Defining Creativity

Personal versus Social Definitions
Introduction: My half century as a creativity researcher

- 1969 Oxy College Scholar thesis
- 1972 Harvard “masters thesis”
- 1975-2021 Creativity publications
- 1988ff Editorial Board, CRJ (30)
- 1993-99 Editor, JCB
- 1999ff Editorial Board, JCB (63)
- 2006ff Editorial Board, PACA (54)
- 2021 Torrance Roundtable!
Yet during those years I have spotted a persistent problem:

- Researchers exhibit no agreement on what constitutes a “creative idea”
- Can research on creativity be effective without consensus on what it entails?
- Can we really study creative talent or its development without knowing what counts as a creative idea?
- After all, the product, person, and process perspectives on creativity all depend on what counts as a creative idea.
Four critical questions that must be explicitly addressed:

☐ What are the assessment criteria?
☐ How are the assessments scaled?
☐ How are the assessments integrated?
☐ Who makes the assessments?
What are the assessment criteria?

☐ Two-criterion “standard” definitions
  ■ Some variation on
    ☐ novel or original, and
    ☐ useful, adaptive, meaningful, or functional

☐ But I argue that “novelty” conflates “originality” with “surprise”

☐ If we split the concept into two, then we get a three-criterion definition: originality, utility, and surprise
What are the assessment criteria?

- Similar three-criterion definitions
  - US Patent Office:
    - new, useful, and nonobvious
  - Boden (2004):
    - novel, valuable, and surprising
  - Amabile (1996):
    - novel
    - appropriate, useful, correct, or valuable
    - heuristic rather than algorithmic
How are the assessments scaled?

- Qualitative? Yes/No?
- Quantitative? Numbers?
  - Ordinal? Ranks?
  - Interval? Continuous?
  - Ratio? Zero point?
  - Proportion or probability? 0-1?
    - My preference for the last for reasons that will become evident
How are the assessments integrated?

- Additive? O+U+S?
- Multiplicative? O*U*S?

- Why the latter > former
  - The reinvented wheel?
    - High U but low O
  - The bank safe made out of soap bubbles?
    - High O but low U
Who makes the assessments?

- The individual?
  - “little-c” or “personal” creativity
    - Cf. “P-creative” (Boden, 2004)
- The field? The society? History?
  - “Big-C” or “consensual” creativity
- Hence, the need for separate personal- and social-level definitions
Personal-level definition

- During a problem-solving episode, any given idea is described by three personal (subjective) parameters:
  - *Initial probability* $p$ ($0 \leq p \leq 1$)
    - e.g. incubation required to instantaneous
  - *Final utility* $u$ ($0 \leq u \leq 1$)
    - e.g. useless to satisficing to maximizing
  - *Prior knowledge of utility* $v$ ($0 \leq v \leq 1$)
    - e.g. ignorance to hunch to full expertise
Personal-level definition

- Derived personal parameters
  - **originality** \((1 - p)\), where \(0 \leq (1 - p) \leq 1\)
  - **surprise** \((1 - v)\), where \(0 \leq (1 - v) \leq 1\)
    - i.e. is extensive knowledge accommodation required or just easy assimilation?

Therefore, **personal creativity**

- \(c = (1 - p)u(1 - v)\),
  - where \(0 \leq c \leq 1\)
- literally “little-c” creativity
Personal-level definition

- Significant implications: 2 examples
  - First – Whereas
    - The additive model for personal creativity yields a normal distribution for creative ideas, making highly creative ideas extremely common, as in
Personal-level definition

- Significant implications: 2 examples
  - First – The
    - The multiplicative model for personal creativity yields a skewed distribution, making highly creative ideas extremely rare, as in
Personal-level definition

- Significant implications: 2 examples
  - Second –
    - The necessity for BVSR creativity,
    - i.e., blind variation and selective retention (aka trial and error, illumination and verification, generate and test, etc.)
    - That is, ideas that are highly sighted cannot be creative whereas highly blind ideas can vary greatly in creativity, requiring a selection-retention procedure to winnow out the wheat from the chaff
Personal-level definition

- Significant implications: 2 examples
  - Second –
    - To demonstrate:
    - The **sightedness** of any idea is given by
      - \( s = puv \), where \( 0 \leq s \leq 1 \)
      - \( 0 = \) pure ignorance and \( 1 = \) pure expertise
      - i.e., an idea is highly sighted to the degree that it is highly probable, highly useful, and highly probable because it is already known to be highly useful
      - Note that as \( s \to 1 \), \( c \to 0 \), necessarily
Personal-level definition

- Significant implications: 2 examples
  - Second –
    - Hence, *blindness* is given by $b = 1 - s$
    - Implying that
      - as $b \to 0$, $c \to 0$; but it also holds that
      - as $b \to 1$,
        - then $\max c \to 1$
        - while $\min c = 0$ and thus $\sigma_c^2 \to 1$
      - as displayed in the following scatter plot ...
BVSR selects the creative “wheat” from the “chaff”

$\begin{align*}
p &= .2, \\
u &= .8, \\
v &= .5, \\
c &= .32
\end{align*}$
Big question:

- Given the logic, precision, and explanatory power of the above quantitative and multiplicative three-criterion definition of an idea’s personal creativity
- What’s required for this definition to be deemed “creative” by my fellow creativity researchers?
- Hence arises the ...
**Social-level definition**

- Ideally, and most simply, if $i$ indicates the $i$th member in a field of size $n$, then an idea’s consensually assessed creativity becomes the simple average of the separate assessments:
  
  $$C = \frac{1}{n} \sum c_i,$$

  or literally its “Big-C” creativity

  where $0 \leq C \leq 1$
Even so, this won’t work well because:

- Degree of consensus is often too small:
  - e.g. the hierarchy of the sciences
    - physics > chemistry > biology > psychology
  - e.g. relevant extra-field social judgments
    - industry professionals versus moviegoers versus film critics versus cinema historians
  - e.g. gender, ethnic, and ideological biases

- Consensus is often temporally unstable
  - cf. “going viral” versus “the test of time”
Social-level definition

- The above complications indicate that a social-level definition of an idea’s creativity may require the introduction of many interpersonal, disciplinary, cultural, economic, and political factors that go beyond those operating at the personal level, i.e.
- Creativity ceases to be psychological
- Think about that for a moment ...
GOOD LUCK!
Arguments for personal-level definition of creativity


Other creativity researchers using the personal-level definition
