

a model of the creative process

The creative process is classically described (Wallis, 1926) as preparation → incubation → illumination → verification

Businesses often describe the process as research → development → execution

These models suggest a tidy, linear structure beginning → middle → end

Simple sequences sound manageable, even predictable. They promise tasks we can schedule and budget. That makes them appealing to people who run organizations and worry about minimizing uncertainty and risk. But the creative process resists planning; it's not a recipe, script, or formula. (How could it be?) In practice, the process is messy, iterative, and recursive.

Framed as a sequence, it's a plan for achieving a goal ready → aim → fire

Yet a first shot doesn't always hit the target. Achieving a goal may require a few tries; it may require iteration. Iteration is a looping process, using feedback from earlier attempts to converge on a goal. Iteration enables participants to calibrate, correct mistakes, build on accidents, add and remove detail, and improve skills through practice.

The creative process is less like a line and more like a loop: observe → reflect → make → observe → reflect → make → ...

The process need not begin with observing; it may begin with any step. Boundaries between the steps are not rigid. Each activity continues throughout the process, e.g., making also involves reflecting and observing.

If the goal is clear—if we have agreed on how we define a problem, as in a math problem—then solutions may be implied. And we know when to stop. If the goal is less clear, deciding when to stop requires judgment.

But some problems are "wicked" (Rittel, 1969). Their definition depends on point of view; participants can always broaden or deepen their understanding and improve their solutions. For such problems, starting and stopping are arbitrary and external to the process. It ends only when we "run out of time, money, or patience" (energy, will, or gumption).

Sometimes the goal is not clear. Participants don't always agree on how to define the problem. Such cases require a new frame, a new generative metaphor (Schön, 1990), or a new articulation of the essential question.

Agreeing on goals may require iteration—may involve a feedback loop. Several levels of loops may be nested: a listing of assumptions and a first approximation of a solution a primary process for refining the solution a process for agreeing on the goal of the primary process a process for improving the process of agreeing on the goal

This "bootstrapping" process (Engelbart, 1962) is a sign of learning systems and organizations (Argyris + Schön, 1978).

The creative process is not just iterative; it's also recursive. It plays out "in the large" and "in the small"—in defining the broadest goals and concepts and refining the smallest details. It branches like a tree, and each choice has ramifications, which may not be known in advance. Recursion also suggests a procedure that "calls" or includes itself. Many engineers define the design process as a recursive function: discover → define → design → develop → deploy

The creative process involves many conversations—about goals and actions to achieve them—conversations with co-creators and colleagues, conversations with oneself. The participants and their language, experience, and values affect the conversations.

Conversations about wicked problems especially benefit from—and may require—a variety of views. Some of these views form a habit of engaging (or observing, reflecting, and making) often called "design thinking." It might be thought of more accurately as a set of lenses on design conversations or creative conversations. These lenses provide perspective beyond the immediate focus of the conversation or process:

The quality of the conversations is largely responsible for the outcome of the process. The quality of the resulting product reflects the quality of the creative process—and the curiosity and determination of the participants.

through conversations with experience + values drawing on a repertoire of frames + metaphors

Reflection begins as a conversation with oneself. A co-creator's experience and values are a metaphor to explain a... which must then be shared with other people.

to understand to integrate

by seeing patterns by building consensus

reflect

iterate illuminate incubate

In the middle, the process as sequence may take a detour and iterate in a loop.

make

evaluative research

Evaluative research iterates making + observing. The main task of evaluative research is to determine what works. The goal is to keep the process on course.

generative research

The goal is to build a new frame or metaphor to explain a... The main task of generative research is to create a new frame or metaphor to explain a... which must then be shared with other people.

criteria + goals definitions + hypotheses insights + concepts

implement

Once an idea has been hatched and refined, it must still make its way into the world. Communicating the idea to others and building consensus for adoption are part of the innovation process but may lie outside the core creative process.

Passing on responsibility to others—leaving a legacy—is the final step in the larger process.

to envision to search

through conversations with tools + materials drawing on muscle memory and "being in the flow"

boundaries + issues characters + stories maps + models

observe

With openness With attention

example: exploring a new design space

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exploratory research

The main task of exploratory research is to "map the terrain." At first, the current situation may be new, as with previous and the process iterates. Exploratory research may also involve observing how constituents react to newly created artifacts or "design probes."

prepare

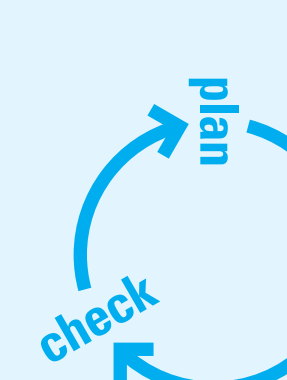
Some steps essential to the creative process lie outside its core. Accepting responsibility for the task and preparing tend to be one-time, upfront tasks.

through conversations with context + constituents drawing on shared language + experience

Observation begins as a conversation with others. Participants who are not part of the conversation's community must learn the culture and language. First you're on the outside looking in; slowly you immerse yourself; then you can step back and reflect. Where are you? Why? What are you doing? What is important here? Why? Ethnographies (and designers) have developed several frameworks to aid the conversation. Rasmussen's AEO framework: activity, environment, objects, interactions, services. Kumar's DEIS framework: design, environment, interactions, services. Rothstein's A&I framework: actors, activities, artifacts, interactions.

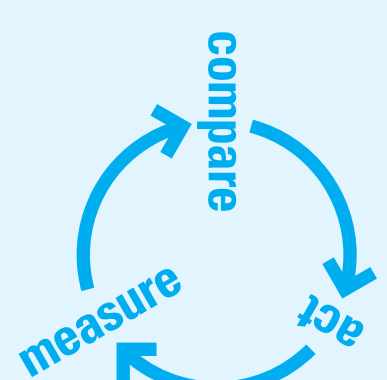
quality cycle

The creative process is startlingly similar to the quality cycle (Shewart, 1939), popularized in business circles by the quality management movement (Deming, 1982).



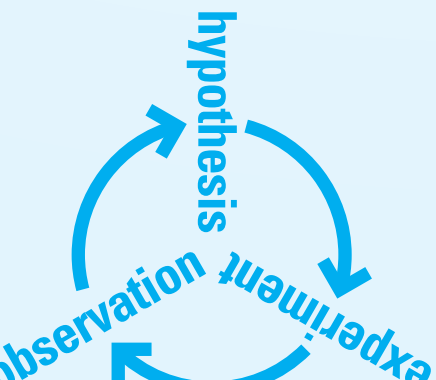
self-regulating system

Like a self-regulating system, the creative process is a classic feedback loop. Measure an essential variable; compare it to a goal; and act to eliminate any difference.



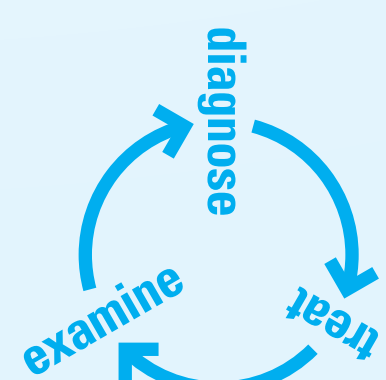
scientific method

Framing a hypothesis is a special type of creative act. Framing the creative process as "experimenting" shows the close tie it has with the domain of science.



clinical process

When physicians meet patients, they begin by taking a history and examining the patient; tests may be indicated, which contribute to a diagnosis, which indicates therapy.



design process

The design process viewed as "problem solving" (Jones, 1976), "problem seeking" (Peña, 1987) or "turning existing situations into preferred" (Simon, 1969) is a variation on the creative process.



interaction loop

Interaction (with computers or the wider world) answers three questions: What do you sense? (feel?) How do you learn + plan? (know?) How do you change things? (do?) (Verplank, 2000).

