



# laetus in praesens

Alternative view of segmented documents via Kairos

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## Interrelating Emotive Interjections in Response to Integrative Failure

### Binary coding of pattern-breaking interjections and expletives

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#### Introduction

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Annex of *Re-Emergence of the Language of the Birds through Twitter?*  
*Harmonising the configuration of pattern-breaking interjections and expletives* (2010)

## Introduction

This Annex is primarily focused on the nature of interjections and the possibility of clustering with the aid of a binary coding system. The approach is therefore exploratory and indicative of possibilities. A binary approach is used here as a basis for a richer framework developed subsequently (*Discovering Richer Patterns of Comprehension to Reframe Polarization*, 1998). The concern is to identify more fundamental distinctions to clarify the nature of any more complex configuration of the qualities associated with any array of interjections. The approach offers a means of filtering cognitive modalities into a pattern.

As noted there, the response to contemporary politics and world affairs, felt to be meaningful under the circumstances, now increasingly takes the form of **brief expressions**, variously termed **interjections, exclamations, ejaculations, expletives or invective**. Such responses are typically used when any appropriate reaction is held to be "beyond words" -- and thereby acknowledging a "netherworld" of which many are obliged to be aware as the language of "real people" (*Designing Global Self-governance for the Future: patterns of dynamic integration of the netherworld*, 2010). Given the effective failure of the integrative approaches (associated with inter-disciplinarity, interfaith, multicultural, etc), interjection might also be understood as their "shadow" of unfulfilled potential -- in the psychological sense.

It is of course the case that in the Westminster parliamentary tradition, it is members of the "Shadow Cabinet" that are both source and focus for pattern-breaking interjections in relation to those speaking on behalf of the government. It is however noteworthy that, whatever the mode, interjections are typically edited out of official records of debate -- as **unparliamentary language** relative to parliamentary language (*lingua legislata*). This would tend to confirm their role in pattern-breaking.

The reference in the main paper to harmony in a musical sense highlights the fundamental challenge of constraints on human comprehension and the implications for **tuning systems** and associated **musical scales** (**diatonic, chromatic, whole tone, pentatonic, hexatonic, heptatonic, octatonic**). In the effort to interrelate the set of interjections as an integrative pattern a relation is established here to Chinese binary coding of distinctions and its relevance to tone quality -- and potentially to the "tone" of interjection.

## Minimum requisite variety of distinct expressions

**Emergence of collective intelligence:** The question here is how the different clues above might be used to configure the repertoire of existing "emotional" responses (interjections), rather than to design a new set. To reinforce the distinction from conventional expression, "emotion" is used here as a cognitive conflation of the **four ego functions** postulated by C.G. Jung (*Psychological Types*, 1921):

sensation, thinking, feeling, and intuition.

As noted above, the question is whether human collective intelligence is to be understood as emerging through a slightly richer set of rules governing "flocking behaviour" -- via Twitter, for example? If 3 rules suffice to simulate bird flocking (as noted below), what is the minimum size of the rule-set appropriate to sustainable global governance exhibiting "collective intelligence"? To what extent is a set of interjections a comprehensible indication of the elements of that rule-set?

As with designing a musical instrument, many designs of such a rule-set may be possible and all may be susceptible of later improvement. This implies hypothetical and experimental consideration of either or both:

- how many basic emotions **need** to be expressed, especially if artificially constrained by the requirement to use no more than some number, 5, 7, 9, etc (George Miller (*The Magical Number Seven, Plus or Minus Two*, *Psychological Review*, 1956)
- how many basic emotions **could** be expressed, again if such a constraint were used

These raise the methodological issue encountered in consideration of [tuning systems](#) in music and the design choice in selecting how many [tones](#), or [pitches](#), to use when playing music. In other words, it is the choice of number and spacing of frequency values. By contrast to the "octave", this is exemplified by the [systems for the twelve-note chromatic scale](#). The range of musical instruments (percussion, string, etc), and how they are variously appreciated, makes the point that the spectrum of emotions could be variously divided. Relative preferences worldwide for simpler instruments is clearly a consideration (guitar vs organ, for example).

**Constrained operating vocabularies:** Another consideration is recognition of the relatively constrained vocabularies used in practice, even by those having received an extensive education providing familiarity with some extensive technical vocabulary. Thus one American survey helpfully focuses on *How Many Words Do Students Need to Know?* and *What Does It Mean to 'Know' a Word?* (Fran Lehr, et al., *A Focus on Vocabulary*). However this did not address what "need" might mean. Another notes that, whilst there are hundreds of thousands of words in English and native speakers may "know" upwards of 20,000, only around 2,000 are in common use [[more](#)]. Such studies typically fail to clarify how many words students may actually use in their daily life.

Given the desperate efforts to delivery "literacy", a more pertinent question is **how many "words" (as "conceptual operators") do people actually require to sustain their sense of identity and quality of life -- to survive?** Any such estimate should contrast with the number required for conventional paper qualifications -- which may well no longer correspond to employment opportunities. What "melodic" signature tune of "interjections" then makes for a coherent and distinctive identity?

Several approaches may be considered:

- **Conceptual primes:** In considering how animals think, Anna Wierzbicka explores a unified conceptual framework within which the cognition of humans and animals could be jointly considered and compared in clear and precise terms (*Conceptual primes in human languages and their analogues in animal communication and cognition*. *Language Sciences*, 2004).  
  
She argues that all natural languages share a common core: a small vocabulary of 60 or so 'conceptual primes' and a 'universal grammar' (the combinatory properties of the primes). These are analogous to the chemical elements and their basic combinatorial properties which opened new vistas for chemistry. However, the primes so detected (and presented in a table) are less "primitive" than those assumed to be associated with emotive interjections. Her primes may rather constitute an elaboration of that set -- based on the "groups" in the periodic table analogue.
- **Toki Pona:** The minimal (oligoisolating language) [Toki Pona](#), designed by [Sonja Elen Kisa](#), focuses on simple concepts and elements that are relatively universal among cultures in order to express maximal meaning with minimal complexity. The language, inspired by Taoist philosophy, has 14 phonemes and a vocabulary of some 120 [root words](#).
- **Texting vocabulary:** The size of a texting vocabulary is suggestive of the most common operational concepts. One source lists 353 terms (*Text Messaging Vocabulary*, MTA Wireless).

These three cases, in contrast with the above estimate of 2,000 words, are highly suggestive of the possibility that a cognitive constraint, of which the [Dunbar number](#) is held to be an indicator, may also apply to "essential" vocabulary size -- namely the vocabulary with which a person is actively comfortable, possibly even as defining a "comfort zone". The number is typically given as 150, with various qualifications as separately discussed ([Dunbar number](#), 2010). More curious is the possibility that the very success of Twitter is associated to some degree with its 140 character limit on message length. Such considerations may apply as much to advertising and political slogans as to [haiku](#) and memorable prayers. Measures of readability may also be related to that constraint, as with the [Flesch-Kincaid readability test](#) which, for example, gives the highest (easiest) readability score possible as around 120 (e.g. every sentence consisting of only two one-syllable words); there is no theoretical lower bound on the score. The formula is:

$$206.876 - 1.015 \left( \frac{\text{total words}}{\text{total sentences}} \right) - 84.6 \left( \frac{\text{total syllables}}{\text{total words}} \right)$$

It is of course the case that the typical one-word interjection achieves the highest "readability" of 121.261 !

**Community integration of foreigners and the autistic:** One interesting way of framing the issue is by determining the set of minimal phrases/interjections required for a "foreigner" to be considered as interfacing adequately with a community. Clearly the set could be smaller in size to the extent that its elements could be combined -- effectively "played" -- to offer an acceptable degree of behavioural identity. "Foreigner" may also include those seeking membership of a specialized community. Aspects of this challenge have been articulated to some degree in book series, typically with titles starting *How to Bluff Your Way in...*

A variant of this approach is evident in the case of those on the asperger-autism spectrum, but with intelligence appropriate to the

challenge of elaborating such a set and experimenting with its use. Various films have exploited the humorous opportunities associated with such explorations.

**Future implications of humanoid robotics and agents:** Another approach is to consider, in the light of the [Turing test](#) (designed to distinguish human and machine via a communication process), what sort of test might apply to make such a distinction in the case of non-lexical communication? How many kinds of response -- distinct expressions (sounds, etc) of what variety -- guarantee recognition as meaningful human communication? When is the simple "congenial grunt" considered an adequate indicator of "human" communication? What are the characteristics of a minimal viable language capable of inducing community? Rather than Wierzbicka's categorization of conceptual primes, might the elements of such a language be characterized by the conflation of such parts of speech into primitive (if not primal) forms typical of interjections? What are the implications for "humanised" communications by robots?

Of relevance in the immediate future is the development of sets of behavioural characteristics for the interaction of virtual agents with humans, as is already implemented in some automated messaging systems. At what point will integration of emotive reactions make it challenging to distinguish from human responses -- as with greeting phrases and simple rules of netiquette? The notorious [Microsoft Bob](#) interface merely anticipated future possibilities (Harry McCracken, *The Return (Gasp!) of Microsoft Bob*, *PC World's TechLog*, 10 March 2006). More challenging will be the emergence of online software agents configured as "friends" -- especially problematic being situations when this is done to "groom" people for various purposes, ideological, religious, or criminal.

On the other hand in the near future it may well prove practical for individuals to clone their own virtual "friends", multiplying their number far beyond that already achieved via social networking, such that their "flocking" (effectively as intelligent agents) enables higher orders of collective intelligence.

More crucially, how many kinds of feedback are required to guide collective intelligence appropriately? In contrast to the 3 rules of boid simulation, and in the light of the challenge of controlling a helicopter, 12 learning/action modalities are distinguished by [Arthur Young](#) (*The Geometry of Meaning*, 1978), as previously considered (*Navigating Alternative Conceptual Realities: clues to the dynamics of enacting new paradigms through movement*, 2002). Are these sufficient or does the binary coding of interjections point to a larger set of relevance -- as suggested by organization within a Fibonacci spiral (see Annex: *Harmonious interrelation of different modes*).

Of particular interest are the ways in which modes of knowing combine or exclude kinds of knowledge or styles of presentation as separately summarized (*Systems of Categories Distinguishing Cultural Biases*, 1993).

**Responsiveness of robotised institutions to humans:** The point is raised otherwise by institutional solicitation of feedback from the public. Given the quantities of messages supposedly received as a result, the use made of such messages (as perceived by the sender) typically does not permit a distinction to be made between human and machine recipient. Any response is typically extremely simplistic -- raising the same doubt (*Considering All the Strategic Options -- whilst ignoring alternatives and disclaiming cognitive protectionism*, 2009). The limited capacity of institutions to ingest rational feedback (and engage with it) is presumably a factor in encouraging the physicality of demonstrations and the problematic consequences of their non-verbal communication.

## Interjections as a set of emotive qualitative judgments

The above indications of minimum requisite variety of expression consistent with the Dunbar number suggest a larger range (of relevance below) than an even more basic set of interjections. A distinction could then be usefully made between:

- basic pattern-breaking interjections, effectively "putting the pattern to the question" regarding what is otherwise unsaid
- basic pattern-reinforcing interjections, unquestioningly affirmative of a presentation
- a larger set, including other cognitive modalities of the minimally requisite set, including variations and combinations

The question might be crudely framed as how many distinct expletives are required in reaction to patterns to enable their transcendence? Ironically deities may be "invoked" (blasphemously) to that end. Frequent references to a "netherworld" may be held to be appropriate (*Designing Global Self-governance for the Future: patterns of dynamic integration of the netherworld*, 2010).

Of potentially direct relevance is a text in Russian (*The Interpretation of Emotive Interjections as Signs of Perception*, *Russian Linguistics*, 26, 2, 2002, pp. 235-254)

Typically few lists of interjections are structured other than alphabetically. The most valuable study of interjections appears to be that of Vladimir Jovanovic (*The Form, Position and Meaning of Interjections in English*, *Facta Universitatis (Linguistics and Literature)*, 2004). He argues that interjections are one of the marginal and perhaps least discussed upon classes of words -- largely neglected in linguistics. This is consistent with the earlier argument of F. Ameka (*Interjections: the universal yet neglected part of speech*, *Journal of Pragmatics*, 1992).

However interjections are now the subject of active debate, as noted by Manuel Padilla Cruz (*What Can Interjections Communicate: a complementary relevance-theoretic proposal*, *XXVII AESLA International Conference*, Ciudad Real, 2009). He indicates that the current relevance-theoretic approach to interjections of Tim Wharton (2003) holds that they encode procedural information that contributes to the recovery of higher-level [explicatures](#). The type of interjections that Wierzbicka (1991) and Ameka (1992) have labelled as emotive or expressive interjections lead the hearer to embed a proposition they accompany under a propositional-attitude description, enabling the hearer to comprehend the attitude expressed toward the proposition communicated. When an interjection appears as an independent utterance without an accompanying proposition, it provides the hearer with a vague idea of the speaker's feelings or emotions.

Jovanovic provides a comprehensive list of interjections used in the English language with corresponding explanations of their meaning. He distinguishes 6 sets (of very different size) based on their pragmatic value:

- situation-oriented interjections with restricted pragmatic purpose.
- those largely based on echoism and onomatopoeia (present an orthographic representation of sound, suggesting the virtual sound or imitating it as closely as possible)
- oaths and euphemistic expressions.
- commands, orders or calls to animals
- calls, notably as encouragement to others
- attention-seeking interjections in English

Several approaches were taken with respect to the following table:

- lexical representations: There are a number of lists of interjections in English. Some include lexical representations of sound variants.
- sounds: On the assumption that the most basic sounds are associated with recognizable qualitative expression, the following checklist indicates results of a simple search based on, for example, "grunt of". Of interest to further investigation is the existence of a freely available "sound encyclopedia" ([soundbible.com](http://soundbible.com)) into which volunteers feed sounds -- offering access by search terms such as "grunt". Clearly a distinction needs to be made between varieties of "shriek" or "cry", for example, to associate the actual sound with "pain" or "joy".

The table includes all categories from the instructive table of Jovanovic which groups them according to their meaning, or rather, according to the predominant semantic features indicative of their meaning. These are indicated as rows in square brackets (eg [anger]), and in those cases the third column includes a very selective sample of the interjections he associates with that category (often including those from other languages, possibly used in English). The unbracketed "categories" were derived from various searches and lists, notably those associated with sounds. The final column indicates some sounds associated with particular categories. This information is **not** derived from Jovanović, but to avoid duplication a sound may be listed against one of his categories. The rows have been roughly clustered into 8 larger "groups", distinguished by alternative colouring of sets of rows and given an arbitrary mnemonic to relate the "octave" to the harmonic associations (considered below).

**Fig. 1: Tentative clustering of the variety of interjections**

<b>Group</b> (mnemonic)	<b>Category</b>	<b>Lexical representation of interjections</b>	<b>Interjection sounds</b>
Do	[anger]	damn! hell! hunh! shit! ...	.
	[annoyance]	damn! tut-tut!...	.
	[indignation]	here! ...	.
	challenge, caution	hey! whoa!	.
	frustration	.	grunt
	warning	.	shout, yell, whoop, whine, howl
	protest	.	shout, yell, whoop, whine, howl
Re	[approval]	hurrah!...	.
	[delight]	ah! coo! coo-er! yippee! ...	shriek, screech, scream, squeal
	[pleasure]	aha! wow! yum! yunyum! ...	.
	[enthusiasm]	wahoo! ...	.
	[joy]	whoopee! yippee!...	shout, yell, whoop, whine, howl
	[triumph]	aha! ha! hurrah! ...	.
	pleasure (anticipated)	ooh!	.
	pleasure (appreciated)	mmm! yum!	.
	affirmation	.	grunt
	victory	.	shout, yell, whoop, whine, howl
celebration	.	ululate. whistle, hiss	
appreciation, admiration	wow!	ululate. whistle, hiss	
Mi	[contempt]	bah! humph! phoey! pshaw! rot!...	.
	[disgust]	aargh! fuck! phew! rot! shit! ugh! yuck!...	snort
	disgust, distaste	ugh! yuk! eek! argh!	.
	disapproval	.	groan
	disagreement	.	snort
	deprecation	.	ululate. whistle, hiss
Fa	[fear]	eeeeek! oh!	shriek, screech, scream, squeal
	[pain]	ah! ouch! yipe! yow!...	.
	dismay	.	groan
	horror	.	shriek, screech, scream, squeal
	pain	.	groan, shriek, screech, scream, squeal
So	[impatience]	tut-tut! ...	.
	[irritation]	hell! hoot! shit! ...	.
La	[pity]	alas! och! ...	.
	[sympathy]	now! tsk!	.
	[sorrow]	alas! heck! och! ...	.
Ti	[relief]	whew! ...	sigh
	completion, exhaustion	phew!	.
	contentment	.	sigh
	satisfaction	.	burp, belch
	effort	.	groan
	[surprise]	ah! coo! gee! hey! oh! wow!...	.

Do'	[wonder]	gee! gosh! ha! oh! wow! ...	.
	astonishment, realization	ah!	.
	accident	oops!	.
	acknowledgement	.	grunt
	disappointment	.	groan

The table is of course crude and very preliminary -- if only in terms of its linguistic bias and with respect to the degrees of subtlety in a "cry" or a "sigh". Use of "emotive", despite the earlier reservation, could benefit from consideration of the "value-charged" terms that were a focus of the [Human Values Project](#) and its exploration of the clustering of values into [value complexes](#). This might offer a more fruitful understanding of Wharton's "higher-level explicatures" as well as reframing these in terms of "attractors" (*Human Values as Strange Attractors: coevolution of classes of governance principles*, 1993). As an "octave" set, there is necessarily a case for "tuning" it as previously discussed more generally in relation to modes of knowing (*Towards a Periodic Table of Ways of Knowing*, 2009; *Tuning a Periodic Table of Religions, Epistemologies and Spirituality: including the sciences and other belief systems*, 2007). The possibility of such tuning also follows from the consideration of the "tone" of interjections, as noted in relation to the Chinese *Ba Yin* system (see Fig. 3).

UK House of Lords: Debate regarding social housing ( <i>Hansard</i> , 21 October 2010) (reproduced in <i>The Observer</i> , 24 October 2010)	
<i>Baroness Hollis of Heigham: My Lords, on social housing, is it not the case that if you cannot find a job your housing benefit is cut after 12 months, your rent arrears mount up, you are evicted and you become homeless? Equally, however, if you find a job with an adequate income, you are also likely to lose your home and be encouraged to move into a different form of tenure. So, fail to get a job and you are out; get a job and you are out. Is that decent?</i>	
<i>Baroness Hanham: My Lords, I think it is.</i>	
<i>Noble Lords: Oh!</i>	

## Binary encoding of distinctions

**Unitary "distinction":** Naively it might be assumed that at its most basic level a sound is emitted to indicate a sense of types of surprise, distinction, or incompatibility. These implications would be conflated, transcending verbal definition. Of relevance is the manner in which this transcends the "yes"/"no" binary distinction, as with the advocacy of "po" by Edward de Bono (*Po: Beyond Yes and No*, 1990).

This condition "beyond yes and no" may be related to the vigilance prior to any decision, appropriate in anticipation of possible surprise, as highlighted with respect to the notorious poem of [Donald Rumsfeld](#) regarding the [unknown unknowns](#), discussed separately (*Unknown Undoing: challenge of incomprehensibility of systemic neglect*, 2008). It might even be related to the classic Zen *koan* regarding the "sound of one hand clapping". It could usefully be represented by an alternation between, and therefore "blurring" together, the following two symbols.





**Binary distinction:** At a second level, in any response to a pattern, a distinction would tend to be made between two conditions::

- interest, sense, unfamiliar, (attractive), threat, extremism, happening, assertive coherence, leadership incongruity, contradiction
- indifference, boring, familiar, nonsense, normalcy, receptive coherence, followership

Of particular interest is the distinction between "agreement" and "disagreement" (or "affirming" and "denying"), especially where this is vital to any sense of "singing from the same hymn sheet" or being "off program" -- notoriously represented by "*you are either with us or against us*", as a fundamental binary principle of US foreign policy (*Us and Them: relating to challenging others*, 2009). Ironically this widely "deprecated" binary approach is of course fundamental to rating of many forms of communication and the triage of e-mails. The blocked polarization of the climate change debate into "believers" and "deniers" is significant in relation to more nuanced distinctions explored below. Many interjections are effectively a counterpoint to a proposition -- "not-A" reacting to the proposal for "A".

It is however interesting to force the distinctions further, as they relate to communication -- using the above symbols.

 expressing, saying ("noise") listening engaging feeling "alive", "switched on" attentive	 not-saying, not-expressing ("silence") not-listening disengaged, apathetic unfeeling "dead", "turned off" distracted
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There is an important sense in which the coding is "self-reflexive" in that the basic distinction can imply contrasting qualities with a degree of ambiguity, as explored separately (*Distinguishing Levels of Declarations of Principles*, 1980). This ambiguity is especially significant with regard to pejorative connotations in polarization. It is reflected in the *Ba Gua* distinction between "stationary" and "moving" lines. In the above presentation it is evident in the limitation on communication "channel capacity". For example:

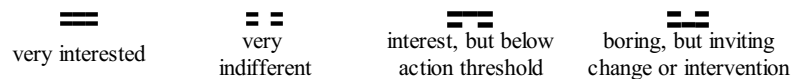
- the process of "expressing" is accompanied by a process of "not-listening", just as "not-expressing" may imply a process of "listening".

- professing "knowledge" is unsuspecting of ignorance yet to become apparent, whereas deliberately assuming "ignorance" is unsuspecting of what others may recognize as knowledge

Again, in the two cases, the qualities mentioned may be conflated. More generally, this highlights questions about what one is "not-doing" when engaged in any particular form of "doing", as discussed separately (*Unknown Undoing: challenge of incomprehensibility of systemic neglect*, 2008). Such ambiguity also calls into question the association of particular qualities with representation by an "unbroken" or a "broken" line. This is a design choice which can be fruitfully reversed to challenge unfruitful connotations.

Whilst seemingly simplistic, these considerations are fundamental to the emerging concern with "dissidence", its expression as "social unrest", and framing such "disruption" as characteristic of anarchism -- even terrorism -- thereby justifying the most extreme responses. Richer patterns therefore merit consideration. With respect to e-mail filtering and tagging, the distinction raises the possibility of being able to detect and filter "good news" ("positivity") and "bad news" ("negativity"), for those so inclined -- despite the reservations emerging from the following discussion.

**Four-fold distinction:** At a third level, the binary distinctions are further qualified, again on the assumptions that the associated qualities would be conflated:



Again, with respect to e-mail filtering, the question is whether such distinctions could be readily and usefully made.

**Eight-fold distinction:** Further qualitative distinctions are made in the light of the following approach originally taken, for a quite distinct purpose, by William S. Huff (*Homonym, Homonym and Homonym, and Other Word Pairs*, 1992) -- as previously discussed in relation to the Chinese *Ba Gua* coding scheme (*Conditions of Objective, Subjective and Embodied Cognition: mnemonic systems for memetic coding of complexity*, 2007). Without considering the qualitative distinctions made within Chinese culture, Huff "borrowed" the trigram structure of that scheme as a means of indicating how a word looks (spelling), sounds (pronunciation), and signifies (means). He then uses the eight trigrams to distinguish word pairs as follows:

**Fig. 2: Distinguishing word-pairs** (example of William Huff)

Trigram	Attributions of significance			Descriptor	Word-pair examples
	Sight (spelling) <i>Upper line</i>	Sound (pronunciation) <i>Middle line</i>	Sense (significance) <i>Lower line</i>		
☰	—	—	—	Identity	dog / dog
☱	--	—	—	Homophonic variant	gaol / jail
☲	—	--	—	Polyphone	the
☴	—	—	--	Homonym (homograph)	hide
☵	--	--	—	Synonym (heterophonic variant)	car / automobile
☶	--	—	--	Homophonic homonym	yoke / yolk
☷	—	--	--	Heterophonic homonym	lead
☸	--	--	--	Heterologue	elephant / rose

This mnemonic pattern is presented here as suggesting a means of handling further patterns of distinction of relevance to current communication challenges and possibilities..

## Towards an integrative coding of qualitative interjections

Huff's encoding method might then be applied to the experience of discourse, especially political discourse or communications intended to evoke an effect -- and in response to which challenging meta-narrative interjections may be made (if only out of frustration). The distinctions made earlier may then be extended into an 8-fold set, more specifically adapted to political discourse. This is designed to capture "tangible" distinctions between:

- "sight", namely how a policy "looks": distinguishing "billboarding vision" from "lack of transparency" (stealth politics, etc)
- "sound", namely how a policy "sounds": distinguishing "sound" policy from "unsound" policy ("sounding funny")
- "sense", namely claims that a policy is "sensible" as opposed to "senseless" ("nonsense", meaningless, etc)

It is the evident inconsistencies and contradictions (as encoded by the table) which evoke pattern-breaking interjections. The table is used to relate the *Ba Gua* pattern of trigrams of the *I Ching* to the "Eight Sound" pattern of the *Ba Yin* derived from it and representing distinct tone qualities. These are the eight categories of natural materials out of which musical instruments were constructed, in terms of which it was held that all categories (and musical instruments) had to be represented in any ritual music ensemble in order to produce music in harmonious accord with nature. A theoretical system of 12 pitches per octave was also used, of which the first frequency of the system was called 'Yellow Bell' (*Huangzhong*) -- serving as the primal generator of the whole series of twelve (Darryl Lyman, *Yellow Bell: music of the universe in Ancient China*, 26 October 2009; Fred Fisher, *The Yellow Bell of China and the Endless Search*, *Music*

*Educators Journal*, 59, 8, 1973). There is a case for exploring the correspondences between the mythical status (and assumed role) of the Yellow Bell in China and that of the Language of the Birds in other cultures -- especially in the light of the significance of harmony in both.

Both traditional and current reflection on the correspondences to various tuning systems are the subject of continuing study, as noted in a thoughtful description of *Chinese Theories of Music* by Gregory Youtz (*Silk and Bamboo: an introduction to Chinese musical culture*, 1999, ch. 9). Whilst the *Ba Gua*, *Ba Yin* and instrumental correspondences in the following table are derived from Youtz, the association of "mnemonic group" with trigrams in the table is purely arbitrary at this stage, serving only to indicate the possibility of a useful future association with types interjection. The ambiguity of the "discourse interpretation" follows (tentatively) from the classic distinction made by Marshall McLuhan (*Understanding Media*, 1994) between "hot" and "cool" modes of communication. In Alternate A the mode effectively favours "hot", treating "coolth" as questionable and unserious -- emphasizing closure. With Alternate B, "coolth" is favoured, with the contrary considered questionably "overbearing" and suspect -- emphasizing openness.

**Fig. 3a: Distinguishing potential for interjection in discourse**

Fig. 3a: Distinguishing potential for interjection in discourse									
Classical Chinese correspondences				Attributions of significance			Discourse interpretation		Mnemonic group (arbitrary)
Trigram	<i>Ba Yin</i> (tonal quality)	Examples of musical instruments	<i>Ba Gua</i> ( <i>I Ching</i> )	<b>Sight</b> ("vision") <i>Lower line</i>	<b>Sound</b> ("declaration") <i>Middle line</i>	<b>Sense</b> ("meaning") <i>Upper line</i>	<b>Alternate A</b> (favouring <b>closure</b> )	<b>Alternate B</b> (favouring <b>openness</b> )	
☰	<i>Shi</i> (stone)	stone chimes	Heaven (sky, creative force, strength)	—	—	—	consistent, decided, looks, sounds and seems OK	completely overbearing and uncool	Do
☱	<i>Jin</i> (metal)	bells, gongs and metal drums	Lake (marsh, joyous, open, devotion)	—	—	--	looks and sounds OK, but relatively meaningless	cool intentions, but seemingly uncool	Re
☲	<i>Si</i> (silk)	stringed instruments	Fire (clinging, radiance, clarity)	—	--	—	looks OK, meaningful, but sounds curious ("speaks with forked tongue"?)	sounds cool but uncool looks and intentions	Mi
☴	<i>Mu</i> (wood)	wood blocks	Wind (gentle, penetrating)	--	—	—	looks bizarre, but sounds OK and is meaningful	looks cool, but otherwise uncool	Fa
☳	<i>Zhu</i> (bamboo)	woodwinds: flutes, reed-based	Thunder (arousing, initiative)	—	--	--	looks OK, but sounds bizarre and relatively meaningless	looks uncool, but otherwise cool	So
☵	<i>Ge</i> (hide)	leather-headed drums	Water (abysmal, dangerous)	--	—	--	looks bizarre, sounds fine, but relatively meaningless	sounds uncool, but cool looks and intentions	La
☶	<i>Bao</i> (gourd)	mouth organs	Mountain (keeping still, stand-still)	--	--	—	looks and sounds bizarre, but relatively meaningful	looks and sounds cool but uncool intentions	Ti
☷	<i>Tu</i> (clay)	clay flutes and drums	Earth (receptive, devoted, yielding)	--	--	--	uncertain, questioning, looks and sounds bizarre, and is relatively meaningless	consistently and completely cool	Do'

Alternation between the "closure" interpretation of Alternate A and the "openness" interpretation of Alternate B is the essence of any system limited to binary logic -- as in contemporary politics in which each alternate demonizes the other. The enrichment of such distinctions is a characteristic of epistemological frameworks honouring variety (*Systems of Categories Distinguishing Cultural Biases*, 1993) -- notably the *mindscapes* of Magoroh Maruyama and the "pre-logical biases" of W. T. Jones. The interplay of alternatives will no doubt be a preoccupation of the future (Ed Bremson, *The Tao of Politics*, 2005; Thomas Cleary, *Tao of Politics: lessons of the Masters of Huainan*, 1990).

## Alternative attribution of signs to value polarities in discourse interpretation

The possible ambiguity of associations between signs and values is further clarified in Fig. 3b. and Fig. 3c. Of relevance is a tendency to attribute a "positive" connotation to an "unbroken line" and a "negative" connotation to a "broken" line which plays into many biases, most notably those associated with male vs. female. The contrasting structure of such signs can be usefully employed to explore the "negative" connotations of the "unbroken" line and the "positive" connotations of the "broken" line -- as with the case of "closure" vs. "openness". A clustered range of value value polarities to which this approach could be applied is indicated in the table of [Value Polarities](#) of the [Human Values Project](#). Interesting examples include coherent-incoherent, knowledgable-ignorant, practical-impractical.

**Fig. 3b: Further illustration of alternative attribution of signs to value polarities in discourse interpretation**  
(omits the 6 intermediary conditions -- "shades of grey" -- between the extremes in each case, as highlighted in Fig. 3a)

a	A	B	A	B	A	B	A	B	A	B
b	cold	cold	alienated	alienated	negative	negative	false	false	evil	good
c	warm	warm	engaged	engaged	positive	positive	true	true	good	evil
=	very cold	very warm	very alienated	very engaged	very negative	very positive	very false	very false	very evil	very good
(6)	(6)	(6)	(6)	(6)	(6)	(6)	(6)	(6)	(6)	(6)
::	very warm	very cold	very engaged	very alienated	very positive	very negative	very true	very true	very good	very evil

The following table again uses polarities, but in terms of an explicit 4-fold distinction, endeavouring to highlight the challenges of associating particular values with either the "broken" or the "unbroken" line. Also of interest is any connotation of placing one above the other in the two intermediary alternatives, namely whether they are to be "read" from top down or from bottom up -- given connotations of "up" (and "above") and "down" (or "below"). Such a presentation invites further reflection to "tune" the contrasts between the distinctions made -- with the addition of examples for the intermediary conditions (\*\*\*) omitted at this stage). Again, the particular selection of 6 polarities can be fruitfully confronted with that of "pre-logical biases" of [W. T. Jones](#), as summarized (*Axes of Bias in Inter-Cultural Dialogue*, 1993). **The polarities of Fig. 3b and Fig. 3c are fundamental drivers in most political discourse -- the "poles" being used as "weapons" through which to attack opponents, as in the traditional martial art of [quarterstaff](#) (and possibly [kendo](#)).**

**Fig. 3c: Further illustration of attribution of signs using a 4-fold distinction**

	Extreme values of binary polarity	Preferred sign attribution (either a or b)	Extreme connotation ["A"]	Intermediary alternative I ["A and not-A"]	Intermediary alternative II ["neither A nor not-A"]	Extreme connotation ["not-A"]
1	system, structure, clarity, closure, coherence, order	a	coherence	***	***	incoherence
		b	ordered diversity	***	***	integralism
	openness, diversity, fluidity, muddle, disorder	a	openness	***	***	rigidity
		b	connectivity	***	***	fragmentation
2	positive, optimistic (upbeat, uncritical, "glass half-full")	a	positive	***	***	negativity
		b	"glass half-full"	***	***	pessimism
	negative, pessimistic (questioning, critical, "glass half-empty")	a	questioning	***	***	unquestioning
		b	critical	***	***	contradictory
3	analytical (cold, "head")	a	analytical	***	***	fuzzy thinking
		b	systemic	***	***	confusion
	empathetic (warm, "heart")	a	inclusive	***	***	exclusive
		b	empathetic	***	***	intolerant
4	belief, assent, confirmation, agreement ("with us")	a	affirmation	***	***	denier
		b	"our kind"	***	***	"others"
	challenging,					

	disbelief, denial, disagreement,	a	otherness	***	***	syncretism
		b	challenging	***	***	complicity
5	attachment, engagement, identification	a	identification	***	***	detachment
		b	engagement	***	***	rejection
	detachment, alienation, disengagement	a	alienation	***	***	attachment
		b	***	***	***	***
6	practical, concrete	a	***	***	***	***
		b	***	***	***	***
	theoretical, abstract	a	***	***	***	***
		b	***	***	***	***
7	interjection, protest interruption, intervention	a	interjection	***	***	silence
		b	interruption	***	***	acquiescence
	silence, abstention	a	silence	***	***	***
		b	silence	***	***	interjection

As a consequence of the classical [excluded middle of logic](#) (fundamental to the binary logic of government policy), and despite recognition of [false dilemmas](#) precluding consideration of other options, there is a challenge to identifying meaningful terms for such intermediary options -- hence the use of "\*\*\*" in Fig. 3c for those terms. This is especially evident when, in contrast with the polar terms ("A" or "not-A"), they imply some understanding of "A and not-A" or "neither A nor not-A". This offers a reason to explore the metaphorical articulation of 4-fold and 8-fold (and more) distinctions within the Chinese pattern of the *I Ching* and other classics. See also [Distinguishing Levels of Declarations of Principles](#) (1980).

Curiously there is considerable experiential familiarity with such intermediate conditions in interpersonal relationships, especially of a romantic nature. It might also be said to be evident in sexual orientations, now that lesbians, gays and transexuals are defining preferences in practice which are neither "A" nor "not-A" -- or are both, or more, as illustrated by the widely publicized challenge of the sexuality of athlete [Caster Semenya](#). Given the "romantic" example, in the proposal for "axes of bias" by W. T. Jones, as a philosopher, it is ironic that his general model was triggered by the observation that academic debate regarding the definition of the "romantic period" was fraught with divisive argument whose dynamics could be predicted by identifying the positions of participating authors on those axes. Hence the title of his study (*The Romantic Syndrome; toward a new methodology in cultural anthropology and the history of ideas*, 1961). Such predictability might be said to be evident in the many repetitive, and unfruitful, debates on policy at every level of society.

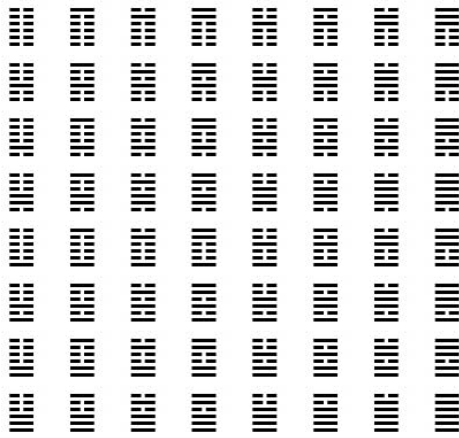
With respect to e-mail filtering, how might it be possible to tag messages, if it is not possible to make a 4-fold distinction, or an 8-fold distinction, with the aid of algorithms -- especially given any preference for one interpretation or another (eg openness vs closure)?

It is of course the case that musical instruments provide their own form of characteristic "interjection" -- as commonly evident at political demonstrations. Potentially of greater relevance is the recognition of eight "tonal qualities" of which such instruments are effectively metaphors. Much is made in the case of interjections regarding the associated "tone" in which they have been expressed. The tone of an interjection may be the distinguishing factor. Is there a possibility of associating one of eight audible tones to an e-mail communication?

The comments of Youtz regarding traditional categorizations by tone, especially in the light of other than 8-fold sets of tones, point to a rich set of insights of relevance to reflection on interjections. Especially significant is the tonal sensitivity of the Chinese language. Of related interest are insights into tonal combinations and what they might contribute to understanding combinations of interjections. This dimension adds to the indication above regarding the possibility of "tuning" any set of interjections, as recommended with regard to a more extensive "periodic table" of interjections.

To the extent that communications (especially e-mail) are now framed in expectation of the evaluation "bad news" or "good news", there is a danger of being trapped in a binary stimulus context ("stick" or "carrot") eliciting corresponding interjections. There is therefore a strong case for refusing such entrapment and its implicit definition of human nature, bearing in mind the comment of policy scientist [Geoffrey Vickers](#): *a trap is a function of the nature of the trapped* (*Freedom in a Rocking Boat: changing values in an unstable society*, 1972). The above table points to **the possibility of a more complex pattern of evaluations and responses -- enabling more fruitful strategies to emerge.**





In exploring use of such a hexagram, an alternative attribution of significance to that of Fig. 5 would be as follows, as separately discussed (*Strategic Patterns in terms of Knowing, Feeling and Action*, 2008).

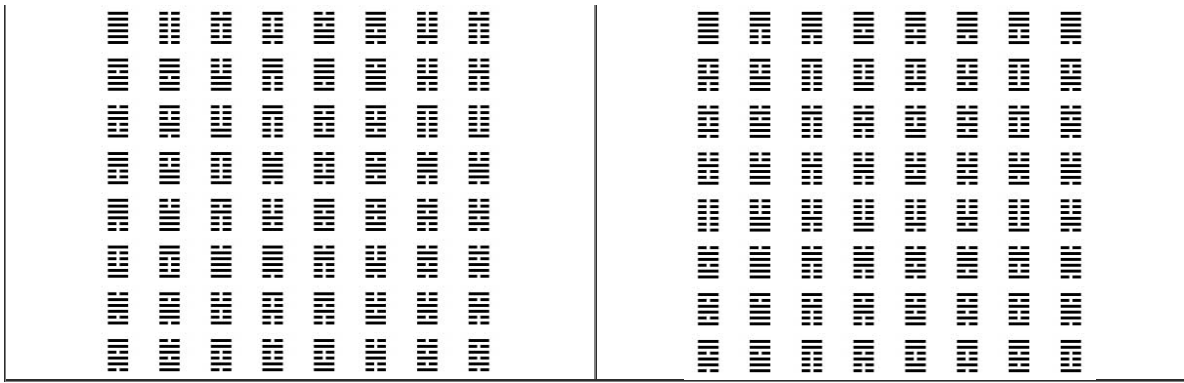
Fig. 6: Association of generic conditions with classical Chinese binary codes (the word order of the descriptors in the feeling and action columns has been inverted, the abbreviations added here are used in mouseover labels within Fig. 7)			
binary coding	<b>Knowing</b> (upper pair in Fig 3 hexagrams)	<b>Feeling</b> (middle pair in Fig 3 hexagrams)	<b>Action</b> (lower pair in Fig 3 hexagrams)
	<b>known</b> knowns (KK)	<b>felt</b> knowingly (FF)	<b>done</b> knowingly (DD)
	<b>known</b> unknowns (KU)	<b>felt</b> unknowingly (FU)	<b>done</b> unknowingly (DU)
	<b>unknown</b> knowns (UK)	<b>unfelt</b> knowingly (UF)	<b>undone</b> knowingly (UD)
	<b>unknown</b> unknowns (*K)	<b>unfelt</b> unknowingly (*F)	<b>undone</b> unknowingly (*D)

\*\*\* interjection: conviction/suspicion

## Alternation between multiple patterns

However the point to be stressed is that this pattern is one of a number, as indicated by the following.

Fig. 7: Classical Chinese Arrangements of 64 Hexagrams in Squares (reproduced from Fig 3 in <i>Strategic Patterns in terms of Knowing, Feeling and Action</i> , 2008) <b>Placing the cursor on each hexagram in the original</b> exposes the code pattern of Figure 6 and a version of the <i>I Ching</i> hexagram quality <b>Clicking on any hexagram in the original</b> opens a page describing the hexagram condition from a <b>policy perspective</b> .	
Fig. 7a: Strategies ordered by <b>Fu Xi</b> pattern	Fig. 7b: Strategies ordered by <b>Jing Fang</b> pattern (see also J.M. Berger, <i>Eight Palaces Circular Arrangement</i> , 2006; also traditionally named as <b>Eight Houses</b> )
Fig. 7c: Strategies ordered by <b>King Wen</b> pattern (the order of the hexagrams in the <i>I Ching</i> )	Fig. 7d: Strategies ordered by <b>Mawangdui</b> pattern (see Edward L. Shaughnessy, <i>I Ching – Mawangdui texts</i> , 1997)



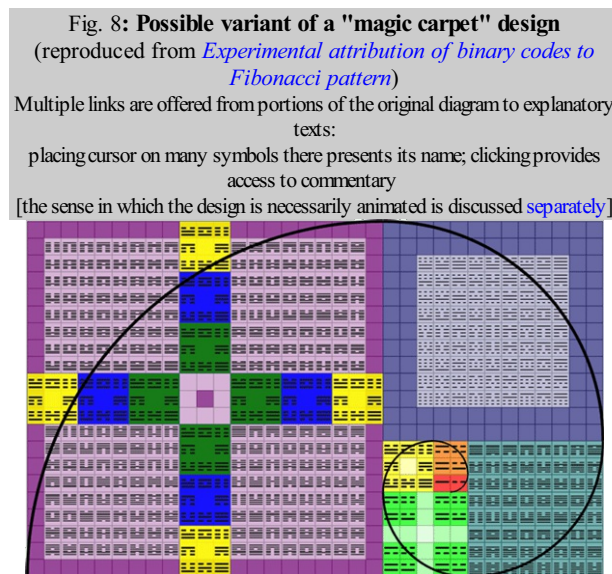
## Harmonious interrelation of different modes

The increasing complexity of distinctions made, using the progressive binary coding above, articulates connotations with ever greater specificity -- at the price of the more fundamental connotations of the structurally simpler forms. The complexity emerges from the relationship dynamics within the patterns of increasing complexity -- losing the apparent simplicity of the earlier forms.

The progression has built into it the relationship between the successive stages -- extensively explored through metaphor in relation to its use in the original Chinese *I Ching*. However there is a case for interrelating these different patterns in terms of the harmonious design traditionally associated in western cultures with the Fibonacci spiral. The elements of each pattern may then be considered as different "voices" -- exemplified by interjections -- for which an appropriate "place" needs to be found in order to ensure their contribution to the larger harmony of the whole.

This spiral approach was used in order to interrelate "games" of different degrees of complexity -- from the binary, through the quaternary, and thereafter (*Tao of Engagement -- Weaponised Interactions and Beyond: Fibonacci's magic carpet of games to be played for sustainable global governance*, 2010; *Designing Global Self-governance for the Future: patterns of dynamic integration of the netherworld*, 2010). Such "games" are understood as embodying cognitive dynamics of different degrees of complexity, as previously discussed (*Cardioid Attractor Fundamental to Sustainability: 8 transactional games forming the heart of sustainable relationship*, 2005).

The Fibonacci spiral pattern with the embedded binary encoding of distinctions, as described and discussed previously, is presented below. The configuration of the dimensions noted above might then be said to imply such a pattern -- as well as the figure-8 pattern elicited by the meme mapping exercise (in main paper). The "simplest" (binary) "voices", are those at the centre of the spiral. The emphasis in eliciting the spiral form is on the challenge of design -- as with that associated with choice of tuning system in musical harmony. The presentation below is therefore only one such design. It notably includes the traditional Chinese ternary coding system, also previously discussed in terms of *magic squares* (*9-fold Magic Square Pattern of Tao Te Ching Insights -- experimentally associated with the 81 insights of the Tai Hsüan Ching*, 2006; *9-fold Higher Order Patterning of Tao Te Ching Insights: possibilities in the mathematics of magic squares, cubes and hypercubes*, 2003).



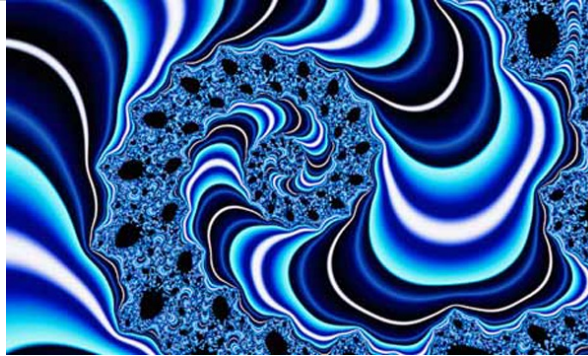
This spiral form is recognized and admired as common in nature, notably in molluscs such as the [nautilus](#). Of relevance to the argument here is the role of the spiral in the related [conch shell](#) and its use as a wind instrument (also known as the [conque](#)). It has been used by various cultures on diverse occasions through the ages. As noted by Saroj Kumar Rathi and P. C. Naik (*Fibonacci structure in conch shell*, *Current Science*, 88, 4, 25 February 2005), it has been described in the *puranas* and epics of India and is used in almost all Indian societies during auspicious occasions. The conch shell is associated with the [horn of cornucopia](#) as a symbol of abundance, plenty, fertility and fortune.

The spiral form offers a means of "holding" the variety of cognitive distinctions and relationships and implies the possibility of "playing"

with them in some way. The binary coding is also helpfully reminiscent of the insight into the patterns of the genetic language so fundamental to the emergence and organization of life. These offer further metaphors through which the cognitive dimensions of any Language of the Birds might be understood (*DNA Supercoiling as a Pattern for Understanding Psycho-social Twistedness*, 2004, with reference to *Engaging with Questions of Higher Order: cognitive vigilance required for higher degrees of twistedness*, 2004). This implication was also discussed with respect to the existential challenge of otherness so fundamental to dualistic thinking (*Archetypal otherness -- "DNA vs. I Ching"*, 2007, with reference to *Climbing Elven Stairways: DNA as a macroscopic metaphor of polarized psychodynamics*, 2007).

Of relevance to such patterning (or the ability of the human mind to elaborate and engage with it) is the fundamental role played by the four-fold distinction in genetics whereby DNA, as a chain of nucleotides, is composed of four types: adenine (A), cytosine (C), guanine (G), and thymine (T). It is the variety of their combination which is so determining of living form. A potentially corresponding four-fold cognitive distinction is that of the quadrilemma: A, not-A, A and not-A, neither A nor not-A. "Cognitive nucleotides"?

Fig. 9: **Computer generated fractal image of spiral form**  
(reproduced in celebration of the work of [Benoît Mandelbrot](#), 1924-2010)



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