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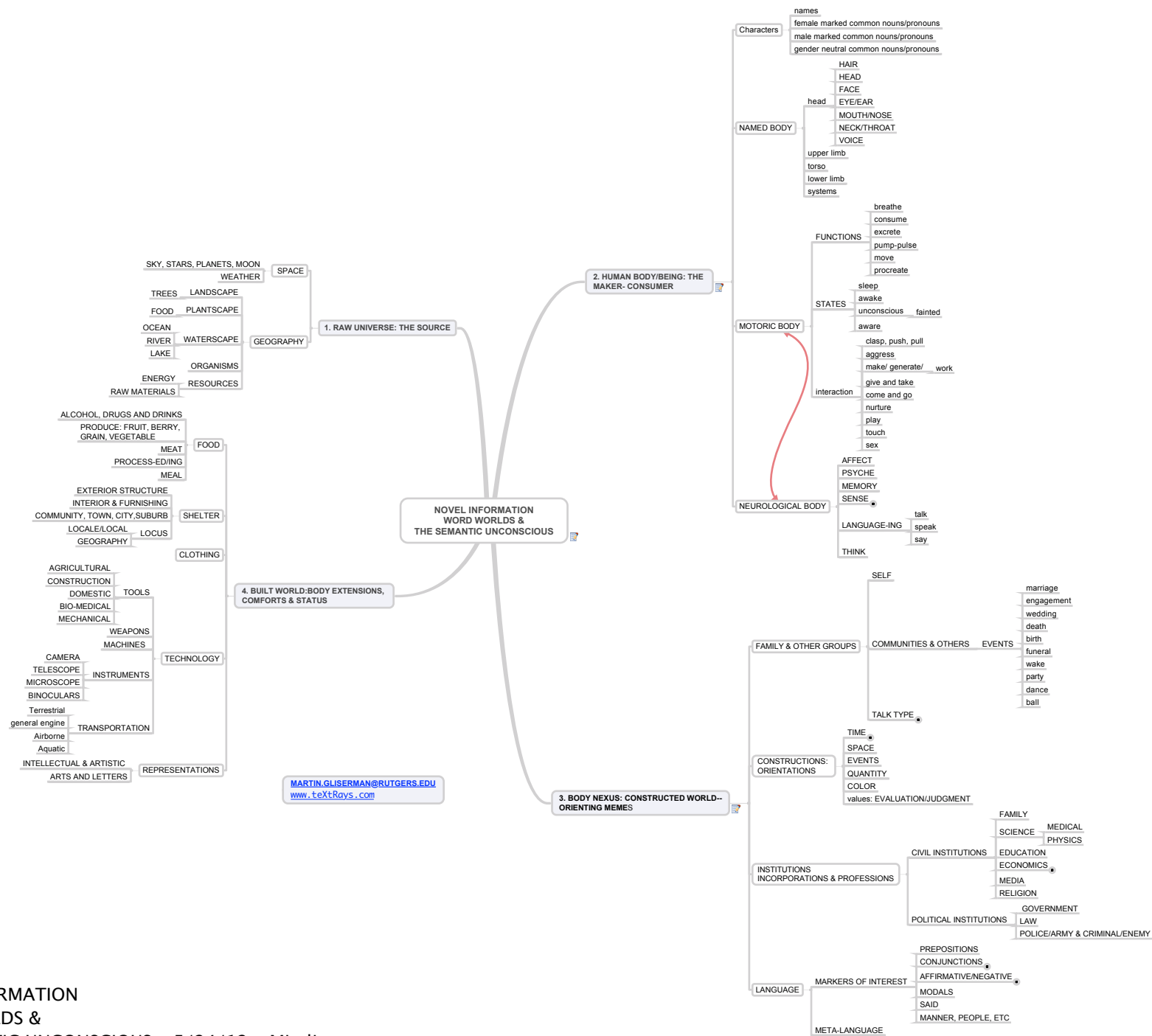
## AFFECT IN 100 NOVELS: SEMANTIC PATTERNS & CULTURAL NEUROLOGY

This presentation has a broad focus on unconscious cultural transmission, and demonstrates it by looking at lexical representations in general and at AFFECT in particular in a corpus of one hundred “classic” Anglophone novels written between 1719 and 1997. Research into the lexical inventories of these texts reveals rules of semantic distribution, i.e., rules about what proportion of what kinds of words are found in any given novel. The rules emerge from the study of semantic networks in this corpus; the rules are seen as regularities across time among key semantic patterns. The patterns point to Whorf’s observation about the locus of language: “This [linguistic] organization is imposed from outside the narrow circle of the personal consciousness . . . as if the personal mind . . . were in the grip of a higher, far more intellectual mind which . . . can systematize and mathematize on a scale and scope that no mathematician of the schools ever remotely approached” (Whorf, 257). As with other linguistic rules we follow without knowing that we are following—e.g., rules of syntax, of phonemes—this presentation suggests that writers follow rules of semantic distribution. These rules are transmitted and utilized unconsciously—to wit, they go through the brain without the mind’s consciousness—hence the idea of “cultural neurology.” The individual mind of the writer shapes the linguistic material even while keeping the semantic proportions that the brain deems necessary for the genre. The literary novels of this corpus embody and propagate a code, a semantic code, which in turn can inform us as to how the brain functions, not at the level of neurons, but at the level of how and how much information needs to be packaged in a text to be successfully delivered to a reader’s brain.

Novels are comprised of words, and among the words are family connections, that is, semantic-conceptual groups—e.g., words that name parts of the body or actions of the body, or parts of a machine, or feelings, etc. The Historical Thesaurus of the OED (2009) defines the universe of words as falling into three superordinate areas: the external world; the mental world; and the social world. From these emerge twenty-six major semantic frames that in turn open up a half dozen times more. The schema developed in this project (teXtRays: ReadingSquared) is less complexly deep because the word world of the novel is far more constrained than the whole universe of discourse that the OED taps into. The major difference in the organization of words here is that the OED’s “external world” is divided at outset into the “raw universe” and the “built world” as a way to more easily see the distinction between two areas of representation important to how writers frame the characters and their interactions in the social realm, and equally important for analyzing the texts for environmental observations or traces of labor, etc. For the purposes of examining the novels, the following large frame was used to separate words: 1) BODY--The Individual Human Body/Being; 2) CONSTRUCTED--The Socially Constructed Domain; 3) BUILT--The Materially Built World; 4) RAW UNIVERSE--The Natural World. These overriding categories open up into a constellation of fifteen subcategories, and these can be opened up into fifty-five sub-subcategories. [see graphic 1]

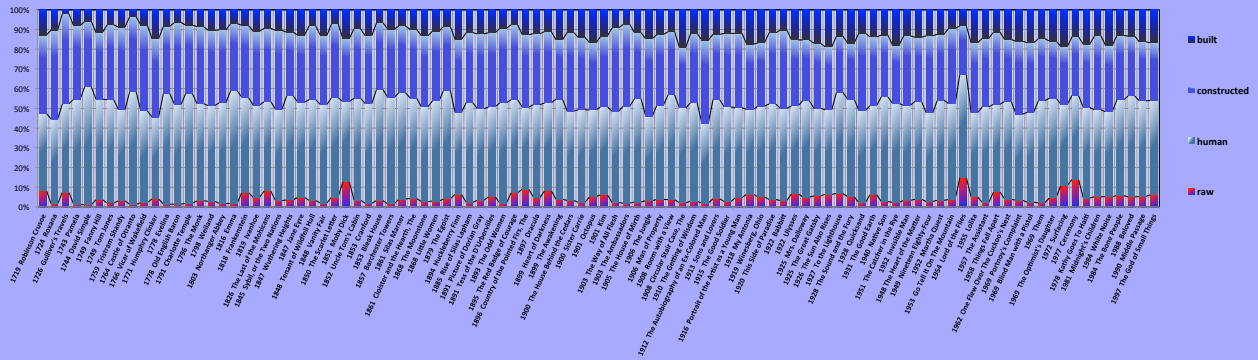
Using the framework of four overarching categories, a dictionary was gradually developed by examining the novels for words that went into each of these semantic groups, which in turn went through several other siftings downward. The first dictionary of the project was derived in the opposite direction—from individual mentions to categorical rubrics. That first dictionary was for the names (nouns) used for the body and all its parts. Reading novels and searching for body parts, I discerned about one hundred twenty names that were then chunked into five conceptual rubrics (e.g., HEAD, TORSO, etc.), and these categories opened up into nineteen subcategories. Having developed the dictionary—a word-net, a hierarchical conceptual array—it could be used with text mining software to search new texts which could be tabulated and charted--visualized.

The four overarching constructs as they are charted out [see graphic 2] show us a very strong pattern of agreement over time: the Raw Universe (bottom band) and the Built World (top band) together occupy about 15% of the references. The largest roles are divided between the Human Body/Being (at about 45%) and the Constructed Social World (at about 40%). The proportions hold steadily in spite of individual differences. Even at this level of zoom, the visual data allows us to make some useful observations and generalizations about the nature of the novel, semantically and from the perspective of cultural neurology—more of which in a few paragraphs.



NOVEL INFORMATION  
WORD WORLDS &  
THE SEMANTIC UNCONSCIOUS - 5/24/12 - Mindjet

FOUR CORE SEMANTIC ZONES  
OF THE WORD WORLDS OF 100 CANONICAL ANGLOPHONE NOVELS, 1719-1997





To get to AFFECT and contextualize it, we will zoom in from this large four strata frame. In drilling down three or four levels, we can establish evidence for rules of semantic distribution. Graphic 2 looks at the four overarching groupings—moving up from the bottom of the chart: Raw Universe (everything relatively untouched and uncultivated by human beings, and everything out of the control of human beings); The Human Body/Being (everything about individuals—names, actions, thoughts, fantasies, memory, affect, bodies, etc.); Constructed World (language, institutions, values, orientation); Built World (everything humans have transformed from the Raw Universe; it is thus the locus of labor that is generally invisible). This graphic is evidence that on a general level, the novels express an unconscious agreement about the proportions among these domains.

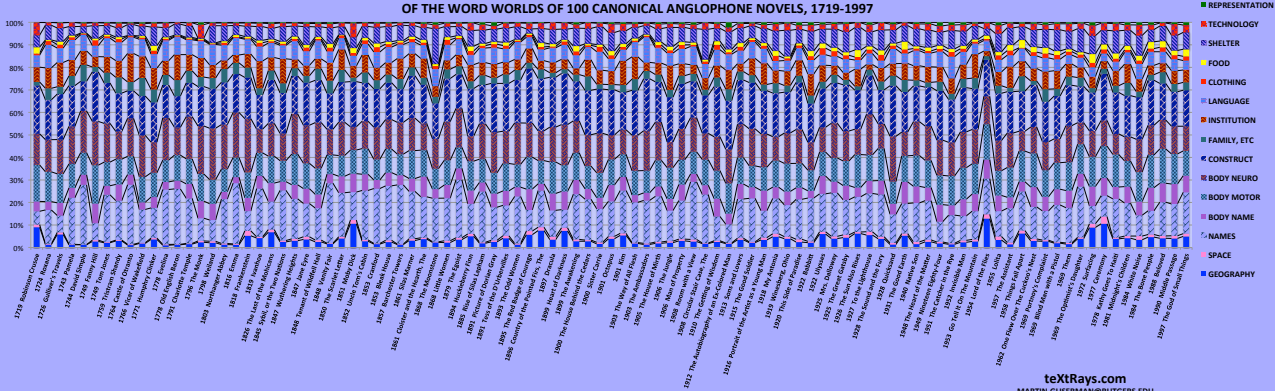
As with all the charts, there are two directional readings, one chronological and one synchronic. The narrative is that across time, from 1719-1997, the proportions in Graphic 2 remain stable, and that stability stands as an agreement. The proportions themselves have a narrative as well—they indicate the locus of the dynamics between the individual and the socially constructed world, and the framing by the external world, both natural and fabricated, as a reflecting, or being the Greek chorus for, the dominant power of the characters in the narrative. In the Built World as well as the Raw Universe we have the “circumstantial reality” that Ian Watt (1967) noted long ago, and now we can see just how much textual real estate it occupies, what it looks like, and, really, what the novel seems to need (information redundancy) to achieve its ends (to connect, to maintain attention, and to be remembered). Moreover, we have evidence of a more important sort—we have long recognized the novel as a depiction of the interface between the individual and society, between the psychological and the socio-cultural, but now we see what that means in more precise terms. We see the evidence for our intuition, that is, we see the divide between what the brain picks up on and hints to us, and what we “know.” What is most important about the evidence from the semantic frame is not that it “tells us what we already knew” but that it shows us what it takes to give us that feeling of knowing. (cf. Kandel, 2007) There is institutional wisdom embedded in the novel’s semantic code; the novel’s semantic distribution is one way that genre can be metabolized by the host, be remembered, and become habit forming (cf. Smail, 2008).

To see the extent to which the idea of semantic distributions holds, we can now look at a second chart [Graphic 3], Fifteen Core Semantic Zones, which opens up the four overarching zones to fifteen core zones. From the bottom to the top: The RAW UNIVERSE opens to the terrestrial (GEOGRAPHY) and then all else above (SPACE)—clouds, moon, weather, stars, etc. These domains generally reflect (straight-on or ironically) the emotional valences in other domains (see, Frye, *The Anatomy of Criticism*, 1971) Just think of: the relatively lush and fruitful center of Crusoe’s island as opposed to the storm that grounds the boat; the spaces around the home and coal mine in *Sons and Lovers*; the vista Jane Eyre looks out on wishing for freedom; Mr. Knightley’s orchard in *Emma*; the trees of Sweet Home in *Beloved*; the toxic river in *The God of Small Things*. The space and activity above the terrestrial is out of human hands. The natural world on the planet seems to reflect on issues of ownership, but on this level, too, are forces far beyond human powers—Crusoe can shoot a beast or grow corn and protect it from predators, but has no say in the earthquake.

The next core grouping (HUMAN BODY/BEING) breaks into: NAMES, NAMES OF THE BODY, THE MOTOR BODY, and THE NEUROLOGICAL BODY (which is the core categorical group in which AFFECT is located). This grouping covers the characters, their names (proper, pronominal, and generic gender names), their actions, thoughts, feelings, memories and dreams, etc. NAMES may be a category with little semantic interest, per se, but important to making the neurological case. The NAMES group occupies a sizable share of the market—this group represents all the characters’ formal names as well as all pronoun references. Textually, references to the characters at this frequency means fairly regular mentions per page—and the function of this frequency is to repeatedly change the reader’s orientation (this person to that person to another person, etc.). Getting the reader to orient and reorient is a method of maintaining interest—i.e., there is an optimum number of shifts needed to stimulate and maintain attention [Sedgwick, ed. Tomkins, 1995] in the short term, and thereby to create memory in the long term [Kandel, 2007].

The rest of the domain (HUMAN BODY/BEING) in some sense goes to show what is in a NAME—it instantiates the NAME with description, action, thought, feeling, etc. This is a domain with a primary semantic focus on the communications of different constituencies or registers of the individual—e.g., what are the eyes or hands “saying” in the NAMED BODY, what is mind “saying” in the NEUROLOGICAL BODY? Another feature of the overall domain and the focus on communication is that the NEUROLOGICAL BODY and the MOTOR BODY weigh in fairly evenly [graphic 3]—two sides to

15 CORE SEMANTIC ZONES  
OF THE WORD WORLDS OF 100 CANONICAL ANGLOPHONE NOVELS, 1719-1997



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each being. The physical representations and the psychological/verbal both have a share in communications; the novel is an attempt to communicate by language recognizing that language although it has several channels, does not offer the only channels. The novel will often articulate the limits of verbal communication, and seems to urge us to “listen” to the simulcast.

The next core category is the CONSTRUCTED WORLD—it opens to CONSTRUCTIONS (time, space, value); FAMILY (family, social groups), INSTITUTIONS (law, government, religion, education, business), LANGAUGE (metalinguage). In this group, the category of CONSTRUCTIONS has some parallel to the NAMES in the previous group because within it are lexical items with less semantic weight but critical in orienting the reader in time and space—think of Mrs. Dalloway or Ulysses—but also to orient one in a field of good-and-bad that generates tensions and ambiguity, and insists on dynamics. Similarly with LANGUAGE, the lexical items are words that shift meaning—like modal auxiliaries—rather than deliver it directly. FAMILY and INSTITUTION name and describe all the proximal and distal relationships that the HUMAN being is situated in, and the activities that might occur within those relationships—e.g., weddings, journeys, atrocities.

The last core category is the BUILT WORLD where we find: CLOTHING, FOOD, SHELTER, TECHNOLOGY, and REPRESENTATION. Here we find the fruit of human ingenuity and human labor, and the thus the transformation of the natural world. We do not generally see a Robinson Crusoe again, salvaging and re-making a way of life, though we do know those who labor, like Mr. Morel. But for all the windows in novels, has one met a glazier, or one who makes sheets of glass? That said, implicit labor as well as raw material are present in a shadow form, and that information is mandatory for political analysis, Marxist or a post-colonial. Generally the material world speaks to issues of class and status—e.g., the difference between where Austen’s Emma lives and where Lawrence’s Morels live. The subcategories concern layers of skin by way of secondary body material (CLOTHING and SHELTER), primary bodily need (FOOD), secondary body extensions (TECHNOLOGY), and mirrors (REPRESENTATIONS).

In this group of fifteen core categories, the chronological story is again relatively stable: the historical sweep and the vertical contingents are in agreement on general proportions. Each of the fifteen groups takes a proportion of the semantic array, and each novel maintains, within a range, that proportion. The creative, generative individual texts vary, but don’t seem to disagree about the basic frame. There are chronological shifts in some of the strata, for example, we can see an increase in FOOD, first in the beginning of the twentieth century with Portrait of an Artist as a Young Man, and increasing again in mid-century with Lolita. The stability of the core is reinforced by a counter example, an outlier—The Lord of the Flies—in which the raw universe is proportionally very high and the domain of INSTITUTIONS is very low—unsurprisingly the data reveals central conflicts. Outside of that anomaly, Golding’s novel largely meshes in relation to the other thirteen categories.

In the chart of the four overarching categories and in the chart of the fifteen core categories we are witness to categorical stability. We will zoom in two more powers, starting with one of the fifteen core group—NAMED BODY—and opening it up to five zones [graphic 4], and then looking at one of those five zones, HEAD, by opening it up to eight subgroups [graphic 5]. In both cases, there is general agreement on the proportions of the constituents. For the NAMED BODY we have HEAD, UPPER LIMB, TORSO, LOWER LIMB, and SYSTEMS (blood, bones, etc.). In the five zones of the NAMED BODY, the HEAD dominates with 40% to 50% of all references, and the UPPER LIMB with 10% to 20%—these are the primary areas of communication. Zooming in on HEAD we find: HEAD, HAIR, MIND, FACE, VISUAL/AURAL, ORAL/NASAL, VOICE, NECK/THROAT. In these charts we also see that the distribution of semantic is stable. Again, there are visible historic shifts, but no continuous erratic fluctuations. We see an increase use of HAIR and a decrease in MIND; we can see that VOICE and VISUAL have a tentative start but become established by the end of the 18<sup>th</sup> Century. The synchronic picture is that As MIND diminishes, FACE increases, as does VISUAL—and FACE and VISUAL come to dominate the graph as the main channels of communication.

When we arrive at AFFECTS [graphic 6], we find similar regularities but with somewhat wider variations. The nine categories used to define AFFECTS were derived from the works of Silvan Tomkins (1995) and Jaak Panskeep (2012). Using these nine categories, a vocabulary of some five hundred words became the semantic network for investigating AFFECT in this corpus. Of the nine affects, three are positive, one neutral, and five negative. SURPRISE (in yellow) will serve as the boundary between positive and negative affects—Tomkins saw SURPRISE primarily as an orientation changer, and separates it from the contiguous stimulation (a gunshot or a surprise birthday party) that might carry other affects (e.g., fear, enjoyment). Looking at the yellow line of SURPRISE, one can see the general balance of negative (below)





and positive (above). At the same time, we can see a range of texts that are not so balanced—anger and fear in The Red Badge of Courage, Native Son, and Things Fall Apart, as well as the fear alone in Dracula. Novels that have more negative semantic networks might be gothic (Castle of Otronto), depressive (Weiland), or politically fraught (Things Fall Apart, The Scarlet Letter, The Red Badge of Courage). On the other side, in ENJOY, we find the erotic Fanny Hill highest with Kathy Acker's romp Kathy Goes to Haiti in fifth; but most of the top ten are more ordinary domestic-social novels, including Little Women, My Antonia, and Vanity Fair. If we looked at each AFFECT strand, we'd find a general increase in the Twentieth Century of Desire, Anger, Enjoyment, Fear, Interest and Shame. Distress is most strongly represented in the Eighteenth Century. We would think that novels would very much be defined by their emotional distribution, and to some extent that is accurate; nonetheless, it would also seem that the novel, as a form, endeavors to maintain an ongoing emotional dialectic between positive and negative.

Looking at any given novel's affective web would demonstrate that the constraints of semantic distribution are not a hindrance to expression. Once we examine the affective particulars of any given novel—say, Emma (see graphic 7)—we see how the individual writer works within the constraints to develop the affective range of her characters. Although the overall proportions of affect might be fairly stable, the reach of any author is what defines the novel's cast of characters and their trajectories. The map of affects in Emma allows one to see what a complex of connections there are that go into shaping the values, emotional texture and moods of the text.

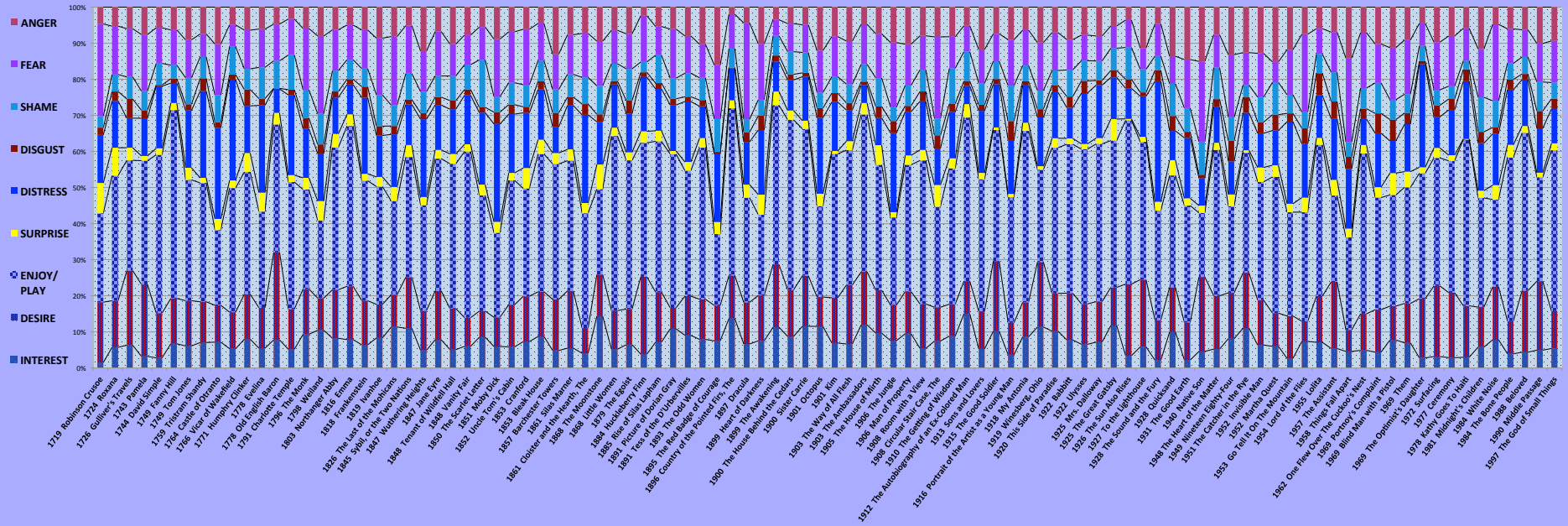
We have looked down into six semantic layers: from Overarching Four to Core Fifteen; from one strand of Core Fifteen—Body Named—into Five Core Body Zones; from one of those five—THE HEAD—into Nine Constituents of the HEAD. At the level of the Core Fifteen, we also looked at AFFECT which would be one strand of the NEUROLOGICAL BODY. At all levels these visual representations display relative stability, and that indicates a set of conventions that are unconscious, brainiacal. The persistent pattern suggests a knowingness that the form embeds indeed embodies. What it Knows is what it takes to get another human being's attention, interest, and focus, as a way to forge memory and regenerate desire. The rules of semantic distribution were formulated by an ancient (and ongoing) collective feedback process seeking the formula for transmitting information in a story.

## BIBLIOGRAPHY

- Austin, J.L. How to Do Things with Words: Second Edition (The William James Lectures). Cambridge, MA, 1975
- Bateson, Gregory. Steps to an Ecology of Mind: Collected Essays in Anthropology, Psychiatry, Evolution, and Epistemology
- Frye, Northrop. The Anatomy of Criticism. Princeton: Princeton U Press 1971
- Historical Thesaurus of the Oxford English Dictionary. Oxford University Press, 2009
- Kandel, Erik. In Search of Memory: The Emergence of a New Science of Mind. NY: Norton, 2007
- Panksepp, Jaak. The Archaeology of Mind: Neuroevolutionary Origins of Human Emotions (Norton Series on Interpersonal Neurobiology). NY: Norton, 2012
- Sedgwick, Eve Kosofsky, ed., Shame and Its Sisters: A Silvan Tomkins Reader. Duke University Press, 1995.
- Smail, Daniel Lord. Deep History and the Brain. Berkeley: U of California Press, 2008
- Watt, Ian. The Rise of the Novel. Berkeley: U of California Press, 1967
- Whorf, Benjamin Lee. Language, Thought and Reality. Cambridge, MA, MIT, 1964

AFFECT-SEMANTIC NETWORKS IN 100 ANGLOPHONE NOVELS, 1719-1997

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**Emma's Affects, Emotions & States:  
affective names, states, actions & descriptions**

- ashamed (27)
- contemptible/tuous (4)
- disdain (3)
- indignity/ation/antly (12)
- mortify/ing/ication/ied (26)
- SHAME
- afraid (65) [often associated with Mr. Woodehouse; weak fear]
- uneasily/iness (21)
- FEAR
- angry (19)
- cold (4)
- displeasure/ed (14)
- hate/d/ing/ful (9)
- ANGER
- anxiety/ious/iously/iety (56)
- agitate/d/ing/tion (28)
- depressed (7)
- distress/ed/ing (32)
- grieve/d/ing/ous/ously /ance (16)
- ill-humor/-ed (5)
- low (5)
- perturbation 4
- sorrow/ful 10
- unhappy/-iness 21
- vex/ed/ation (13)
- DISTRESS
- regret/s/able/ed 37
- any / no
- continual
- great/greater
- less
- more, much
- severe
- softened
- unnecessary
- disagreeable 22 [disambiguate from judgement]
- concerned (10)
- abominable (6)
- contemptible (3)
- abominable (6)
- blameless (2)
- folly
- contemptible
- kind (77)
- vulgar (8)
- detestable (1)
- awkward/ness (18)
- disgust/ing (12)
- remiss (4)
- unkind (1)
- blame (7)
- misconduct (4)
- saucy 5
- selfish (5)
- rude (5)
- uncivil (1)
- care/ing/ed (64)
- affection/ate (71)
- glow/ing 8
- cried (79) {not defining tears, but empathic/emotional speaking}
- smile/s/ing (107)
- laugh/ed/ing (49)
- frown (2)
- a long face (1)
- tears (11)
- tremor/trembling/ed 10
- arch/ly 4

- feeling/s/(153) felt (111) [264]
- agreeable (50)
- amusing (6)
- animate/ing/d (14)
- cheer/ful/ness/ly/ing (51)
- contented (4)
- delight/ed/ful/ly (100)
- exultation/ing/ingly (8)
- fond/ly/ness (45)
- glad (50)
- good-humour/ed
- happy/happiness (197)
- joy/ous/ly ful/fully (26)
- pleasure (115)
- pleased (56)
- pleasant (39)
- satisfied (46)
- positive
- gratify/ied/ing/ification (24)

- warmly
- extremely
- peculiarly
- completely
- highly
- more
- most
- much

- comfort state
- action
- comfortable 34
- doubt (97)
- no (43x)
- some
- (a) little
- seriously
- respect (44)
- confused/confusion (18)
- sorry (58)
- hope (208)
- saucy/iness (5)
- playful/ly (50)
- contemptuous (1)
- pity /iful (34)
- passion/ate (9)

states & attitudes

attachment (45)

negative

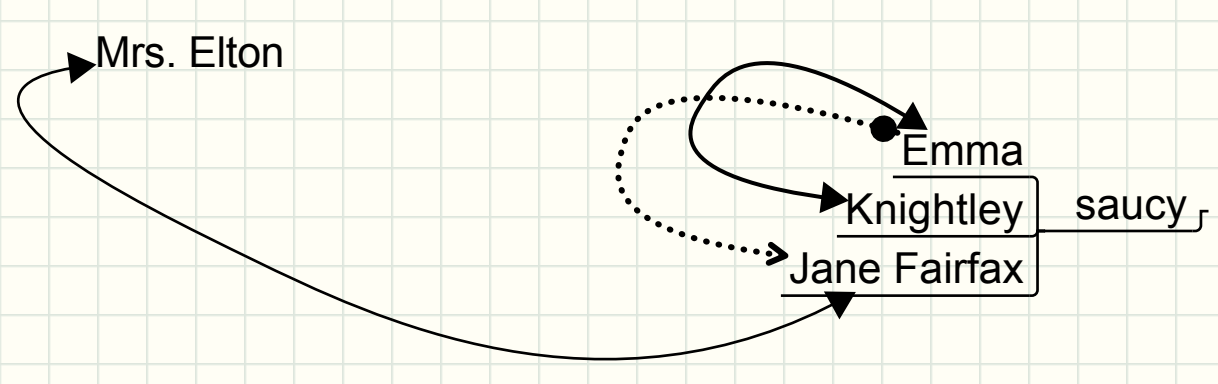
judgement/behavior

action/gesture

One gem here is "saucy." This word, used five times, manages to bring together a clutch of characters--Emma, Knightley, Mrs. Elton, and Jane Fairfax. It is used first and last to describe Emma, a particular look and attitude--we might say it was flirtatious--and it involves Emma's relation to Mr. Knightley; it emerges when it is safe to play--to tease a disruption in a stable relationship.

- strong and steady
- most desirable or most natural
- ardent
- friendly and compassionate
- growing
- improper
- imprudent
- a little
- symptoms of
- her own attachment subsided into a mere nothing
- a very promising
- real
- strong
- supposed
- warm

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1. Emma's trust in her relationship with Knightley is such that she can raise the question, make the observations, that she does about right and wrong judgment. The trust also has an erotic component--she feels "satisfaction" and then a little sauciness." There are oral implications, esp. in this novel where gruel and wedding cake fight it out.
2. Emma gives herself a "saucy conscious smile" when she perceives her past outrage about George Knightley marrying and thus not leaving the state to Henry, Emma's nephew, as a defense. What actually distressed her was the idea that anyone else would marry Knightley; she claimed him without knowing it. She owns her desire, hence the "saucy conscious smile."
3. Mrs. Elton's use of the word is to describe Jane Fairfax, and refer to the deception that Jane and Frank had perpetuated; the word is used with affectionate peevishness. The use makes a connection between Emma and Jane about their audacity, in reaching for something desired, in pushing at gender, age or class hierarchy. The use also links Mrs. Elton to Jane, as they are linked in triangle with Mr. Elton and in quartet with Harriet.
4. Last, Mr. George Knightley characterizes Emma's early and frequent or regular responses to him: "How often, when you were a girl, have you said to me, with one of your saucy looks--'Mr. Knightley, I am going to do so-and-so; papa says I may, or I have Miss Taylor's leave'--something which, you knew, I did not approve." So, he acknowledges this edge or attitude of hers toward his authority, and while he had not approved of it at the time, and thought it showed a "spoiled child" by the end of the novel he admits he is not longer : "I am losing all my bitterness against spoilt children, my dearest Emma." Her saucy looks seduced him.