

A Geometry of Moods

Evoked by Wujue Poems of the Tang Dynasty

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Abstract

Learning to be human may some day include mastering an internal language of thousands of moods. We may learn to appreciate, identify, prolong and reproduce moods and to evoke them recognizably in poetry, music, theatre and physical activity.

We can define basic emotional responses by discovering the simplest ways to evoke them in our imagination. We derive them by manipulating our expectations. When we are not personally invested, then we are surprised when our expectations are not met and excited when they are. But when we are personally invested, then we are distraught when our expectations are not met and content when they are. Thus our emotional life alerts us to a fundamental boundary between our self and our world.

We analyze how wujue poems evoke specific moods by transforming this boundary, which is given, for example, by Li Bai's bed in his "Quiet Night Thoughts". We identify six transformations (reflection, shear, rotation, dilation, squeeze, translation) and illustrate how they enrich our geometry (which may be affine, projective, conformal or symplectic).

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Subjectively, we experience moods in seemingly thousands of different shades. Currently, we have no model for describing their variety. I sketch a research program of our personal moods to identify, reproduce, contrast, transform, interpret and appreciate them so that we might understand and share them just as we do any language.

Evoking Basic Feelings

A first step is to model our most basic emotional responses. I started with six responses which are essentially those which psychologist Paul Ekman found can be observed in the faces of young infants, namely: happiness, sadness, excitement, surprise, fright and disgust. What is the simplest way that I might evoke these responses within myself? I once read that we are struck by existential sadness when our deeply held assumptions turn out to be wrong. So I imagined myself as a child playing with alphabet blocks. I would pick up a block, guess what letter was on the other side, and see if I was right.

Suppose I don't know the block very well. If I guess wrong, then I am surprised, but if I guess right, then I am excited. However, if I know the block with absolute certainty, if I can't imagine I could be wrong, if my self and my world depend on that, and yet indeed I am wrong, then I feel devastated, but if I am right, I feel content and assured. And so by such introspection it is clear that our cognition grounds our emotion. A crucial distinction is between that knowledge which we personally identify with, by which we define ourselves, and that knowledge which is more distant, exploratory, theoretical. Furthermore, when I experience what I can't in any way expect because it is too sudden, too strange or too undesirable, then if it comes from beyond, I am frightened, and if it comes from within, I feel disgusted.

The structure of this model gives subjective meaning to the facial expressions we observe. It also makes sense of two emotional responses which we can introspect but which we do not and cannot observe, namely peace and suspense. We feel suspense after we have made an expectation and before we know whether it has been met, and we feel peace when we make no expectations. These are responses of not knowing, whereas the other six are for knowing. We see from this model that seeking peace (which has us be sensitive to all emotions) and seeking happiness (by avoiding sadness) are two very different approaches to living.

We can thus evoke distinct, basic, pure, vivid emotional responses by manipulating abstract expectations. It is remarkable that psychologists have not appreciated the significance of our imagination's ability to evoke feelings. They focus on physiology and conclude that there are no basic emotions, indeed, no reproducible emotions, because they lack any consistent expression. It is as if they were linguists for whom shouting and whispering were different activities and who never understood that they may convey the same name. They do not appreciate the mind as an abstract system of activity which maintains a coherence that need not have any particular neurological analogue.

Proceeding similarly, we can show how to evoke other feelings including fright and disgust; suspense and peace; anxiety, anger and hate, relief and depression; beauty, intimacy and love; humility and resignation, guilt and shame, self-assurance and pride; empathy and humor; pleasure and pain.

We feel positive moral tones as the impossibility of negative moral tones. For example, if we perceive that everything is outside of us, then disgust is impossible, and so we feel beauty. Thus we feel beauty not as our own emotional response, but rather as an afterglow, emanating from our beautiful environment.

Negative moral tones arise when we expect that which we do not wish. For example, if I expected to find my bicycle where I left it, then I will be surprised if I

don't; but if I expected it to be stolen, then I will be angry if it is, but relieved if it is not.

This model also draws attention to the role of the conscious and unconscious. I may consciously expect that my wife will die from cancer, but my unconscious mind may yet expect otherwise, holding true to my desire that she live. This may evidently be healthy. Thus this model suggests itself as a tool for investigating such distinctions between our conscious and unconscious, or in contemporary terms, Kahneman's System 2 and System 1.

Studying How Poems Evoke Moods

Psychologists only distinguish between good moods and bad moods. But let us now investigate how our expectations can give rise to a language of thousands of moods. We might study music, dreams, activities, but especially, poetry. Are two people able to interpret a poem in the same way so that it evokes the same mood?

Quiet Night Thoughts, by Chinese poet Li Bai of the Tang Dynasty, is a classic poem about his travels far from home.

*Beyond the bed - bright moon shines -
I think on the ground is frost.
I raise my head - see bright moon,
I lower my head - think of home.*

Note how this poem organizes the spaces for our expectations. The bed is a boundary beyond which we feel the moon is beautiful and the frost is surprising. The poet's neck, which raises and lowers his head, is yet another boundary. The poet thinks of home, which is dear to him, and of itself that surely makes him happy. Yet when he contemplates that his home is so distant, it is sad to think that he is here and not there. Overall, we can specify a mood of conditional sadness, which depends on his

reflection on his great distance from his happiness, as measured by the beauty of the moon and the surprise of the frost.

I made a study of 37 classic wǔjǔé poems (five-character quatrains) from the renowned collection "Three Hundred Tang Poems" (Tángshī sānbǎi shǒu). Each poem made use of one of six different transformations of the boundary that defines the self and world which are familiar to geometers: reflection, shear, rotation, dilation, squeeze and translation. These transformations are six ways of enriching a geometry.

In the simplest affine geometry, a triangle consists of three paths from A to B to C. In a projective geometry, it consists of lines intersecting at A and B and C. Lines moving back and forth allow us to confront our own moods. In a conformal geometry, it is formed by angles at A and B and C. This lets us admit of other moods, perpendicular with ours or not. And in a symplectic geometry, it is an oriented area defined by A and B and C. Here we may attribute a mood to our environment.

A reflection allows us to look back upon ourselves. A shear transformation lets our view be perpendicular to that of another who sees what we don't see. A rotation lets our view dance from point to point. A dilation has our view expand it, whereas a squeeze transformation has it keep the same area but recast the proportions of its shape. A translation has us move to a new situation. I simply wish to suggest that conceptual geometry is the key to an interpretation of the situations which define the boundary between our selves and our world which determines our mood.

7 poems establish a mood by reflection. I see myself, as if in a mirror, in a foreign world: I talk up a boatsman, whether he's from my village; in my dashing enemy I perceive my own ambitions. In Li Bai's poem, Quiet Night Thoughts, his bed marks the boundary between familiar and foreign.

4 poems establish a mood by a shear transformation, that is, by defining perpendicularity: flowers bloom apart from us; I awoke to realize I had slept through a passing storm; one must comport oneself anew after inauspicious omens; venerable ladies discuss the absent Emperor. In Li Bai's poem, *A Bitter Love*, an injured beauty opens her window, but I remain disengaged.

5 poems establish a mood by rotation, turning our attention. A sensitive friend, however far away, will hear the falling of the pine cone, which I hear in the stillness of the mountains. The buddy at my side may succumb to temptation to drink a cup of wine. A general will shoot an arrow blindly into the storm and, in the morning, find it driven into a stone. In Li Duan's poem, *On Hearing Her Play the Harp*, the harpist commands not only of the warrior's attention, but mine own, as well.

7 poems establish a mood by dilation, that is, by increasing or decreasing scope. That is our relationship with our environment and its mood. Mountains and paths are snowed over, as if there were no boundaries, and yet we see a fisherman, all alone, in his small boat, covered by his bamboo coat, his personal boundary. Stopping at the edge of the wilderness, as the plains open up, a traveler is overcome by sadness, he feels himself too large, but then the moon draws near, reflected in the creek. (This is an example of how one transformation may be extended by another, even in a short poem.) Wang Zhihuan's poem, *Climbing Heron's Tower*, widens endlessness, as you imagine climbing one more flight of stairs.

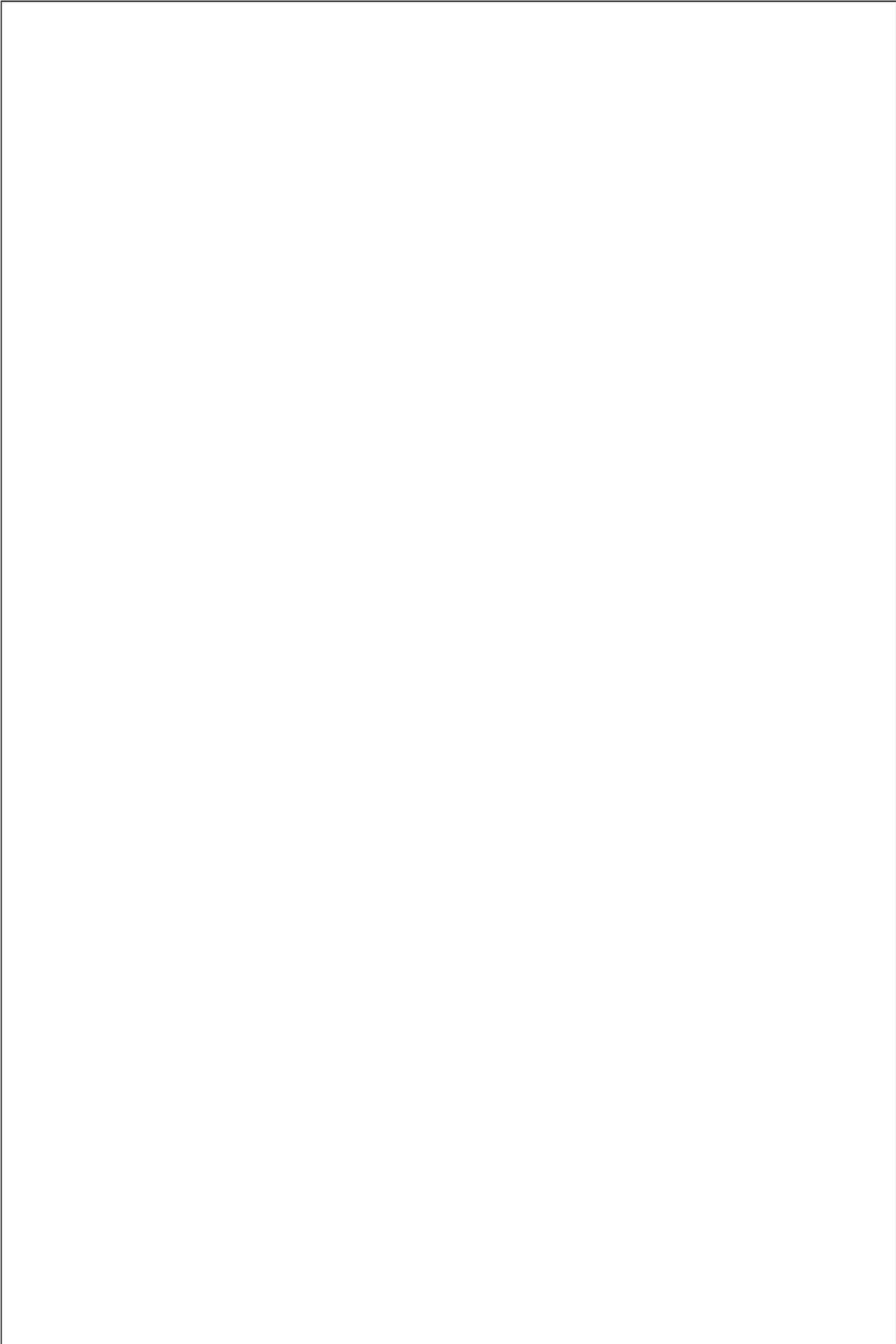
9 poems establish a mood by a squeeze transformation, whereby an area remains constant but its proportions change. Similarly, a poem may relate a general's silk flag with a thousand shouts from the tents. Li Yi's poem, *A Song of the Southern River*, considers is a wife better off with an inattentive merchant or a commoner who is regular as the tides.

6 poems establish a mood by translation. The elder dame of the estate comes to tears from hearing a song of her homeland. Li Pin feels a growing fear, as he gets closer

to home, that he will feel a stranger there, in his poem, Crossing the Han River.

All 37 poems nicely distributed themselves according to these six geometrical transformations. This suggests that spatial relations are the key to the mood which a poem establishes. And the purpose of that mood and of the poem, I believe, is to foster our growth to empathize with others, to know ourselves, and to develop commonality. Classic poems let us believe that they can indeed evoke in us specific, comparable, well defined moods. Working further, we may truly externalize this internal language of moods.

Already, this has led to a successful exercise for learning how to write a poem. Describe a memorable mood. And then, perhaps, edit that so it is easy to memorize.



Reference

This richly illustrated and clearly written undergraduate textbook captures the excitement and beauty of geometry. The approach is that of Klein in his Erlangen programme: a geometry is a space together with a set of transformations of the space. The authors explore various geometries: affine, projective, inversive, hyperbolic and elliptic. In each case they carefully explain the key results and discuss the relationships between the geometries. Here I am gonna posts geometry articles, notes and problem collections, that I create or collect from sites around the internet (except the Tournament Of Towns Conferences). All the aother articles, are also in the other pages. Free books, old and recent, are collected here. Paris Pamfilos - Geometricon 190 pages' Sample of Geometricon, a 800 pages Geometry book in English, currently available only in Greek (his homepage , source of this file). Problems collections by others, from the internet. Abdilkadir Altıntaş & Ercole Suppa - Sangaku problems. Amir Hossein Parvardi - (25) Geometry Problems (January 6, 2011) . Amir Hossein Parvardi - 150 Nice Geometry Problems (January 9, 2011). Coordinate Geometry, coordinate geometry problems, Coordinate plane, Slope Formula, Equation of a Line, Slopes of parallel lines, Slope of perpendicular lines, Midpoint Formula, Distance Formula, questions and answers, in video lessons with examples and step-by-step solutions. the coordinate plane or Cartesian plane. the slope formula. the equation of a line. the slopes of parallel lines. the slopes of perpendicular lines.