

Psi'cology: The Physics of Psychology

By Sonia Elkes

“It would be most satisfactory of all if physics and psyche could be seen as complementary aspects of the same reality. ...the quantitative and the qualitative, the physical and the psychical – as compatible with each other....”

—Wolfgang Pauli, Nobel Laureate, in dialogue with C.G. Jung

The structure of physics appears to lend itself beautifully to informing a more objective understanding of psychology. Why? Because when psychological terms are substituted self-consistently into established physics formulas, recognizable psychological phenomena emerge. Based on the relationship that seems to exist between the *structure* of physics and the *structure* of psychology, it's worth asking whether psychology and physics might not both be 'cut from the same mold.'

In the account that follows, I lay out how psychology *looks, smells, tastes and feels* like physics, yet it is not physics nor is it derived from physics -- nevertheless, psychology gives every impression of being *analogous* to physics and *subject to the same mathematical logic and rules*.

A useful equivalence between physics and psychology could pave the way for mathematically-informed treatment of mental health conditions and crises. Whether we view a situation as a **problem or opportunity**, for example, might be a matter of which variable we are mentally solving for. While the paper that follows undoubtedly contains errors, it lays the foundation for exploring how the equations of physics, thermodynamics and gravity might apply in full to the mental realm.

Borrowing from physics, if the following are considered mathematically equivalent:

1. **Mass** = Belief, where
 - **Matter** = Information

- and **Matter at absolute zero temperature** = Truth,
2. **Velocity** = Thinking,
 3. **Speed of Light** (c) = Knowing, where
 - c^2 = Certainty, as in 'knowing knowing',
 4. **Distance** = Distinction (as in discrepancy), where
 - d^2 = Dissonance
 - r^2 = Contradiction,
 5. **Acceleration** = Expectation,
 6. **Time** = Awareness (as in attention), where
 - t^2 = Consciousness, as in 'awareness of awareness',
 7. **Momentum** = Perception,
 8. **Force** = Feeling,
 9. **Work** = Productivity,
 10. **Power** = Competency,
 11. **Energy** = Energy (as in motivation),
 12. **Gravity** = Meaning, where
 - **Force of Gravity** = Caring,
 13. **Gravitational Constant** = $6.67 \times 10^{-11} \text{ Nm}^2/\text{kg}^2$ = a 'Care Constant' (measured in 'units of attachment'),

...and more specifically:

1. Mass (m) = Belief, as in 'a coherent collection of information', with...

- large ' m ' in numerator = **Value** (massive belief)
- large ' m ' in denominator = **Notion** (minor belief)
- m^2 = **Faith** (belief of belief)
- if $m = 0$ then **Non-belief**, as in a ['Philosophical zombie'](#) (lacking all belief)
- $-m$ = **Disbelief** (anti-belief, as in 'can't believe')
- large $-m$ in numerator = **Shock**, as in stunned (massive disbelief)

- large $-m$ in denominator = **Surprise** (minor disbelief)
- $-m^2$ = **Denial** (disbelief of disbelief)

2. Velocity (v) = **Thinking**, as in cognition (beliefs/thoughts in *motion*), with...

- large v in numerator = **Reasoning** (maximal thinking)
- large v in denominator = **Guessing**, as in intuiting (minimal thinking)
- v^2 = **Metacognition** (thinking of thinking)
- if $v = 0$ then **Mindlessness**, as in a meditative state (lack of all thinking)
- $-v$ = **Questioning** (anti-motion of beliefs/thoughts, as in thinking backwards)
- large $-v$ in numerator = **Investigating** (maximal questioning)
- large $-v$ in denominator = **Wondering** (minimal questioning)
- $-v^2$ = **Confusion** (questioning questioning)

3. Speed of Light (c) = **Knowing**, as in familiarity, with...

- [approaching] c in numerator = **Clarity**, as in understanding (maximal knowing)
- [approaching] c in denominator = **Instinct** (minimal knowing)
- c^2 = **Certainty** (knowing knowing)
- c^3 = **Deja' vu** (knowing knowing knowing)
- If $c = 0$ then **Naivete**
- $-c$ (such as how c slows down when passing through a medium) = **Forgetting** (anti-knowing)
- [approaching] $-c$ in numerator = **Amnesia** (maximal forgetting)
- [approaching] $-c$ in denominator = **Absent-mindedness** (minimal forgetting)
- $-c^2$ = **Uncertainty** (forgetting forgetting)

4. Distance (d) = **Discrepancy**, as in distinction, with...

- large d in numerator = **Disagreement**, as in difference or disagreeability (major discrepancy)

- large d in denominator = **Variation** (minor discrepancy)
- $d^2 = \text{Dissonance}$, as in discord (discrepancy discrepancy)
 - And $r^2 = \text{Contradiction}$ (disagreement disagreement)
- if $d = 0$ then **Uncorrelated**, as in unrelated (lack of distinction)
- $-d = \text{Correlation}$, as in relationship (anti-distinction)
- large $-d$ in numerator = **Agreement**, as in resemblance or agreeability (major correlation)
- large $-d$ in denominator = **Commonality** (minimal correlation)
- $-d^2 = \text{Resonance}$, as in accord (correlation correlation)
- $-r^2 = \text{Corroboration}$ (as in 'agreement of agreement')

5. Acceleration (a) = Expectation (an increase in rate of thinking); with...

- large a in numerator = **Excitement** (major expectation)
- large a in denominator = **Confidence** (minor expectation)
- $a^2 = \text{Entitlement}$ (expectation of expectation)
- if $a = 0$ then **Acceptance** (lack of all expectation)
- $-a = \text{Doubt}$ (anti-expectation, as in a decrease in rate of thinking)
- large $-a$ in numerator = **Suspicion** (major doubt)
- large $-a$ in denominator = **Misgiving** (minor doubt)
- $-a^2 = \text{Paranoia}$ (doubt doubt)

6. Time (t) = Awareness (as in attention), with...

- large t in numerator = **Focus** (maximal awareness)
- large t in denominator = **Distraction** (minimal awareness)
- $t^2 = \text{Consciousness}$, as in 'awareness of awareness' (aka self-awareness)
- $t^3 = \text{Self-Consciousness}$, as in 'awareness of awareness of awareness' (or 'feeling watched')
- if $t = 0$ then **Unconsciousness**, as in coma (lack of any awareness);
- $-t = \text{Relaxation}$ (as in anti-awareness)

- large -t in numerator = **Asleep** (maximal relaxation)
- large -t in denominator = **Subconscious awareness** (minimal relaxation)
- $-t^2$ = **Dream state** (relaxation of relaxation)
- $-t^3$ = **Vegetative state** (relaxation of relaxation of relaxation)

7. **Momentum (p) = Perception** (thinking that has implications, as in ‘direction & magnitude’), with...

- large p in numerator = **Judgment** (massive perception)
- large p in denominator = **Observation** (minimal perception)
- p^2 = **Conscientiousness** (perception of perception)
- if p = 0 then **Obliviousness** (lack of perception)
- **-p** = **Ignoring** (anti-perception, as in anti-thinking with ‘direction & magnitude’)
- large **-p** in numerator = **Avoidance** (massive ignoring)
- large **-p** in denominator = **Neglect** (minimal ignoring)
- $-p^2$ = **Dismissing** (ignoring ignoring)

8. **Force (F) = Feeling**, as in ‘moved’ positively, with...

- large (+) F in numerator = **Attraction** (majorly ‘moved’ positively)
- large (+) F in denominator = **Interest** (minorly ‘moved’ positively)
- F^2 = **Obsession** (positively ‘moved’ by ‘moved’)
- if F = 0 then **Numbness**, as in apathy, ambivalence
- **-F** = **Recoil** (anti-feeling), as in ‘moved’ negatively
- large (-) F in numerator = **Repulsion** (majorly ‘moved’ negatively)
- large (-F) in denominator = **Disinterest** (minorly ‘moved’ negatively)
- $-F^2$ = **Disgust**, as in revulsion (negatively ‘moved’ by ‘moved’)

9. **Work (W) = Productivity**, with...

- large W in numerator = **Accomplishment** (major productivity)
- large W in denominator = **Progress** (minor productivity)

- $W^2 = \text{Purpose}$ (productive productivity)
- if $W = 0$ then **Unproductivity** (lack of productivity, passive); **Resistance** (lack of productivity, active)
- $-W = \text{Counterproductivity}$ (anti-productivity)
- large $-W$ in numerator = **Failure** (major counterproductivity)
- large $-W$ in denominator = **Regression** (minor counterproductivity)
- $-W^2 = \text{Destructiveness}$ (counterproductive counterproductivity)

10. Power (P) = Competency, with...

- large P in numerator = **Giftedness** (major competency)
- large P in denominator = **Adequacy** (minor competency)
- $P^2 = \text{Usefulness}$ (competent competency)
- if $P = 0$ then **Non-competence**, as in no experience (lack of competency, passive); **Helplessness** (lack of competency, active)
- $-P = \text{Incompetency}$, as in ineptitude (anti-competency)
- large $-P$ in numerator = **Burdensomeness** (maximal incompetency)
- large $-P$ in denominator = **Inadequacy** (minimal incompetency)
- $-P^2 = \text{Uselessness}$ (inept ineptitude)

11. Energy (E) = Energy, as in motivation or impetus, with...

- large E in numerator = **Drive**, as in **Will** (maximal energy)
- large E in denominator = **Desire**, as in **Want** (minimal energy)
- E^2 in numerator = **Compulsion** (drive drive)
- If $E = 0$ then **Calm** (as in lack of energy, passive); **Content** (lack of energy, active)
- $-E = \text{Stress}$ (anti-energy, as in de-motivation)
- large $-E$ in numerator = **Nervous Breakdown** (maximal stress)
- large $-E$ in denominator = **Irritation** (minor stress)
- $-E^2 = \text{Frustration}$ (stress stress)

Then...

a.) **Velocity = Distance / Time** means **Thinking = Discrepancy / Distraction**

Thinking is proportional to how distracting we find discrepancy to be.

And likewise:

- $-v = -d / t$ Questioning = Correlation / Distraction

(We question correlations/relationships proportional to how distracting we find them.)

- $-v = d / -t$ Questioning = Discrepancy / Relaxation

(We question discrepancy/disagreeability that we find relaxing.)

- $v t = d$ Thinking x Awareness = Discrepancy

(Discrepancy/disagreeability is proportional to how much awareness of one's thinking one has.)

- $-v t = -d$ Questioning x Awareness = Agreeability

(Agreeability is proportional to awareness of our questions.)

- $v (-t) = -d$Relaxation x Thinking = Correlation

(Relaxed thinking fosters seeing correlation/relatedness/agreeability.)

b.) **Velocity = Acceleration x Time** means **Thinking = Expectation x Awareness**

Thinking is the product of awareness of expectations.

And likewise:

- $-v = (-a) t$ Questioning = Awareness of Doubt

(Questioning results from awareness of doubt.)

- $-v = a (-t)$ Questioning = Expectation x Relaxation

(Relaxing our expectations produces questions.)

- $v / t = a$ Thinking / Distraction = Expectation

(Expectation is proportional to how distracting thinking is.)

- $-v / t = -a$ Questioning / Distraction = Doubt

(Doubt results from being distracted by questions.)

- $v / a = t$Thinking / Confidence = Awareness

(Awareness is proportional to the confidence we have in our thinking.)

Note equivalence: $v = a (t) = d / t$

Thinking = Awareness of Expectation = Distraction by Discrepancy

c.) **Momentum(p)=Mass(m) x Velocity(v) means Perception = Belief x Thinking**

Perception results from believing our thinking.

And likewise:

- $-p = (-m) v$ Ignoring = Disbelief x Thinking

(Ignoring is the product of disbelieving our thinking.)

- $-p = (m)(-v)$ Ignoring = Belief x Questioning

(Ignoring is the product of questioning of beliefs.)

- $p / m = v$Perception / Belief = Thinking

(Thinking is proportional to how much we believe our perceptions.)

- $p / v = m$Perception / Thinking = Belief

(Beliefs are the product of how much thinking goes into our perceptions.)

d.) **Work = Power x Time** means **Productivity = Competency x Awareness**

Productivity is proportional to awareness of competency.

And likewise:

- $-W = -P \times t$Counterproductivity = Awareness x Incompetency

(Counterproductivity is proportional to awareness of incompetency.)

- $-W = P \times -t$Counterproductivity = Competency x Relaxation

(Counterproductivity results from relaxation of competency, aka 'complacency'.)

- $W / P = t$Accomplishment / Adequacy = Awareness

(Our awareness is proportional to the adequacy of our accomplishment.)

- $W / t = P$Accomplishment / Distraction = Competency

(Competency is proportional to one's ability to accomplish despite distraction.)

- $-W / P = -t$Failure / Adequacy = Relaxation

(Relaxation is proportional to how adequate [as in minimally competent] one is at failure -- in other words the harder one finds it to screw up, the easier it is to relax.)

- **W / -P = -t.....Accomplishment / Inadequacy = Relaxation**

(Relaxation is proportional to how inadequate (as in minimally incompetent) one is at accomplishment -- likewise, the more difficult it is not to succeed, the easier it is to relax.)

e.) **Force = Mass x Acceleration** means Feeling = **Belief x Expectation**

Feeling is the product of believing our expectations.

And likewise:

- **-F = -m (a).....Recoil = Disbelief x Expectation**

(Recoil is the product of disbelief [shock] to our expectations, i.e. when we're shocked to discover evidence that runs counter to what we expected.)

- **-F / -m = a.....Repulsion / Surprise = Expectation**

(Expectation is proportional to how much of a surprise repulsion is.)

- **-F / a = -m..... Repulsion / Confidence = Disbelief**

(Disbelief [shock] is proportional to how much confidence we have in our repulsion.)

- **F / -a = -m..... Attraction / Misgiving = Disbelief**

(Disbelief [as in the inability to believe in someone or something] is proportional to our misgivings about the attraction.)

- $F / a = m$Attraction / Expectation = Belief

(Belief in something [or someone] is proportional to how much expectation we have of attraction.)

- $-F = m (-a)$Repulsion = Belief x Doubt

(Repulsion toward something [or someone] is proportional to how strongly we believe in our doubt.)

f.) **Energy (E) = Mass (m) x Speed of Light (c) ^2** means **Energy = Belief x Certainty**

*Energy (as motivation) is proportional to our certainty in our belief, as in a sense of **‘conviction,’** or **‘security.’***

And likewise:

- $-E = (-m) c^2$Stress = Disbelief x Certainty

*(Stress is proportional to certainty in our disbelief[shock], as in **‘horror’** or **‘dread.’**)*

- $-E = m (-c)^2$Stress = Belief x Uncertainty

*(Stress is proportional to uncertainty in our beliefs, aka **‘insecurity’**.)*

- $E / m = c^2$Motivation / Belief = Certainty

*(Certainty results from belief in our motivations, aka **‘righteousness’**.)*

g.) **Force of Gravity = Gravitational Constant x (Mass 1 x Mass 2 / radius²)**
means **Caring = 'Care Constant' x (Belief 1 x Belief 2 / Contradiction)**; where

- **Gravitational Constant = 6.67×10^{-11} = 'Universal Care Constant', and**
- **(Belief 1 x Belief 2 / Contradiction) = Cognitive Dissonance**

Caring is the product of 'cognitive dissonance' times a 'universal care constant'. We care when things don't add up, according to how much. In other words, when we have to reconcile two contradictory beliefs (m1 and m2), depending how contradictory they are and multiplied by a universal 'care constant', we are left with a value (akin to 'gravity') that dictates the nature and extent of our caring.

Thanks for reading!

soniaelkes@gmail.com