with Craig and Kinney and deciding what weight to give the Golden Ear rejection; confirmation of our low proclitic counts by Marina Tarlinskaja, if available, apply new tests if available, redo composite analysis, consult with Jackson, Craig, and Kinney, others. Our guess is that, when the dust settles, everything but 4-7 will he ruled out by our rules (Golden Ears apart), Craig and Kinney's rules, or both, leaving 4-7 as the most promising Shakespeare possibility still standing — yet not so promising, if the Golden Ears are right, as they usually are. A further consultation with the Golden Ears might be helpful.

Taken as a whole, *ARDN* has ten Shakespeare rejections and is wildly improbable as a solo Shakespeare work.

Craig and Kinney's *Shakespeare, Computers, and the Mystery of Authorship* (CUP, 2009) is an important and welcome addition to the authorship literature, the first full-bore, 200-proof, new-optics quantitative study by lit-department pros that I know of (others have used quantitative studies as a supplement to old-optics documentary studies, but none as seriously and exclusively as C&K). We are no longer alone with our new optics. Somebody else now has impressive quantitative data, arrived at by a different route, and it doesn't all match ours at the bottom line. We still have several possible discrepancies with C&K to explore and try to narrow: parts of the *Henry VI* series; parts of *Edward III;* and the Hand D Section of *Sir Thomas More* are at the top of the list. We expect much more progress to be made with Shakespeare on the numbers if we are not the only ones in the game. Shakespeare authorship research is still more done in silos than we would prefer, but it's nice to have another one to try to reach. Craig has been very co-operative in this, has confirmed half our position on Shakespeare's vocabulary, run a marker-words Zeta tests on 1,500-word blocks (our default) with very encouraging results, and has sketched out a rigorous-looking test regime for our ten "tough-nut" blocks. These could be big steps forward for new optics, but we have no results from him yet to report.

7. **Scene from** *The Tragedy of Arthur*. *The Tragedy of Arthur* (2011) is a modern fictional Shakespeare play submitted to us by the author, Arthur Phillips, curious as to how it would fare under our stylometric analysis. First impression: remarkably well till it got to

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our Thisted-Efron tests, slope, New Words, and Rare Words, all of which it flunked: too many new words, too many rare words, too steep a slope between the most common rare words and the least common, all saying it's highly improbable as a Shakespeare could-be. Second impression after Valenza's Continuous analysis: *460 million years worth of Shakespeare discrepancy, wildly improbable.* The Clinic's favorable verdict on the play, portrayed in the novel, is fictional. *Wildly improbable* is the true one.

8. **Aemilia Lanier**. Aemelia Bassano Lanier, poetess, educated daughter of a court musician, Dark Lady candidate, and onetime mistress of Lord Chamberlain-to-be Henry Carey, Lord Hunsdon, founding patron of Shakespeare's acting company two years later, is the latest Shakespeare claimant (Posner, 2010). Our tests of the first block of her *Salve Deus, Rex Iudaeorum,* show three rejections in 14 tests and indicate that she is an improbable claimant with about ten times too much Discrete Shakespeare discrepancy to be a could-be, 23 weeks worth v. two weeks. We haven't yet calculated Continuous discrepancy. The Golden Ear panel decisively rejects it as Shakespeare's. We would say she is a *highly improbable* claimant.

9. **In sum**:

Woodstock: wildly improbable for Shakespeare, 16th century, could be by Samuel Rowley, 17th century.

The 1602 Spanish Tragedy revisions: unresolved.

1610 Mucedorus revisions: somewhere between improbable and wildly improbable.

Double Falsehood: Its most likely "Shakespeare" lines look improbable, but Oliphant's "Fletcher" scenes in the second half look plausible as an adaptation of Fletcher.

Arden of Faversham: Several scene-length blocks clearly not Shakespeare by our tests or Kinney's. Several blocks look like could-be's or borderline by our tests, but not Kinney's. One block, scenes 4-7, is a could-be both for us and for Kinney, but Golden Ears say it's not. 4-7 look more likely than the rest of the play, but Golden Ear negative says even that is not an easy could-be.

Arthur scene: wildly improbable.

A*emelia Lanier:* highly improbable claimant.

III. Our £1,000 bet

Omitted. See II, 2 above for citations to various references about this bet.

An unanticipated side-issue of the Clinic's work in 2011 was the possibility that one of the students could collect £1,000 on our bet that nobody could find a still-untested whole play not by Shakespeare that passes the Clinic's tests, nor one by Shakespeare that does not pass. Valenza and I even offered long ago to pretest properly edited plays, before the bet was actually placed. But no one has ever accepted the bet, nor even the pretest option, most likely because proper editing of a new play for computer testing takes a lot of time and work. An electronic text has to be found, typed, or scanned; speech-headings and stage directions have to be removed; verse separated from prose; and all the spelling normalized to match that of the baseline *Riverside Shakespeare.* When the Clinic was founded in the 1980s, this process took weeks to do a play but it is less onerous now. Today's scanners and OCR programs are a hundred times faster and more accurate than before; e-texts are a thousand

times more available; and the Clinic has found a quick-and-dirty way to get 90% of old-spelling words machine-modernized. The upshot is that you can now edit a new play in days, not weeks, and the students, spearheaded by Heather Siegel, gathered and edited 22 new plays to test, few or none of them currently thought to be by Shakespeare. Could one of them have passed the Clinic's Shakespeare test and won the students the £1,000? This was still a live question in 2010, but it is now becoming clear that the answer is no. On present evidence, the range of the fully-tested early-Shakespeare plays tested, with a few more tests than in 2004, looks like zero to four rejections. The range of non-Shakespeare and anonymous plays tested, not all of them completely tested, is 8-34 rejections; it could be a bit higher when all the tests are finished. We haven't yet recomputed composite Shakespeare discrepancy, but, in most cases, we expect the odds of a Shakespeare fit to be lower than those of getting hit by lightning.

IV. Publications

1. **Sir Thomas More and Edward III**. "Two Tough Nuts to Crack: Did Shakespeare Write the "Shakespeare" Portions of *Sir Thomas More* and *Edward III?"* 2 parts, with Valenza. Answer: *STMO,* Hand D section improbable but not impossible, rest of play very improbable; *Edward III:* several blocks are could-he's by our tests, but two battle scenes are out of line with consensus. Golden Ears go decisively with consensus, and we would probably defer to them, but now there is also Craig and Kinney, who say the *Edward III* consensus (and we) are right about the Countess Scenes, but wholly wrong on the battle scenes, none of which, they say, could be Shakespeare's. And it's negative evidence! Is it enough to outweigh us, the consensus, and the Golden Ears?

A C&K student thinks we're too skeptical of Shakespeare's connection with Hand D and has tried to replicate our tests with a different archive, but his baseline blocks are different from ours and he disaggregated some key contractions which we leave alone. Hand D has some intriguing resemblances to some of Shakespeare's mob scenes, maybe intriguing enough to get mentioned in our next cut at Hand D, despite our normal indifference to resemblances where discrepancies seem too great. "No, no, no, no, no!" Is Shakespeare the only other one to use this sequence? And there are still some questions from MacDonald Jackson about our grade-level tests, as applied to Hand D. We shall see. Both plays still strike us as tough nuts to crack.

Part *I. Lit Linguist Computing* 2010 25: 67-83 April 2010
Abstract:
http://llc.oxfordjournals.org/cgi/content/abstract/25/1/67.
Part II *Lit Linguist Computing.2010; 25: 165-177* June 2010
Abstract:
http://llc.oxfordjournals.org/cgi/content/abstract/25/2/165.
The full articles are available free to LLC subscribers only. An undivided, open-access version is posted on Elliott webpage:
2. http://www.cmc.edu/pages/faculty/welliott/UTConference/2ToughNuts.pdf
3. Shapiro, *Contested Will.* "Bard battles: 'Contested Will' by

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James Shapiro" Ward Elliott Book review of James Shapiro, *Contested Will: Who Wrote Shakespeare?* Los Angeles Times, May 9, 2010 latimes.com/entertainment/news/la-ca-james-shapiro-20100509,0,5041756.story

Shapiro's is the first book on the Shakespeare Authorship Question by a lit-department pro in almost 50 years. It was well worth the wait: temperate, lucid, penetrating, readable, and impeccably documented. It is one of several indicators that the long holiday that twentieth-century American lit profs took from Shakespeare authorship studies may be over this century, not a minute too soon.

3. Shakespeare's Vocabulary. "Shakespeare's Vocabulary: Did it Dwarf all Others'?" Sept. 11, 2009, chapter in Mireille Ravassat and Jonathan Culpeper, eds., *Stylistics and Shakespeare's Language - Transdisciplinary Approaches* (London: Continuum Press, 2011. Our answer: No, and his new-word coinage rates are still overestimated by a factor of at least two. For a century and a half, the highest authorities have declared that Shakespeare's vocabulary towers over all others. If you look closely at the others, as we do in several innovative ways, it's clearly a myth. It's a big breakthrough. As mentioned above (II, 6) Hugh Craig arrived independently at the same conclusion for vocabulary, but did not address the coinage question. Craig, H. (2011). "Shakespeare's Vocabulary: Myth and Reality." *Shakespeare Quarterly* 62(1): 53-74. In the tradition of Darwin and Wallace, both articles had mutual acknowledgements of the independent breakthroughs.

4. Another Chapter in our long debate with our Oxfordian minders. "The Shakespeare Clinic and the Oxfordians — a Retrospective" with Valenza, *The Oxfordian* (2010). Our longterm Oxfordian minders, John Shahan and Richard Whalen, egged on by *The Oxfordian's* new editor, Michael Egan (the same one who bet us that *Woodstock* is by Shakespeare), got so feisty in their last article that we thought they wanted an end of it. But no, they were eager to get a reply from us, and we have given them a long one, summarizing our dealings with the Oxfordians over many years, and our current problems with the Oxfordian case: Our tests put Oxford in a different statistical galaxy from Shakespeare and show the plays continuing to appear and evolve stylometrically after Oxford's death. The leading Oxford documents authorities say there is no document connecting Oxford with Shakespeare's work, and many which would be jarringly inappropriate for a person of Oxford's standing. The Golden Ears don't think his poems sound like Shakespeare. Our article is now out: "The Shakespeare Clinic and the Oxfordians," together with a tart retort from our minders: "A Reply to Ward E.Y. Elliott and Robert J. Valenza."

5. Cambridge World Shakespeare Encyclopedia Article. "Language: Key to Authorship," *The Cambridge World Shakespeare Encyclopedia* (forthcoming). This is an article describing the state of the art of authorship studies today, and where and how new-optics methods have led to stronger evidence. It seemed to us a bit out of the mainstream for an encyclopedia article, but the editors liked it and are printing it essentially intact. It's short, broad, and as well-placed as anything we've done since our 1997 *Shakespeare Quarterly* article on A *Lover's Complaint* and the *Funeral Elegy* to

convince lit-department regulars that Shakespeare authorship matters too much to be left entirely to amateurs like us.

V. Still to go

Get INPC and Textcruncher 2.2 ironed out; finish Heather Words baseline comparisons; see what we can do with MorphAdorner and POS-tagging; see what we can learn from differences with Craig and Kinney; try Craig's marker words as badges and flukes or as modal keywords; see what he makes of our Tough Nut cases; push on with completion of book, *Shakespeare by the Numbers.*

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Weiss, Larry (2011), Larry Weiss opinion, *Egan* v. *Elliott* (2011). http:// shaksper.net/documents/doc_download/274-egan-v-elliott For more SHAKSPER discussion of the *Woodstock* controversy, see SHAKSPER threads, *Woodstock, Shakespeare by the Numbers, 1 Richard 2, Wager,* or *Lions and Tigers and Wagers...oh my...*

Â He and his colleague, Robert J. Valenza were co-advisors of the Claremont Shakespeare Clinic, 1987–1994. They have published articles on Shakespeare authorship, notably in Shakespeare Quarterly, Computers and the Humanities, Literary and Linguistic Computing, among others. Ward Elliott is co-dedicatee of Brian Vickers's Shakespeare Co-Author (OUP 2002).Â With Ward E. Y. Elliott, he was faculty advisor to the Claremont Shakespeare Clinic from 1987 through 1994. They have published widely on the issue of Shakespeare authorship. Understand Shakespeare's plays and sonnets with SparkNotes' translations, plot summaries, character lists, quotes, lists of themes and symbols, and more.Â No Fear Shakespeare. The full text of Shakespeare's plays and sonnets side-by-side with translations into modern English. No fear Shakespeare is available online and in book form at barnesandnoble.com. the Shakespeare Au-. thorship Clinic at. Claremont McKenna. College. They wrote. ʻOther Car' in res-ponse to our ʻApples. Claremont McKenna College, California. to Oranges in Bard. Stylometrics: Elliott and Valenza fail to eliminate Oxford' (The Oxfordian, Vol.Â As Elliott and Valenza surely know, most published dramas from the period are anonymous, including Shake-speare's first six. Clinical. Back. The Lancet Clinic. Series. Commissions.Â We collected data from members of the general public, predominantly from the UK, who completed an extended questionnaire (inclusive of questions pertaining to COVID-19 infection) and series of cognitive tasks via The Great British Intelligence Test, a collaborative citizen science project with BBC2 Horizon that launched in late December 2019.