QUANTUM PSYCHOTHOTONIX
VECTORS & TENSORS

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PREFACE

Quantum Psychothotonix (*patent pending*) integrates key principles from the fields of mathematics, quantum computing, psychology, and photonics. This paper expands upon the ideas promulgated in the Quantum Psychothotonix Primer as it relates to modeling internal (B)ehavior (E)motion and (D)ecision states as vectors moving in time on a unit sphere —a Psychothotonix (PT) sphere that may be both deterministic represented by a discrete value of -1 or 1 on the surface of the sphere (Black) or probabilistic any values between the interval of (-1,1) inside of the sphere (Green/Red) or undecided (Yellow). The probabilities range from negative -100% to 100% incorporating the concept of negative probability[1].

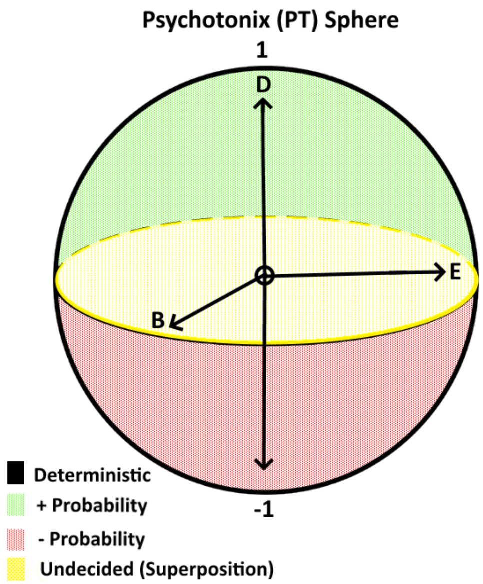


Fig. 1

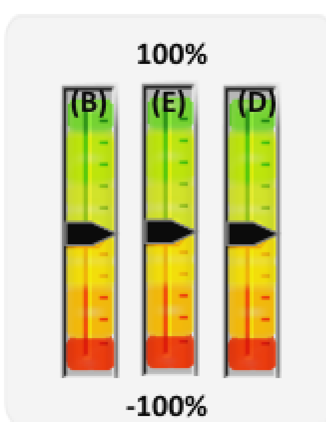
The PT sphere provides a mathematical tool for measuring and potentially changing any type of external or internal image feedback state. Any vector outside the PT Sphere is an event that is outside of the observers' interpretation of any external or internal event. Any type of interpretation of any image by any person can be broken into three irreducible measurements describing the magnitude or degree of behaviors, emotions, and decisions. A dualistic model incorporating vectors and tensors is the most efficient way to represent quantum internal image data in time. This data format captures the dynamics of the interplay of the human psyche as it interacts in a constant feedback loop of external/internal image interpretation and processing that

[1] Feynam, R 1984, 'Negative Probability' pp. 1-13.

dominates human existence. Psychothotonix is the first technology/math model that defines reality as human consciousness (internal image states) in the brain interacting with external objective reality resulting in a new type of space-time diagram. The methodology of capturing image data in vector form maintains the integrity of the quantum data and allows data scientists to easily perform calculations (vector addition/normalization) to interpret the impact of more than one person's internal (B)(E)(D) vector state as well as the ability to use tensor calculus to trace out the curve of any vector or aggregated vectors moving in time thus being able to measure internal (B)(E)(D) changes to outside stimulus (external images) for an individual or population. The PT sphere captures quantum data (external/internal) images in time that may also be mapped 1:1 to a qubit. As technological innovation continues in the field of quantum computing, eventually a commercially viable computer that creates an adequate number of coherent/stable qubits will be developed. Any PT Sphere vector data collected will be readily available to utilize on a quantum computer in the near future.

ESCAPING DUALITY

When one examines the most frequent data set captured by social media, duality is ingrained in something as simple as a like/dislike (D)ecision usually expressed as a thumbs up or down button. This forces a dualistic response collapsing an internal image state into a pure state. The dualistic (D)ecision is that of "acceptance" thumbs up or "like" versus "rejection" thumbs down to "dislike". This like/dislike data would be represented by the following vectors on the PT sphere [0,0,1] and [0,0,-1]. Note that any point (black) on the surface of the sphere has a magnitude of 1 a pure state, in this case the data points would be "like" on the North pole and "dislike" on the South pole of the PT sphere. The (B)(E) data points are 0 as this data has not been collected based on the user pushing the like/dislike button. It is apparent by forcing the duality of acceptance/rejection with a like/dislike button, the mixed probabilistic states in between are not possible for the user to express (ie 60% accept or 55% reject) nor are behavioral and emotional data correlated and captured with the decision data. Given the lack of potential to record a response with some degree of a mixed state, the data is skewed to the extremes as it forces an inaccurate response. Once a dualistic decision has been recorded, it is less likely for the user to record any future change in their internal image state, whereby a mixed state invites the user to provide ongoing feedback as the internal image evolves in time. The following scroll bar maps (B)(E)(D) to a vector on the PT Sphere for any duality state:



The slider captures the three irreducible measurements about the magnitude, or degree of behavior, emotions, and decisions at a point in time. The vectors change on the PT sphere in time as the sliders are moved up and down relative to an external image/video (stimulus). The sliders are an ideal tool to capture sample data from a prospective demographic watching a video as their perceptions change in time relative to the recorded scenes. A Psychothotonix questionnaire may also be used to capture (B)(E)(D) vector data and map it to the PT Sphere. Once enough (B)(E)(D) data is compiled, the model could be used to forecast the potential impact of a particular scene in time (ie image/video) on an intended audience. Some examples of the possible vectors on the PT sphere that may be expressed using the sliders are as follows:

Examples of Dualistic (B)(E)(D) States

(B)ehavior	Control/Flow	Miser/Spendthrift	Honest/Lying	Optimistic /Pessimistic	Disciplined/Undisciplined
(E)motion	Happy/Sad	Angry/Afraid	Love/Hate	Anxiety/Outrage	Guilt/Envy
(D)ecision	Buy/Don't Buy	Agree/Disagree	Like/Dislike	Accept/Reject	Vote For/Against

(B)ehavior - I am optimistic to one degree or another

I am pessimistic to one degree or another

(E)motions - I feel anxiety/outrage to one degree or another.

I feel happy/sad to one degree or another.

I feel angry/afraid to one degree or another.

(D)ecision - I 100 percent agree with the person or situation

I 100 percent disagree with person or situation

I somewhat agree with the person or situation

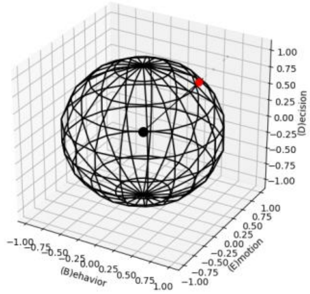
I somewhat disagree with the person or situation

FACIAL IMAGES MAPPED TO VECTORS

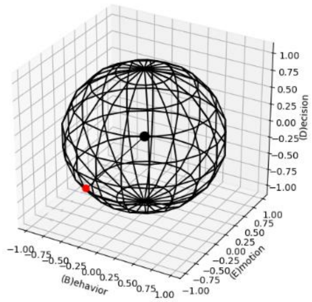
Existing machine learning tools (Pytorch) that exploit GPU trained neural networks could be used on facial images scraped from the web or in real time using a line scan camera that translate images or language (text) into vector form on the PT Sphere capturing human (B)(E)(D) states and recording them in time. The duality states that are mapped can be fine-tuned for a particular purpose. For example, an ecommerce platform would be interested in the following data points: (B) Miser/Spendthrift (E) Happy/Sad (D) Buy/Don't Buy. A political polling company would be interested in (B) Disciplined/Undisciplined (E) Angry/Afraid (D) Vote For/Against. The duality points may be interchanged in an infinite number of ways on the PT Sphere to model the complexity of a particular client's needs suited for virtually any purpose. Facial expressions provide a vast amount of information concerning a person's internal image state at a particular point in time.

The following are four examples of the basic mapping of internal image states to vector form:

#1 (B) Optimistic / (E) Happy / (D) Agree [0.75,1,1] *Raise at Work

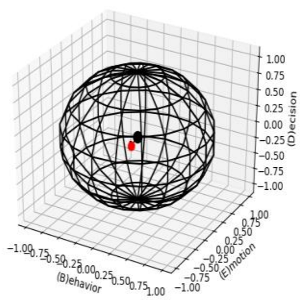



#2 (B) Pessimistic / (E) Sad / (D) Disagree [-0.75,-1,-1] *Pay Cut at Work

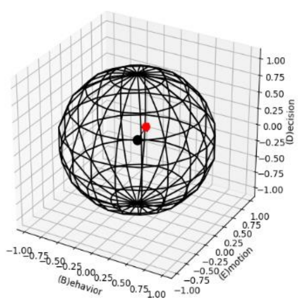



*Note - examples #1 and #2 are dual opposite vectors, as illustrated on the PT Sphere.

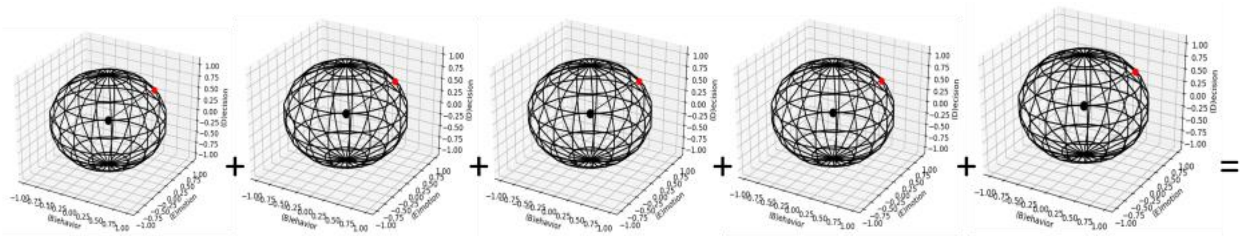
#3 (B) Miser / (E) Angry / (D) Don’t Buy [-0.75, 1,-1] *No Free Shipping

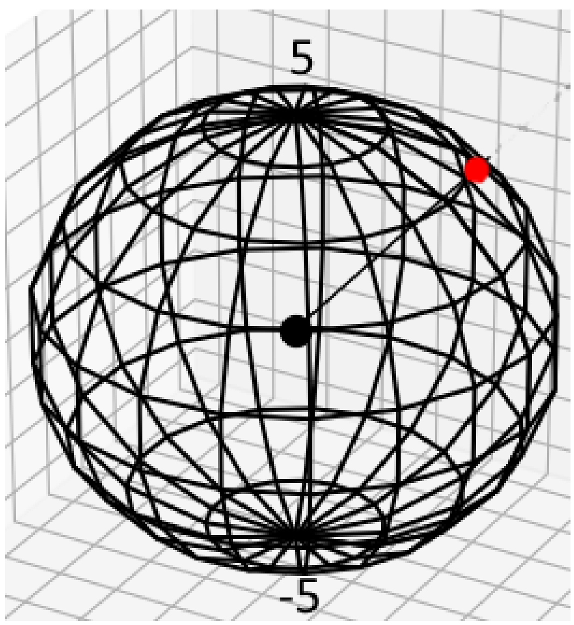



#4 (B) Control / (E) Afraid / (D) Like [0.75, -1,1] *Watching Horror Film

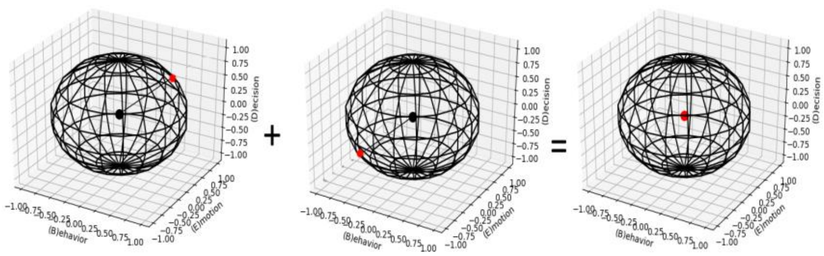
#5 (B) Optimistic / (E) Happy / (D) Agree [1,1,1] + [1,1,1] + [1,1,1] + [1,1,1] +[1,1,1] = [5,5,5] (Vector Addition) *Cooperation





(B)(E)(D) Internal Image States may be additive when in alignment and multiply the strength of each other.

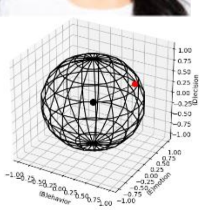
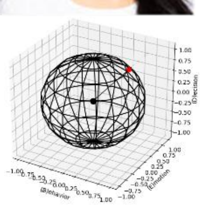
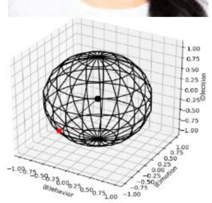
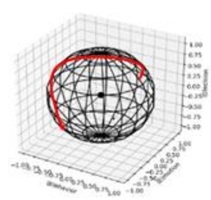
#6 (B) Optimistic-Pessimistic / (E) Happy-Sad / (D) Agree-Disagree [1,1,1] + [-1,-1,-1] = [0,0,0] (Vector Addition) *Conflict



(B)(E)(D) Internal Image States that are opposite, offset and cancel each other out.

INTERNAL IMAGES CHANGE OVER TIME (TENSORS)

#7

	t0/frame #1	t1/frame #2	t2/frame #3	
[External]				
[(B)(E)(D) Internal]				
				
	(B) Flow (E) Happy/Sad (D) Like [1,0,0.75]	(B) Optimistic (E) Happy (D) Like [1,1,1]	(B) Pessimistic (E) Sad (D) Don’t Like [-1,-1,-1]	t0…t2

From the examples above one can see that each (B)(E)(D) perception is a point on a sphere that moves in time due to external or internal (B)(E)(D) forces thus tracing out trajectories (curves) in time. Consequently, the laws of tensor calculus can be expanded to create equations of motion of images and image interpretations. For example, expanding Newton's Laws and modifying relativity and quantum mechanics as well. For the first time in history, we can model any and all images/image interpretations in the powerful way we model physical entities interacting in physical space-time. Psychothotonix uses an extended form of tensor calculus to gather and analyze any form of human behavior (B)(E)(D) vector data as it evolves in time tracing out a curve on the PT Sphere (see #7 t0..t2). This advancement is called PT tensor calculus which provides a mechanism to compare, interpret and influence internal behavioral, emotional and decision states in an objective quantitative framework. Two fundamental concepts of PT tensor calculus are:

1. The use of equations common to modeling any sort of purely physical objects movement applied to modeling the brain interpretations of any kind of internal/external event.

2. Provides a quantitative method that goes beyond statistics for modeling human behavior because it involves the moment-to-moment brain interpretations of events in physical space-time relative to other observers' brain interpretations of external events. This means that an advanced form of AI is needed to correlate the entanglement between the various interpretations. This can be achieved using our PT duality logic and measurement tools.