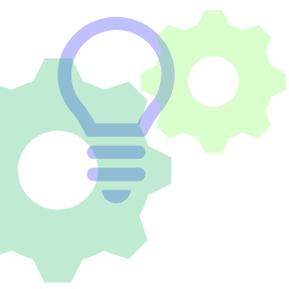




The Neuroscience of Creativity

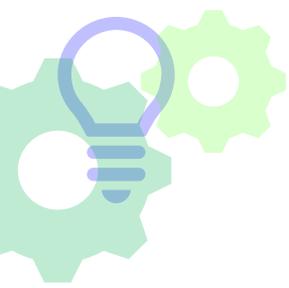


Neuroscience of Creativity

- ~100 Billion Neurons in the human brain
- Each neuron has 1000-10,000 synapses
- Up to 100 Trillion neural connections
- Ponder the number of interconnections that are possible in the brain
- This is what gives our brains an enormous learning and decision-making capability
- Every time we learn something new, we form new connections. Our brains are constantly changing



Source: Cornell University study

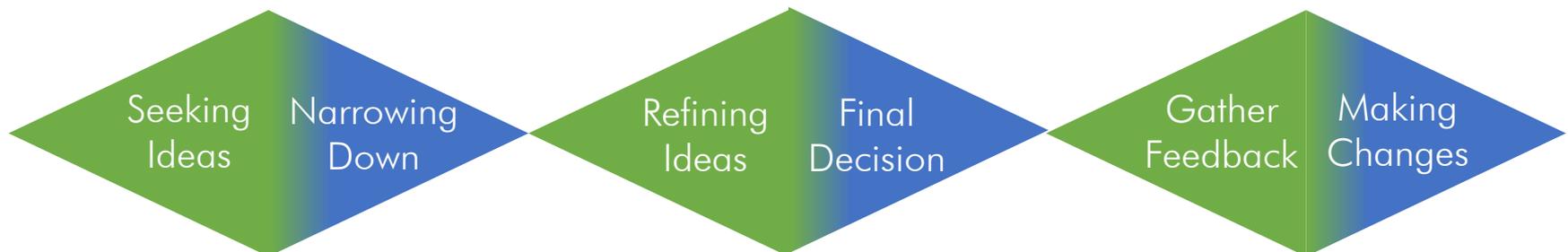


Neuroscience of Creativity



new ideas that
Nancy C. Andreasen, M.D., Ph.D.

- Creativity is the ability to perceive and produce are somehow valuable (originality & usefulness)
- Intelligence \neq Creativity
- Level of creativity relies heavily on the concept of divergent thinking
- **Divergent Thinking** is defined as the ability to come up with a large number of responses to an open-ended probe
- It is contrasted with **Convergent Thinking**, which tends to apply a sequential series of steps to answer a question that has only one possible solution





Neuroscience of Creativity



Nancy C. Andreasen, M.D., Ph.D.

“Creativity is a process...”

The Creative Process

Importance to Creativity

Fostering in an Organization

1 Preparation
Assimilation of the basic information to build on

Gathered over time. The more and the more diverse the information the better

Exposing people to diverse information from throughout the organization (sharing data and issues)

2 Incubation
A relaxed time when connections are made, often unconsciously

Can be a short or long-term process to allow information to coalesce and form connections (Divergent)

Ask questions that inspire curiosity and create the space for the mind to wonder when solving issues

3 Inspiration
The “Eureka!” experience

The moment the connection is made in the brain

Listening to new and radical ideas without judgement or applying current assumptions

4 Production
Putting the insights or concepts into a useful form

There is no point in discovery unless something is done with it (Convergent)

Giving support to good ideas to make them a reality along with sharing and rewarding success

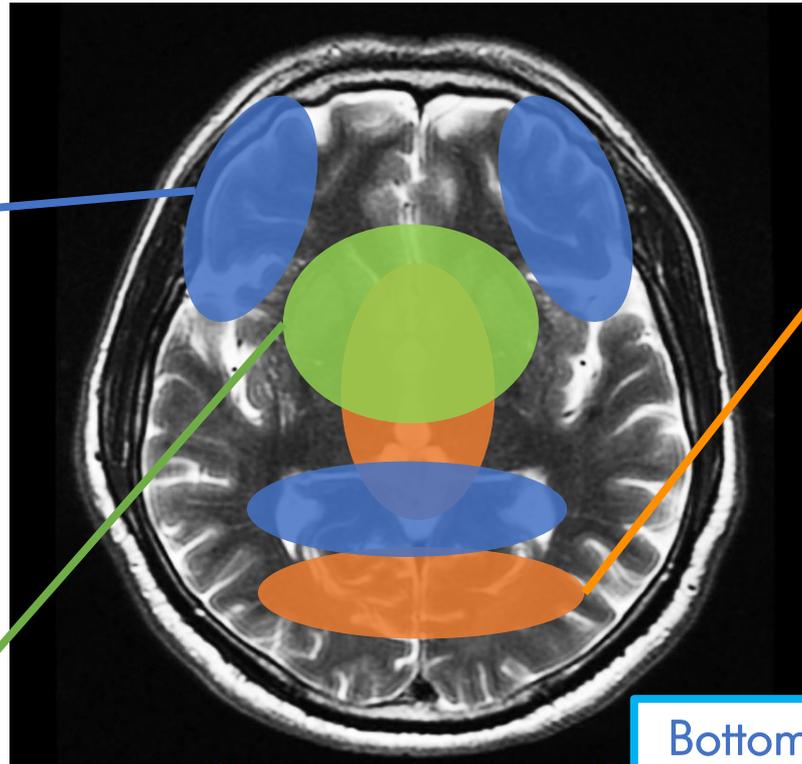


3 Networks in the brain impact creativity

Executive Attention Network



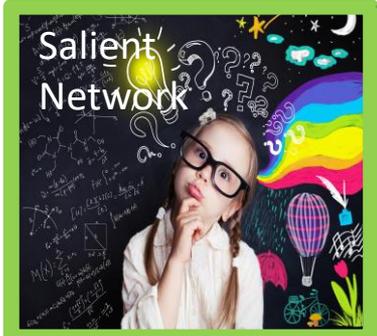
Recruited when a task requires that the spotlight of attention is focused like a laser beam.



The Default Network

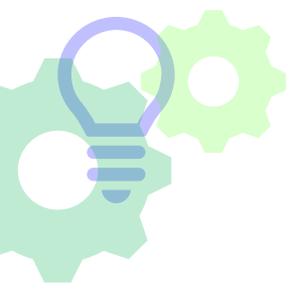
Involved in "constructing dynamic mental simulations based on personal past, thinking about the future, and generally when imagining alternative perspectives and scenarios to the present.

Salient Network



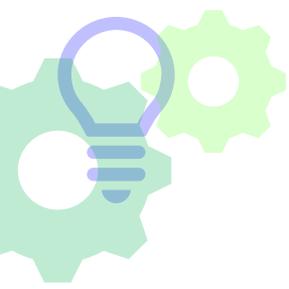
Constantly monitors both external events and the internal stream of consciousness and flexibly passes the baton to whatever information is most salient to solving the task at hand.

Bottom Line:
It's not as simple as "left or right brained". Your brain needs to be in a relaxed state for imagining new perspectives. Pressuring yourself to think of new ideas isn't ideal.



Allowing Your Team's Creative Minds to Flourish

- Share as much information as you can so that new data can connect with what is already known
- Ask thought provoking open-ended questions to stimulate the incubation process (Why...? What if...? How do we...?)
- Allow people time for thoughts to connect.
- Do not shoot down ideas too quickly. Outlandish ideas allow others to think big.



A New Take on Brainstorming

- Before getting together, give the participants something to think about a week before
- Ask big open-ended questions to get the incubation phase of creativity started (Why do we...? What if...? How do we...?)
- **CRITICAL:** Do not shoot down ideas or ridicule outlandish ideas. Encourage them! At minimum, wild ideas help others break out of their shell
- Make sure you have multiple different perspectives in the room
- In brainstorming, reward participation, not just the one who came up with the ultimate idea.
- Make it as fun and relaxed as you can