

Stray Thoughts on “Old Masters and Young Geniuses”

The Combined Life Cycles of (Every Kind of) Creativity

(RICHARD P. GABRIEL), Poet, Writer, Computer Scientist, California

Galenson’s book “Old Masters and Young Geniuses: The Two Lifecycles of Artistic Creativity” [Galenson 2007] presents and explores two major modes of creative work: *conceptual* and *experimental*. I’ve referenced this book in two of my earlier essays: “Better Science Through Art” [Gabriel and Sullivan 2010] and “I Throw Itching Powder at Tulips.” [Gabriel 2014]. In his book, Galenson presents the two modes as if they are mutually exclusive, a simplification which helps present the concepts clearly and cleanly.

In this essay I explore how in real life for almost all artists—and for at least some scientists—these modes are intertwined or *blended*, with some artists leaning toward or favoring one or the other. I began this exploration by investigating how I approach computer-science research and programming, which appear to be obvious examples of pure conceptual work, but which for me are primarily experimental.



The terms *conceptual* and *experimental* are not commonly used in the computer science world. However, the ideas they refer to are well known by a variety of different terms. Computer science is broad, encompassing several theoretical subfields (including mathematics), a number of practical subdisciplines that largely serve other scientific and engineering fields, and a variety of commercial activities—for example, you are likely reading this essay using programs written to enable the general public to read such things. One of the subfields of computer science is creating programming languages for programmers to use; another is creating the tools that help programmers program. My work in computer science spans all of these.

I consider myself a blend of conceptual and experimental, reflecting my belief that creative folks generally use a blend. The basic logic is simple: You can’t make something without some amount of thinking about it; sometimes the bulk of the thinking is called “planning” and is done before any of the steps of making the planned thing; other times thinking is interspersed with making, which is akin to the experimental approach. Moreover, you can’t make something in the real world—even if on a canvas or on the page—without the *stuff* of the made thing playing a role: brushstrokes go wrong, word choices inspire new thoughts about the piece, the pigments on the palette don’t cooperate as expected; and all these things conspire to make the creator rethink some of the plan at least a little.

The rest of this essay describes the thinking I did to come up with the above assessment of my process.



To understand how I classify myself regarding *experimental* versus *conceptual* in my computer science and programming work, we need to read closely and critically Galenson’s definitions of them alongside some of the descriptions of the artists who exhibit these approaches. I believe that *experimental* and *conceptual* are somewhere on a spectrum—perhaps at endpoints, but perhaps not—and that the most typical case for a given artist (or scientist or engineer) is to use measures of each for any particular act of creation. To put it a different way: I believe most creators use both *experimental* and *conceptual* techniques most of the time. I know that I do.

Author’s address: Richard P. Gabriel, (Poet, Writer, Computer Scientist), California.

I want to note that though Galenson's book does not talk about blends of experimental and conceptual techniques, his argument is consistent with such blends. The important contribution of his book is to define and describe clearly these two ways artists—and all creators—approach designing their creations. And although I believe most creators use a blend of experimental and conceptual techniques—with some leaning one way or the other—there are some who are purely experimental or purely conceptual.

Experimental:

Artists who have produced experimental innovations have been motivated by aesthetic criteria: they have aimed at presenting visual perceptions. Their goals are imprecise, so their procedure is tentative and incremental. The imprecision of their goals means that these artists rarely feel they have succeeded, and their careers are consequently often dominated by the pursuit of a single objective. These artists repeat themselves, painting the same subject many times, and gradually changing the treatment in an experimental process of trial and error. Each work leads to the next, and none is generally privileged over others, so experimental painters rarely make specific preparatory sketches or plans for a painting. They consider the production of a painting as a process of searching, in which they aim to discover the image in the course of making it; they typically believe that learning is a more important goal than making finished paintings. Experimental artists build their skills gradually over the course of their careers, improving their work slowly over long periods. These artists are perfectionists and are typically plagued by frustration at their inability to achieve their goals.

⋮

For experimental artists planning a painting is unimportant. The subject selected might be simply a convenient object of study, and frequently the artist returns to work on a motif he has used in the past. Some experimental painters begin without a specific subject in mind, preferring instead to let the subject emerge as they work. Experimental painters rarely make elaborate preparatory sketches. Their most important decisions are made during the working stage. The artist typically alternates between applying paint and examining the emerging image; at each point, how he develops the image depends on his reaction to what he sees. Lacking a clear goal for the work, the artist is looking for things he finds interesting or attractive. If he finds them, he may continue working; if he does not, he may scrape off the image or paint over it. The decision to stop is also based on inspection and judgment of the work: the painter stops when he cannot see how to continue the work. Sometimes this is because he likes the painting and considers it finished, but often he remains dissatisfied, yet cannot see how to improve the work. In either case, experimental painters are inclined to consider the decision to stop as provisional, and often return to work on paintings they earlier abandoned or considered finished, even after long intervals.

Conceptual:

In contrast, artists who have made conceptual innovations have been motivated by the desire to communicate specific ideas or emotions. Their goals for a particular work can usually be stated precisely, before its production, either as a desired image or as a desired process for the work's execution. Conceptual artists consequently often make detailed preparatory sketches or plans for their paintings. Their execution of their paintings is often

systematic, since they may think of it as primarily making a preconceived image, and often simply a process of transferring an image they have already created from one surface to another. Conceptual innovations appear suddenly, as a new idea immediately produces a result quite different not only from other artists' work, but also from the artist's own previous work. Because it is the idea that is the contribution, conceptual innovations can usually be implemented immediately and completely, and therefore are often embodied in individual breakthrough works that become recognized as the first statement of the innovation.

The precision of their goals allows conceptual artists to be satisfied that they have produced one or more works that achieve a particular purpose. Unlike experimental artists, whose inability to achieve their vague goals can tie them to a single problem for a whole career, the conceptual artist's ability to consider a problem solved can free him to pursue new goals. The careers of some important conceptual artists have consequently been marked by a series of innovations, each very different from the others. Thus whereas over time an experimental artist typically produces many paintings that are closely related to each other, the career of the conceptual innovator is often distinguished by discontinuity.

⋮

For conceptual artists planning is the most important stage. Before he begins working, the conceptual artist wants to have a clear vision either of the completed work or of the process that will produce it. Conceptual artists consequently often make detailed preparatory sketches or other plans for a painting. With the difficult decisions already made in the planning stage, working and stopping are straightforward. The artist executes the plan and stops when he has completed it.

These descriptions seem to me to be based mostly on how they manifest in painting, despite being labeled as about artists. Galenson's book examines other disciplines, but I suspect these examinations are more cursory than examinations of painters. From my perspective as a writer of poetry, fiction, and essays, the two styles of creativity considered as exclusive of each other seem to fit poorly prose writing and poetry, and they also are hard to apply with exclusivity to things like computer-science-research or programming without substantial qualifications. I believe the analysis that leads to the problem of scope with these descriptions starts with this:

The distinction between experimental and conceptual artists can be sharpened by considering their procedures in making paintings. For this purpose, we can divide the process into three stages: planning—all the artist does before beginning a particular painting; working—all the artist does while in the process of putting paint on the canvas; and stopping—the decision to cease working.

—Adapted from [Wollheim 1995]

The issue here is that planning (also called in my neck of the woods “designing”) is *defined* as the activity that takes place before any of the work of making something starts—another issue is calling it “planning” instead of “designing.” Designing is a series of decisions, it is thinking; later decisions can influence and alter earlier ones; therefore, a common mistake is to believe that if all these decisions can be lumped together at the start, in one's head or in ephemeral construction materials—before anything is committed to reality—the cost of redoing some decisions is less than if those redosings require manipulating the real world in the form of more permanent construction materials: *stuff*. In theory, it's a good thought to have. However, when a thing to be built exists in

the real world, that thing has the bad habit of talking back to its designer;¹ this means that some decisions made before the thing exists can be understood as mistakes only when the mistake is manifest in the world—that is, some mistakes can't be discerned in one's head or in the world of planning-appropriate abstractions. Below, in talking about software, I'll elaborate on how in the realm of software—actual programs running on a real computer and being used by real people—such mistakes are ubiquitous.

For simplicity and without loss of generality, I will use the word “design” for the thinking one does before engaging in *any* creative making-like activity in the real world, including *immediately* before (such as placing brush strokes or writing some words), and I will use the word “building” for such creative making-like activity in the real world. Moreover, I will use the phrase “upfront design” to refer to the sort of planning outlined by Galenson/Wollheim.

An important problem with lumping all design in upfront design and calling it “planning” is to consider as *imprecise*, *tentative*, and *incremental* those artists who design a little, build a little, design some more, build some more, and so on.

One can see this tendency at work by looking at a passage in which Galenson quotes Émile Bernard—who spent a month with Cézanne while he painted—remarking on what he witnessed as the experimental painter Cézanne worked: “[Cézanne] never placed one stroke of paint without thinking about it carefully . . . [his method of working was] a meditation with brush in hand.” This is an example of designing / planning during the so-classified *working* stage of creating a work of art.

A different defect of the definition of “conceptual [art]” is to generally consider opaque the (upfront) planning stage. Were we to open up such pre-planning stages for conceptual artists, we likely would observe some degree of experimental work—because the plan is also a thing built, and hence designed, and so the work that goes into building it can also be either experimental or conceptual. We will see this below when we look more closely at the planning that Picasso did for *Les Femmes d'Alger*.



Let's spend a few paragraphs looking at places in Galenson that support the idea of blending experimental and conceptual—these will be just hints at support, not outright declarations.

On page 8, Galenson wrote about Cézanne's late paintings—Cézanne is taken as a prototypical experimentalist:

The painting becomes a representation not of something seen, but rather of the process of seeing, and of Cézanne's recognition of the inevitable incompleteness of that representation. Thus Meyer Schapiro declared that Cézanne was “able to make his sensing, probing, doubting, finding activity a visible part of the painting.”

Compare that to what Galenson wrote on page 127 about Ezra Pound—Pound is taken as a conceptual poet:

At the age of 28 Pound conceived a new type of poetry he named Imagism. In keeping with Pound's conceptual approach, he published a set of formal rules for this new poetry. The motivation for the movement lay in thought rather than observation: as the critic Hugh Kenner explained, “The imagist . . . is not concerned with getting down the general look of the thing. . . . The imagist's fulcrum . . . is the process of cognition itself.”

¹My essay “Designed as Designer” [Gabriel 2008] is about how the thing being designed is a collaborator in its own design and construction.

Perhaps I'm a naïve reader, but these seem like similar observations.

There are three passages talking about how writers approach the sounds and rhythms of language, a topic I take up in the next section. First, Robert Frost—an experimental poet—on page 124:

Frost based his poetry on what he called “sentence-sounds,” by which he meant the impact of the rhythms and stress patterns within sentences on the meanings of the words they contained. Capturing sentence-sounds was not a process of imagining, but of listening: “They are gathered by the ear from the vernacular and brought into books. . . . I think no writer invents them. The most original writer only catches them from talk, where they grow spontaneously.” The language of Frost’s poems equally came from listening: “I would never use a word or combination of words that I haven’t heard in running speech.”

Second, James Joyce—a conceptual writer—on page 141:

In 1941, an obituarist described James Joyce as “the great research scientist of letters, handling words with the same freedom and originality that Einstein handles mathematical symbols. The sound, patterns, roots, and connotations of words interested him much more than their definite meanings. One might say he invented a non-Euclidean geometry of language; and that he worked over it with the doggedness and devotion as if in a laboratory far removed from the noises of the streets.

(I will return to James Joyce and “Ulysses” later.)

Third, Ernest Hemingway—another conceptual writer:

*One of Ernest Hemingway’s most distinctive innovations was in his writing of dialogue. In 1926, Conrad Aiken declared in a review of *The Sun Also Rises* that “the dialogue is brilliant,” and described it as “alive with the rhythms and idioms, the pauses and suspensions and innuendoes and shorthands, of living speech.” In fact, however, Philip Young later explained that “for all the impression of authenticity, Hemingway’s dialogue gives, it was no simple reproduction of actual human talking. . . . Hemingway’s dialogue strips speech down to the essentials which are typical of the speaker. He built a pattern of mannerisms and responses which give an illusion of reality that, in its completeness, reality itself does not give.”*

As a writer myself, I can report that it is common for writers to worry over wording with “doggedness and devotion” to maximize “the impact of the rhythms and stress patterns within sentences”—to make the writing “alive with the rhythms and idioms, the pauses and suspensions and innuendoes and shorthands, of living speech”—“from listening” and “in a laboratory far removed from the noises of the streets.” Generally, language in creative writing is not copied from real life—it is worked over extensively. To quote Picasso on this idea:

Nature and art, being two different things, cannot be the same thing. Through art we express our conception of what nature is not.

In all these cases, the writers are confronting the *stuff* of writing, not in a purely conceptual or abstract manner, but as actual words in all their naked and blunt glory, on the page and in the real and imagined ears of readers. To quote myself from “Designed as Designer” [Gabriel 2008], also here: <https://dreamsongs.com/Files/DesignedAsDesignerExpanded.pdf>:

*On his way to Switzerland for a “rest cure,” Eliot took his *Waste Land* manuscript of about 1000 lines to Pound in Paris for comments, and he stopped in Paris again on his trip back. There were undoubtedly many conversations, but also there are marked up manuscripts in the Berg Collection in the New York Public Library that tell us the story*

of the collaboration. Pound found the heart of Eliot's manuscript and directed him in paring it down to the 434 lines we see today. Don't be fooled: Pound did not merely scrape away words, lines, and stanzas (though that's what he mostly did); Pound's comments are extensive—if cryptic to readers not accustomed to artists talking to each other—and not particularly subtle. He pointed out weaknesses and suggested changes. Eliot wrote this about the role Pound played in *The Waste Land*:

It was in 1922 that I placed before him in Paris the manuscript of a sprawling, chaotic poem called *The Waste Land* which left his hands, reduced to about half its size, in the form in which it appears in print. I should like to think that the manuscript, with the suppressed passages, had disappeared irrecoverably: yet on the other hand, I should wish the blue penciling on it to be preserved as irrefutable evidence of Pound's critical genius.

[Eliot 1946]

Here Pound was working (experimentally) with the words on Eliot's page.² Recall the definition of "conceptual": "artists who have made conceptual innovations have been motivated by the desire to communicate specific ideas or emotions"

Here is what Eliot said later about Pound's artistic intervention (Galenson, page 127):

In gratitude, Eliot later dedicated the poem to Pound with the tribute "il miglior fabro"—the better craftsman—explaining that he wished to honor the technical mastery and critical ability of [Pound's] own work. Yet even Eliot admitted that his interest in Pound's work was almost exclusively in its form: thus Eliot wrote, "I confess that I am seldom interested in what Pound... is saying [rpg: that is, the ideas], but only in the way he says it [rpg: that is, the words on the page or "aesthetic criteria"]"



But let's delve into writing more deeply for a bit.

As noted, regardless of how much planning is done, eventually a work of fiction (let's say) requires constructing paragraphs out of sentences and sentences out of words—words that have associated sounds and rhythms, and associated / sparked-off meanings: connotations, cultural meanings, and special meanings for the characters in the story. When two words or phrases accidentally rhyme or echo each other, readers will tend to link them together (called "fishing back" by the poet Gerald Stern (with whom I studied a bit and who passed away in October 2022)), thereby creating a structure that is hard to anticipate in pure / abstract planning. On noticing this (accidental) structure, the writer might go back and rethink some decisions, perhaps bending the story toward developing this relationship.

Here is a speculative example of how this would work. It's from the novel, "Moby Dick," by Herman Melville [Melville 1851]. In the final text, Ahab and the white whale (Moby Dick) are similarly described: Ahab: *bleached bone, ribbed and dented brow, wrinkled brow, snow-white ivory leg, wrinkling his brow*; Moby Dick: *wrinkled brow and a crooked jaw, his wrinkled brow, the peculiar snow-white brow of Moby Dick*. These form a descriptive overlap and hence gives rise to an existential ambiguity between Ahab and his obsession, Moby Dick, the white whale. It *might* be that the connection between Ahab and the Whale came about after Melville noticed he had described the two similarly, and after noticing that, he revised the text (changed the plan or design) in order

²A facsimile of Pound's corrections to Eliot's draft can be found in "The Waste Land: A Facsimile and Transcript of the Original Drafts Including the Annotations of Ezra Pound" [Eliot and Eliot 1971].

to strengthen the connection. Even if that's not what happened, it is an example of the *stuff* the writer makes helping the writer write and revise; and it is also an example of how I write.

There are hundreds of books on sentence-by-sentence and word-by-word revision in the prose world, let alone the poetry world. Even such small things as where sentences are broken across lines and page boundaries can have a strong influence on how a reader reads a story.

Poetry has even more of such dense interlocks. Here are only a few of the connections in "The Second Coming" by William Butler Yeats:

~~The Second Coming~~

~~Turning and turning~~ in the ~~widening gyre~~
 The ~~gyron~~ cannot hear the ~~falcones~~,
 Things ~~fall~~ apart; the centre cannot ~~hold~~,
 Mere anarchy is ~~loosed~~ upon the ~~world~~,
 The blood ~~dimmed~~ tide is ~~loosed~~, and everywhere
 The ceremony of ~~innocence~~ is ~~drowned~~,
 The ~~best~~ lack all ~~conviction~~, while the ~~worse~~
 Are full of ~~passionate intensity~~,
 Surely some revelation is at ~~hand~~,
 Surely the ~~Second Coming~~ is at ~~hand~~,
 The ~~Second Coming~~! Hardly are those ~~words~~ out
 When a ~~vast~~ image out of ~~Spiritus Mundi~~
 Troubles my sight; somewhere in the sands of the ~~desert~~
 A shape with a ~~lion~~ body and the head of a ~~man~~,
 A gaze blank and pitiless as the sun,
 Is moving its ~~slow~~ ~~things~~, while all about it
 Reel ~~shadows~~ of the ~~indignant~~ ~~desert~~ ~~birds~~,
 The ~~darkness~~ drops again; but now I know
 That twenty centuries of ~~stony~~ ~~sleep~~
 Were vexed to ~~nightmare~~ by a ~~rocking~~ ~~cradle~~,
 And what ~~rough~~ ~~beasts~~ its ~~den~~ come ~~round~~ at last,
~~Slouches~~ towards Bethlehem to be born?

For writers, the words on the page are what it means to be "motivated by aesthetic criteria." Any planning they do before setting pen to paper can be modified by what the words on the page teach them; their "imprecision" and "vague goals" come from recognizing that only during draft after draft of a piece will the true plan (outline, design) become clear—before the words are down there *cannot* be clear goals; the revision process is how writers seek the rest of the plan; that plan emerges from the revisions in front of them. Because sentence-by-sentence and word-by-word revisions can go on indefinitely, they reach a point where they "cannot see how to continue the work" and "abandon" it or "consider it finished."

Some writers don't care much about what their sentences sound like—Annie Ernaux who won the Nobel Prize for literature in 2022 is an example. Ernaux is notable for her rejection of the French concern for exquisite well-turned language. She has described herself as using words like "a knife"; she uses a minimalist style which she describes as flat writing, "écriture plate." She says her language is "brutally direct, working class and sometimes obscene."

The plan, as it were, that experimental writers create is the result of all the individual think-a-little / revise-a-little steps where planning (and designing) is interspersed with writing / building / creating / painting / sculpting....

Eventually every creative activity has a point where the *stuff* confronts the creator. Even if the designer or conceptual artist makes a detailed plan that someone else carries out, that someone else is confronted with the *stuff* and must respond to it, presumably with well-trained and practiced skill. Consider this interview with novelist Larry Brown:

I decided that a lot of people just learned [writing] on their own, and I went into a room and started writing. Anybody who wants to apply themselves to it, who wants to work at it, can eventually learn how. That's what I tell my students. It took me eight years to publish my first book. In that time, I wrote five novels I had to throw away and about 80 or 90 short stories.

[Interviewer: But why throw it away? Why not just keep working on it?]

Because it wasn't readable. It was silly. It was stupid. There were so many things wrong with it. You have to do so many of those until you get to the point where you cross the line and you can become a professional writer. It takes a lot of work. You have to keep on going and believe in yourself. And you have to be willing to write stuff and then throw it away.

—<https://www.bookpage.com/interviews/8048-larry-brown-fiction/>

It is no surprise, then, that Picasso had a lengthy training and practicing period before any of his innovations. This skill stood him well during the creation of *Les Femmes d'Alger (O. J. R. M.)*. Let me quote from “Better Science Through Art”:

Picasso thought of himself as someone from whom art sprung whole. Les Femmes d'Alger is considered by many to be his masterpiece. He carefully planned it. The painting portrays five nude prostitutes in a brothel in Barcelona. The figures are physically jarring, none conventionally feminine, all slightly menacing, and each is rendered with an angular and disjointed body shape. Two of the women have African-mask-like faces, giving them a savage and mysterious aura. This is a variant of Primitivism. Picasso also abandoned perspective in favor of a flat, two-dimensional picture plane.

Picasso stated that his art was the result of what he had found—as opposed to showing his seeking, as Cézanne did—but he claimed to not believe in research.

I can hardly understand the importance given to the word “research” in connection with modern painting. To find, is the thing. . . .

When I paint my object is to show what I have found, not what I am looking for. . . .

I have never made trials or experiments. Whenever I had something to say, I have said it in the manner in which I have felt it ought to be said.

—Interview, 1923

Yet, for Les Femmes d'Alger, Picasso did over 400 studies and sketches, a record for artistic preparation. If this isn't playing, experimenting, and researching, we confess to not knowing what those things are. [Gabriel and Sullivan 2010]

(I will return to Picasso and *Les Femmes d'Alger* later.)



Let's start with what I believed before reading Galenson's book. First, it's important to know that my beliefs about programming originated with my work in artificial intelligence in the 1970s and 1980s. That was when AI was about writing programs to try to mimic some of the intelligent and

common-sense behavior of people performing mental acts. That is, it was before machine learning was used for performing perception-like tasks and some rudimentary instinct-like mental behavior. An example would be diagnosing gait (problems) from observations; another would be producing a simple natural language (English) description of how an algorithm works; or performing simple non-monotonic reasoning (McCarthy's Advice Taker)—I worked on all three as a grad student and later a researcher at Stanford. In these cases, the best one could do was take a guess about what might work, then try to code that up in a programming language, and finally use the experiences of trying the program out on some cases to refine the guess. Also, because most mainstream programming languages at that time (C, Fortran, Pascal) were not designed for—let's say—strange programming tasks, such work sometimes required inventing programming constructs to begin to express the vague ideas in one's head.

Think about it: how would it be possible (back then) to have a complete and correct theory or idea about what was behind simple reasoning? The only people (back then) trying to come up with an effective theory—a theory that exposed the mechanisms behind thought—were the AI researchers.

For an extreme example, here is a description of the program I have been working on since 2013: InkWell [Gabriel 2016]: Write a program that will take as input a set of words as “triggers,” a set of words indicating mood, a model of a particular writer, a hint about how important rhyme and sonic echoes are, a personality description of the “narrator,” and perhaps half a dozen other aesthetic considerations; from them produce a short, haiku-like poem while endeavoring to “think” like a poet. And as an example, if the trigger words are *loud guitar blues music*, the following is a good outcome—and it is a poem InkWell wrote:

*tuned adrenaline
my music
a beat-boogied headful*

If it seems impossible to plan out how such a program should work *beforehand*, I can assure you that it really is. For example, one aspect of InkWell is based on a vague idea I had way back in the 1970s that human creative thinking relied on certain things—moods, words, sounds, random thoughts—*influencing* the creative process. InkWell is able—in fact was originally designed—to revise a given text based on influences. Here is a simple text as an example (it's a single line from Robert Frost's “Stopping by Woods on a Snowy Evening”):

The woods are lovely, dark, and deep

One of the influences in InkWell is called a “halo,” which is a set of words that imply a mood that biases InkWell's choice of words. Here is the Happiness halo:

*Buoyant, Delighted, Ebullient, Ecstatic, Elated, Energetic, Enthusiastic, Euphoric,
Excited, Exhilarated, Fine, Overjoyed, Pleasant, Thrilled, Ticked pink, Turned on,
Vibrant, Zippy*

Here is how InkWell revises the Frost line under the influence of the Happiness halo:

The woods are fine-looking, not too light, and heavy

Here is the Anger halo:

*Affronted, Belligerent, Bitter, Burned up, Crabby, Enraged, Fuming, Furious, Heated,
Incensed, Infuriated, Intense, Outraged, Provoked, Seething, Storming, Truculent,
Vengeful, Vindictive, Wild*

Here is how InkWell revises the Frost line under the influence of the Anger halo:

The woods aren't very ugly, not too light, and not too shallow

The metaphorical way I thought of haloes was that a halo's words acted like magnets that would draw InkWell's attention to some words and push away from others (a word in a halo can be something like *-Happy*, which is taken as a negative influence). The *structure* in InkWell that embodies haloes is called "gravity."

Now think of it this way: how could you know whether there was a conceptual bug in a program that produced some halo-influenced wording that surprised you? Could you be sure it was a bug instead of inspiration (on the part of InkWell)?

Yes, trying to program something like this is crazy.

Contrast this with the sort of programming the so-called "software engineers" were talking about back in the early 1970s: creating business and military software to automate or speed up tasks already performable by people. A good example is a spreadsheet. Robert M. Frankston³ and Dan Bricklin wrote VisiCalc, the first spreadsheet program in 1979 for the Apple II computer, prompting IBM to create the IBM PC. In this case, the sort of program to write is based on a well-worn model, the accountant's spreadsheet (though Frankston and Bricklin generalized that idea to wider-ranging constraint satisfaction). Many people can imagine what this program should do, and—based on seeing paper spreadsheets—guess what it would look like in action. In such cases, it makes sense to imagine that a detailed specification of a spreadsheet program is possible—a kind of detailed blueprint or "preparatory plan"—and that idea is the basis of early thinking about software engineering.

At first it might seem that these two extremes are pure examples of an experimental approach to programming on one hand and a conceptual one on the other, but when we look more closely, it turns out that they are not pure examples, but dirty & messy ones. Let's start with the second one, the spreadsheet.

In 1985 Microsoft released the first version of Excel, their entry into the spreadsheet world. It's now 2022, and Excel is in its 16th version. In Galenson's book we can read the following:⁴

For conceptual artists planning is the most important stage. Before he begins working, the conceptual artist wants to have a clear vision either of the completed work or of the process that will produce it. Conceptual artists consequently often make detailed preparatory sketches or other plans for a painting. With the difficult decisions already made in the planning stage, working and stopping are straightforward. The artist executes the plan and stops when he has completed it.

Is this sequence of Excel versions an example of "detailed preparatory sketches" of the latest, most final (as it were) version of Excel, *Excel Microsoft 365, 2022 edition*, or is it an example of this:⁴

Artists who have produced experimental innovations have been motivated by aesthetic criteria: they have aimed at presenting visual perceptions. Their goals are imprecise, so their procedure is tentative and incremental. The imprecision of their goals means that these artists rarely feel they have succeeded, and their careers are consequently often dominated by the pursuit of a single objective. These artists repeat themselves, painting the same subject many times, and gradually changing the treatment in an experimental process of trial and error. Each work leads to the next...

³A friend of mine.

⁴The full quote appears earlier in this paper.

This process of working and reworking the material being created—regardless of what it is—is common in software development (programming), as it is in any other building activity. An indispensable essay on this topic and related ones is Mary Shaw’s “Myths and Mythconceptions: What Does It Mean to Be a Programming Language, Anyhow?” [Shaw 2022] where she wrote:

*The myth of **Correctness** engenders another myth: the myth that we have, or could have if we tried hard enough, a full **Specification**—either as a requirement on the software to be written, or as a commitment that a user of a component could rely on. After all, how can you prove correctness of the code without such a specification? So the **Correctness** myth is intimately bound up with the myth of full formal **Specification**. There is another challenge to the **Specification** myth, the notion that some sort of requirement or specification, even an informal one, should precede writing the software, and we turn to that myth here. We’ve seen that an important, perhaps even dominant, mode for vernacular programmers is in fact to use the software development process as a vehicle for understanding what problem they’re actually trying to solve. Sometimes they do not have access to ground truth or an oracle to check the results, so they write some code and make judgments about how well it meets their expectations.*

Here she is talking about the fact that a specification is difficult or impossible to come up with. This is because it is typically not likely that a designer will know what the software should do—and how it should look—before there is some version of the very thing being built right in front of the designers, programmers, and users (customers or clients). Here is the beginning of the description of a certain type of software specification from Wikipedia:

A software requirements specification (SRS) is a description of a software system to be developed. It is modeled after business requirements specification (CONOPS). The software requirements specification lays out functional and non-functional requirements, and it may include a set of use cases that describe user interactions that the software must provide to the user for perfect interaction.

Software requirements specification establishes the basis for an agreement between customers and contractors or suppliers on how the software product should function (in a market-driven project, these roles may be played by the marketing and development divisions). Software requirements specification is a rigorous assessment of requirements before the more specific system design stages, and its goal is to reduce later redesign. It should also provide a realistic basis for estimating product costs, risks, and schedules. Used appropriately, software requirements specifications can help prevent software project failure.

—https://en.wikipedia.org/wiki/Software_requirements_specification

The idea of software development being an example of conceptual “art” is consistent with the so-called “Waterfall” method of software development:

In Royce’s original waterfall model the following phases are followed in order:

- (1) System and software requirements: captured in a product requirements document*
- (2) Analysis: resulting in models, schema, and business rules*
- (3) Design: resulting in the software architecture*
- (4) Coding: the development, proving, and integration of software*
- (5) Testing: the systematic discovery and debugging of defects*
- (6) Operations: the installation, migration, support, and maintenance of complete systems*

Thus the waterfall model maintains that one should move to a phase only when its preceding phase is reviewed and verified.

—https://en.wikipedia.org/wiki/Waterfall_model

However, there have always been alternative ways of developing software, called such names as “iterative,” “incremental,” “rapid prototyping,” “exploratory programming,” “agile,” “eXtreme programming,” “kanban,” “Scrum,” etc. All of these recognize that the thing itself being built needs to be in front of the designers, builders, and users before the final(ish) nature of the thing can be grasped. This is the message in this essay of mine: “Designed as Designer.” [Gabriel 2008] In fact, Agile and Scrum are the current “hot” (or popular) approaches to developing software.

~

I believe that as a researcher, programmer, poet, and writer I combine the two approaches—experimental and conceptual—in all my creative activities. And I would bet that almost all creators do the same thing. As mentioned earlier, the reasoning is simple: there is always an initial concept, because no one can make the first move in creating something without first having some sort of thought or plan in mind—regardless of how simple it is; and once the first draft is ready(ish), the *stuff* always talks back and demands revision.

Now let’s return to the first “pure” experimental example, Inkwell. When I started working on InkWell, my “plan” was to use a simple meta-heuristic optimization algorithm⁵ to vary the choice of words in a sentence in order to approach a pre-defined personality model. This evolved over a 10-year period to the program that can write poems. Once the simple first version of InkWell appeared, I continued to tinker with it whenever I and it confronted me with new ideas.

In writing we can find examples of writers who plan extensively but also revise extensively while working with what has been planned. Here is what JK Rowling—a writer I do not admire—said about planning one of the Harry Potter books:

I have a large and complicated chart propped on the desk in front of me to remind me what happens where, how, to whom and which bits of crucial information need to be slipped into which innocent-looking chapters.

—<https://thefriendlyeditor.com/2015/03/26/how-rowling-revised-harry-potter-phoenix/>

Figure 1 is an example of such a chart, from the same web page. She went on to say:

I plan; I really plan quite meticulously. I know it is sometimes quite boring because when people say to me, “I write stories at school and what advice would you give me to make my stories better?” And I always say (and people’s faces often fall when I say), “You have to plan,” and they say, “Oh, I prefer just writing and seeing where it takes me.” Sometimes writing and seeing where it takes you will lead you to some really good ideas, but I would say nearly always it won’t be as good as if you sat down first and thought, Where do I want to go, what end am I working towards, what would be good—a good start?

—<https://thefriendlyeditor.com/2015/03/26/how-rowling-revised-harry-potter-phoenix/>

Figure 2 is her planning chart updated by tracking differences between it and the published version of “Order of the Phoenix”; I take it that the revisions noted arose primarily from her revising the text and not from revising the plan. Red is what Rowling deleted from the story; yellow is what she swapped around; and green is everything she added after the outline.

Other artists and writers approach things a little differently. For example, Hayao Miyazaki, a film director who also writes his own original works and screenplays, described this as follows:

⁵https://en.wikipedia.org/wiki/Simulated_annealing

No.	Time	Title	Plot	Prophecy	Cho / Ginny	Order of the Phoenix	Dumbledore's Army	Snape / Harry + Father	Hagrid + Gramp
13	Oct	Plots and Resistance	Harry has a lesson scheduled with Snape, but he skips it to go to Hogsmeade with Ron and Hermione. They meet Lupin and Tonks but can't talk because Umbridge is bawling them, so they pass a note. Harry, Ron, and Hermione are recruiting for Dumbledore's Army. Hagrid has fresh injuries.	Harry sees the Hall of Prophecy (in a dream). Voldemort is still formulating his plans; none of his Death Eaters are able to get in, so he sends his snake Nagini on a recon mission.	Cho is in Hogsmeade and wants to join Dumbledore's Army.	Tonks and Lupin	Recruiting	Harry skips his lesson to recruit for Dumbledore's Army.	Hagrid's still being injured and has blood stains. ("He's feeding something that's not his blood.")
14	Nov	Dumbledore's Army	First meeting of Dumbledore's Army		Cho and Ginny are both present.	Umbridge is now reading their mail.	First meeting	Harry's still skipping his lessons.	-
15	Nov	The Dirtiest Tackle	Harry is suspended from Quidditch after he attacks Malfoy because Malfoy taunted him about Cedric. That night Harry is restless and unable to sleep; he worries about Umbridge, Cho, and his scar. Harry sees Nagini attack Mr. Weasley (in a dream).	Nagini attacks Mr. Weasley.	Cho is now madly in love.	-	Firehead		-
16	Nov	Black Marks	Harry rows about skipping his lessons with Snape; Harry is in the doghouse and he's angry. An overview of Christmas. Hermione contacts Rita. Another lesson with Snape.	Nagini gets into the Hall of Prophecy. Voldemort has confirmation of Bode's story -- that only he and Harry can touch the prophecy.	Cho kiss? Ginny is concerned about her father.	Ron and the rest of the Weasleys are told about their father's injury.	Reactions to the attack -- another meeting and an overview?	A row about Harry not going to his lessons	Hagrid's still getting injured.
17	Dec	Rita Returns	Harry, Ron and Hermione go to Hogsmeade for their Christmas shopping and meet with Rita.	Rita supplies information.	Harry is now avoiding Cho a bit. Ginny is with someone else?			Another lesson	Hagrid's in the hospital wing.
18	Dec	St. Mungo's Hospital for Magical Maladies and Injuries	They visit Mr. Weasley at St. Mungo's on Xmas Eve. They also see Macnair visiting Bode and run into Professor Lockhart and Neville.	Now Voldemort is actively trying to get Harry to the Hall of Prophecy. Harry's dreams are very vivid; he can see his name.	Ginny is visiting her dad.	They're around.			
19	Dec	Xmas		Bode's dead.	Hermione's with Krum and Ginny has a boyfriend.	Sirius is here; there's a big reunion.			
20	Jan	Extended Powers of Evlira Umbridge	Harry misses the Quidditch match against Hufflepuff. Why weren't they at the match? Umbridge now suspects the existence of Dumbledore's Army. Another lesson with Snape?	Harry is fighting increasingly strong visions but not very successfully.		Sirius and Lupin	Big meeting	In his lesson with Snape, Harry mentions the Hall of Prophecy.	Hagrid's out of the hospital and going into the Forbidden Forest armed with spikes, etc.
21	Feb	Valentine's Day	Harry is in Hogsmeade with Cho. Professor Trillemay is fired and Firenze replaces her in the nick of time. Rita reports back on Bode, etc. Another lesson with Snape?	-	Harry has a Valentine's date with Cho; they're miserable and row.	-			
22	Feb	Cousin Gramp	Umbridge is now going after Professor Hagrid. Harry, Ron, and Hermione go to warn Hagrid about Umbridge and they meet Gramp. Firenze is teaching about prophets and prophecies. Another lesson with Snape?	-		Gone here		Snape gets angry at Harry because Harry can't do it.	
23	Mar	Treason	At Easter Dumbledore's Army is discovered; Dumbledore takes the rap for it -- Azkaban.		Cho wants back with Harry, but they row again.	-			
24	Apr	Careers Guidance	At his career consultation Harry is interested in being an Auror. Dumbledore's Army continues meeting. Ginny is angry. Harry has a lesson with Snape.	Harry starting to get how to block his dreams.		Firehead	See plot. Meeting.	Snape grudgingly approves.	Hagrid's clinging to his job and refusing to abandon Gramp.

www.writelikerowling.com Copyright Stuart Horwitz/Book Architecture

Fig. 1. Rowling As Planned

When people talk about making films, they often use fancy and hip phrases like 'being creative'; however, in reality, you do have creative choices until you select the topic for your film. . . . Now, you may make this choice based on some deep subconscious desire, but once you have decided to make your film, you're not really making the film—it will be making you. . . . The film tries to become a film. The filmmaker just becomes a slave to the film. The relationship is not one of me creating the film, but rather of the film forcing me to create it. [Miyazaki 2014]

Haruki Murakami, a novelist I do admire, said that the structure of a story is not planned in advance but arises spontaneously:

When I start to write, I don't have any plan at all. I just wait for the story to come. I don't choose what kind of story it is or what's going to happen. I just wait. [Murakami 2004]

Expanding on this, Haruki Murakami said:

I don't make up stories in my head. . . . I don't plot from the beginning, and I don't write when I don't want to. In my case, the story must always be spontaneous. [Murakami 2012]

No.	Time	Title	Plot	Prophecy	Cho / Ginny	Order of the Phoenix	Dumbledore's Army	Snape / Harry + Father	Hagrid + Gramp
15-16	Oct	Prisoner of Azkaban The Hog's Head	Harry has a lesson scheduled with Snape. But the advice is for Ron and Hermione. They meet Lupin and Tonks but can't talk because Umbridge is bawling them so they pass a note. Harry, Ron, and Hermione are recruiting for Dumbledore's Army. Hagrid has a snake injuries.	Harry sees the Hall of Prophecy (in a dream). Voldemort is still formulating his plans. None of his Death Eaters are able to get in, so he sends his snake Nagini on a recon mission.	Cho is in Hogsmeade and wants to join Dumbledore's Army. Harry mentions in Chpt 1 dreams of long corridors and locked doors, but he doesn't realize it's the Dept of Mysteries until Chpt 24 during an Occlumency lesson, and he doesn't get past that first locked door until another Occlumency lesson in Chpt 26.	Tonks and Lupin	Recruiting	Harry skips his lesson to recruit for Dumbledore's Army. Harry's Occlumency lessons don't start until Chpt 24.	Hagrid's still being injured and has blood stains. (He's feeling something... that's not his blood...) Hagrid doesn't return until Chpt 20.
14-15	Nov-19	Dumbledore's Army The Driestest-Tackiest The Lion and the Serpent	First meeting of Dumbledore's Army. Harry is suspended from Quidditch after he attacks Malfoy because Malfoy taunted him about seeing the right-angled triangle. Harry is restless and unable to sleep; he worries about Umbridge, Cho, and his scar. Harry sees Nagini attack Mr. Weasley (in a dream).	Nagini attacks Mr. Weasley. Moved to Chpt 21.	Cho and Ginny are both present. Cho is now madly in love.	Umbridge is now reading their mail. Firehead	First meeting	Harry's still skipping his lessons.	
16-17	Nov-21	Book Marks The Eye of the Snake	Harry rows about keeping his lessons with Snape. Harry is in the doghouse and he's angry. An overview of Christmas. Hermione contacts Rita. Another lesson with Snape.	Nagini gets into the Hall of Prophecy. Voldemort has confirmation of the prophecy - but only he and Harry can touch the prophecy.	Cho kisses Ginny is concerned about her father. Moved to Chpt 22.	Ron and the rest of the Weasleys are told about their father's injury. Reactions to the attack - another meeting and an overview?	Reactions to the attack - another meeting and an overview?	A row about Harry not going to his lessons. With Sirius and Lupin in Chpt 29; with Hermione in Chpt 30.	Hagrid's still getting injured.
17	Dec	Rita Returns Chpt deleted	Harry, Ron and Hermione go to Hogsmeade for their Christmas shopping and meet with Rita.	Rita supplies information.	Harry is now avoiding Cho and Ginny is with someone else? -> Chpt 38	Cho gives Harry the cold shoulder in Chpt 26 and again in Chpt 30.	Another lesson	Hagrid's in the hospital wing.	
18-23	Dec	St. Mungo's Hospital for Magical Maladies and Injuries	They visit Mr. Weasley at St. Mungo's on Kneazle Eye. They also see Merope Locket and Neville. and Christmas on the Closed Ward	Now Voldemort is actively trying to get Harry to the Hall of Prophecy. Harry's dreams are very vivid. He can see his name.	Starting in Chpt 28. Both mentioned in Chpt 16.	Ginny is visiting her dad. They're around.	Rowling includes three Occlumency lesson scenes. One in Chpt 24, another in Chpt 25, and a final one in Chpt 28.		
19	Dec	James Chpt deleted	During the match against Ravenclaw in Chpt 30, Harry and Hermione meet Gramp.	Bode's dead. Chpt 25.	Hermione's with Krabb and Ginny has a boyfriend.	Sirius is here, there's a big reunion.			
20-21	Jan-26	Extended Power of Choice Umbridge's Seven and Unforgotten Valentine's Day The Beetle at Bay	Harry misses the Quidditch match against Hufflepuff. Why weren't they at the match? Umbridge now suspects the existence of Dumbledore's Army. Another lesson with Snape?	Harry is fighting increasingly strong visions but not very successfully. Umbridge suspects right away in Chpt 17.	Chpt 30	Sirius and Lupin. Harry talks to them via the Flu Network in Chpt 29.	Big meeting. Rowling might be referring to when they get caught in Chpt 27.	In his lesson with Snape, Harry mentions the team of Prophecy Dept of Mysteries.	Hagrid's out of the hospital and going into the Forbidden Forest armed with spikes, etc.
21-22	Feb-28	Valentine's Day The Beetle at Bay	Harry is in Hogsmeade with Cho. Professor Trilunkey is fired and Firenze replaces her in the role of fire. Bode reports back on Bode, etc. Another lesson with Snape?	Chpt 26	Harry has a Valentine's date with Cho; they're miserable and row.		Chpt 24	Chpt 26	Harry sees Hagrid limping out of the forest in Chpt 29.
22	Feb	Goblin Gossip	Umbridge is now going after Professor Hagrid, Harry, Ron, and Hermione go to warm Hagrid about Umbridge and they meet Gramp. Firenze is teaching about prophecies and prophecies. Another lesson with Snape? -> Last lesson with Snape is in Chpt 28	Chpt 20		Cho here. This might have been prep for the scene where it appears that Sirius has been captured by Voldemort.		Snape gets angry at Harry because Harry can't do it.	
23	Mar-21	The Centaur and the Sneak	Professor Trilunkey is fired and Firenze replaces her in the role of fire. Bode reports back on Bode, etc. Another lesson with Snape? -> Last lesson with Snape is in Chpt 28	Chpt 30					Hagrid's willing to leave his job but needs Harry, Ron, and Hermione to look after Gramp.
24	Mar-21	Treason The Centaur and the Sneak	At Easter Dumbledore's Army is discovered; Dumbledore takes the rap for it. A Prisoner		Cho wants back with Harry, but they row again.				
24-25	Apr	Carriage of Courage Career Advice	At his career consultation Harry is interested in being an Auror. Dumbledore's Army confronts Umbridge. Ginny is angry. Harry has a lesson with Snape.	Harry starting to get how to block his dreams. He doesn't really want to block his dreams; his curiosity is overpowering.		Firehead	See plot. Meeting	Snape grudgingly approves.	Hagrid's clinging to his job and refusing to abandon Gramp.

www.writelikerowling.com

Fig. 2. Rowling As Written

Many writers have said that when a story arises spontaneously, the characters start moving on their own. For example, Haruki Murakami said:

It is of course the author who comes up with the characters. However, if the characters are truly alive, they will at some point take off and begin acting on their own. This is not just my opinion, but is an awareness shared by many fiction writers. In fact, if such a phenomenon were not to take place, writing a book would be an extremely grueling and painful process. Once a book gets on the right track, the characters begin moving on their own and the story proceeds naturally; hence, the writer takes on the pleasant role of simply transcribing the events that are occurring. In some cases, the character may even take the author by the hand and lead him/her to some surprising place the author had not expected to see. [Murakami 2015]

Stephen King (I admire him, too) wrote:

I often have an idea of what the outcome may be, but I have never demanded of a set of characters that they do things my way. On the contrary, I want them to do things their way. In some instances, the outcome is what I visualized. In most, however, it's something I never expected. . . . If you do your job, your characters will come to life and start doing

stuff on their own. I know that sounds a little creepy if you haven't actually experienced it, but it's terrific fun when it happens. [King 2002]

Leo Tolstoy (everyone admires him) said:

My heroes and heroines sometimes do things against my wishes. They do what they must do in real life and what happens in real life, and not what I desire. [Vygotsky 2004]

Jorge Luis Borges (everyone admires him too . . . or should) wrote:

I don't think a writer should meddle too much with his own work. He should let the work write itself, no? [Borges 1967]

The novelist John Irving said that the writer is a "medium":

And writing, in my opinion, is the opposite of having ego. Confidence as a writer should not be confused with personal, egotistical confidence. A writer is a vehicle. I feel the story I am writing existed before I existed; I'm just the slob who finds it, and rather clumsily tries to do it, and the characters, justice. I think of writing fiction as doing justice to the people in the story, and doing justice to their story—it's not my story. It's entirely ghostly work; I'm just the medium. As a writer, I do more listening than talking. [Irving 1986]

Murakami said that not only can the writer not predict what the characters will say or do, but he also gradually learns who the characters in the story are as he writes:

In many cases, the characters in my novels are formed spontaneously in the flow of the story. With merely a few exceptions, I never decide "I want to create a character like this" in advance. As I write, a kind of core of the people who appear in the story naturally emerges, and various details attach themselves to it one after another. It's like a magnet sticking pieces of iron together. In this way, the overall image of a person is created. [Murakami 2015]

Novelist & teacher Robert Boswell wrote that at least for fiction "a fully known world is devoid of mystery" and "when the reader's experience of a story results in a world that is too fully known, the story fails." [Boswell 2008] He wrote that the most common failed story . . .

. . . is the story written by a writer who simply knows too much about the reality that the story wishes to portray; he understands his characters and their motivations too clearly, too logically, and too early; he has researched the material too categorically and completely; he comprehends where the story is going too correctly. . . . [T]hese novels ignore the unexplainable, the quirky, the unconscious—the human slippage that makes people large and contradictory and fascinating.

How to avoid this? Boswell wrote:

I have grown to understand narrative as a form of contemplation, a complex and seemingly incongruous way of thinking. I come to know my stories by writing my way into them. I focus on the characters without trying to attach significance to their actions. I do not look for symbols. For as long as I can, I remain purposefully blind to the machinery of the story and only partially cognizant of the world my story creates. I work from a kind of half-knowledge.

In the drafts that follow, I listen to what has made it to the page. Invariably, things have arrived that I did not invite, and they are often the most interesting things in the story. By refusing to fully know the world, I hope to discover unusual formations in the landscape, and strange desires in the characters. By declining to analyze the story, I hope

to keep it open to surprise. Each new draft revises the world but does not explain or define it. I work through many drafts, progressively abandoning the familiar. What I can see is always dwarfed by what I cannot know. What the characters come to understand never surpasses that which they cannot grasp. The world remains half-known.

⋮

There can be no discovery in a world where everything is known. A crucial part of the writing endeavor is to practice remaining in the dark. [Boswell 2008]

In all the writers' descriptions above, it's clear that important aspects of the pieces *emerge* as the writers work, but also that each draft is very much like a *preparatory sketch*. Galenson wrote of experimental artists that they “repeat themselves, [creating] the same subject many times, and gradually changing the treatment in an experimental process of trial and error”; however, it would be foolish to believe that Haruki Murakami, Stephen King, Leo Tolstoy, and Jorge Luis Borges wrote the same story many times. Moreover, the stories and novels these writers created do not read as having no plan or lacking conceptual integrity—they are coherent and well structured: their plans are apparent regardless of how those plans were created. This is because these writers are using a blend of experimental and conceptual techniques.

~

Let's jump briefly back to computer stuff. Designing a new programming language seems to be the ultimate conceptual task. You want to fundamentally change how people program computers, so you *must* have to do a ton of planning beforehand. Right?

(You want to fundamentally change how artists paint, so you have to do a ton of planning beforehand. Right?)

Well, no. If you are making something that's never been made before, it would be absurd (or arrogant) to believe your first try, even after a lot of thinking upfront, is going to work the first time. Every programming language in practical use today has been through many revisions, changes, improvements, and redesign. You design the new language, implement it, then see how it goes for people trying to use it.

For one of several programming languages I helped design, I put together a group of very good programmers and mathematicians; the group would propose a programming problem, assign some folks to try to write a program to solve that problem in the current version of the new language, and then we would get together to see what the experience was like for the programmers and whether we all “liked” what the program looked like. Then we would revise the language. Repeat.

Fortran was the first so-called high-level programming language, designed in 1957. It is still in use and has been through eleven (11) major revisions, the most recent made in 2018.

Designing a programming language is a blend of conceptual and experimental.

~

This leads us to exploring the example of Picasso as the quintessential conceptual artist. As noted, there are two main aspects about conceptual approaches that need to be opened up:

- (1) What happens during upfront planning? If *stuff* is created during the planning (such as drawings, sketches, or prototypes), is that *stuff* created using experimental techniques? Can some of such *stuff* be created using conceptual techniques, leading to a recursive situation?



Fig. 3. Les Demoiselles d'Avignon

That is, if you are making a prototype to help plan how to build the final thing, you need to design and build that prototype—it's the same game in both cases.

- (2) What happens once upfront planning is over and the “final” piece is created? Is it handled experimentally?

Galenson does not open up the processes of planning for the conceptual artists he talks about. I believe what we would find is that these processes are also examples, generally speaking, of a blend of conceptual and experimental approaches. In the following sections I will concentrate on Picasso and his painting *Les Femmes d'Alger* (Figure 3). We will see that during Picasso's big-design upfront—his planning stage—he used a variety of experimental techniques; moreover, we

will see that after he started putting brush to final canvas, he worked experimentally. The upfront planning, though, was littered with purely experimental techniques and approaches: a blend.

In these sections I rely on “Picasso’s *Demaiselles*: The Untold Origins of a Modern Masterpiece” by Suzanne Preston Blier [Blier 2019], primarily for historical details but not for her interpretations.



First, the chronology.

According to André Salmon, in October 1906 on a Thursday, Henri Matisse held a dinner at his home with Guillaume Apollinaire, Picasso, and perhaps some others. Salmon reports the following:

At some point, Matisse picked up from a piece of furniture a statuette in black wood (Figure 4) and showed it to Picasso; this was the first African sculpture. . . . Picasso held it in his hand the entire evening. The next morning when I arrived at the studio, the floor was strewn with sheets of . . . paper. On each sheet was a large drawing, each similar to the other: a woman’s face with but a single eye, a too long nose confounded with the mouth, a lock of hair on the shoulder. Cubism was born. [Blier 2019]

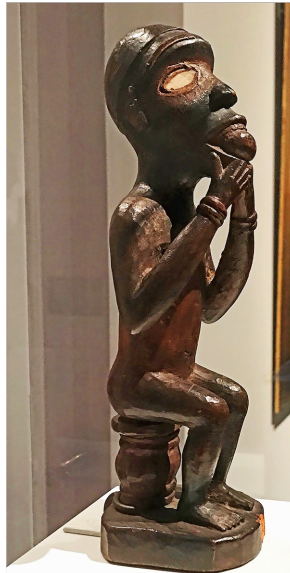


Fig. 4. Vili Figure Owned by Matisse

Max Jacob recounted the same incident in conversation with Roland Dorgelès, who reported:

The historic scene took place at Matisse’s studio. The doyen of Fauvism had for some time already been in possession of a black idol that he made much of. One evening, when Picasso came to dinner, he caught sight of the statue on a chest of drawers and was lost in admiration; he picked it up and held it in his hands for the duration of the evening. The following morning, when Max arrived at Bateau-Levoir as usual, he surprised the Spaniard drawing the figure of a woman with only one eye in the middle of her forehead, four ears around her head, a diamond-shaped mouth, a pentagonal nose and a square neck. The floor was strewn with pieces of drawing paper on which one could recognize

the same monster in various guises. . . . Fascinated by the black idol, he had worked right through the night. Cubism had been born. [Blier 2019]

Taking place in Fall 1906—probably October—this incident is likely the beginning of Picasso’s conceptual/experimental sketchbook phase, in which he explored, researched, and experimented with “concepts” by sketching them in a series of sketchbooks. There were perhaps 400 such sketches.

The next milestone is perhaps Blier’s most important discovery—the one that launched her on her examination of the history and meaning of *Les Femmes d’Alger*: a photo of Augusta (“Guus”) van Dongen and her daughter Dolly (Figure 5) posed in front of a partially completed *Les Femmes d’Alger* and meticulously dated Tuesday night, March 26, 1907. This photo might have been taken by Picasso.



Fig. 5. Guus and Dolly van Dongen

The most reliable dates for the completion of *Les Femmes d’Alger* is June or July 1907. Picasso was also known to work fast once he started to paint. This means that there were about five months of upfront planning (October 1906–late March 1907) and two or three months of painting the final work. Note that it is a large canvas: 8 feet tall and $7\frac{2}{3}$ feet wide.



Let’s set the stage for looking at Picasso’s process for *Les Femmes d’Alger*.

Picasso was well-trained as a painter: from the age of seven, Picasso received formal training from his father, José Ruiz y Blasco,⁶ in figure drawing and oil painting. Ruiz was a traditional academic artist and instructor who believed that proper training required disciplined copying of the masters, and drawing the human body from plaster casts and live models. Picasso was admitted

⁶Picasso’s mother was María Picasso y López.

to Madrid's *Real Academia de Bellas Artes de San Fernando*, Spain's foremost art school, but he soon dropped out.

From 1901–1904 Picasso had his so-called “Blue Period,” followed from 1904–1906 by his “Rose Period,” these names reflecting the overall color palettes he used. He was a very good painter creating mostly realistic pieces, and gaining a strong but limited reputation.

In April 1906 Picasso sold twenty-seven paintings to Ambroise Vollard for enough to support about a year of expenses in Paris for Picasso. Soon after, Picasso approached Gertrude Stein to paint her portrait, and she and her husband, Leo, became patrons of a sort; they also fostered competition between Picasso and Henri Matisse. Vollard's commission and Stein's financial support enabled Picasso to rent a new, larger studio—named “Bateau-Lavoir”—and eventually to purchase the very large (and not cheap) canvas he used for *Demoiselles*. Critically, this influx of funds and support permitted him to focus exclusively on *Demoiselles*.

For her portrait, Gertrude Stein reports doing eighty or ninety sittings for Picasso in Spring and early Summer 1906 (Figure 6). This implies that he was well-acquainted with experimental-style work. Interestingly he could not complete the portrait during this period, but after spending time in Gósol Spain that Summer, he returned and completed the portrait without further sittings. Her mask-like face—completed immediately before Picasso first started on *Demoiselles*—hinted at a transformation in Picasso's approach to thought and painting.



Fig. 6. Gertrude Stein Portrait

Picasso was part of group who met routinely at a bistro known as Closerie des Lilas near Jean-Baptiste Carpeaux fountain, which features four female figures representing the four parts of the world: Africa, America, Europe, and Asia. Andrés Malraux noted that “It was there that Paul Fort, director of the review *Vers et Prose*, would meet every Tuesday with such writers and painters as [Guillaume] Apollinaire, Max Jacob, Picasso, and [Georges] Braque.” Fernande Olivier (one of Picasso's models and live-in girlfriend during the *Demoiselles* years and later) wrote of these meetings:

After dinner on Tuesdays we've been going to the Closerie des Lilas, which has kept some of its charm from the days when shop girls used to go dancing there to meet their sweethearts. . . . But the new crowd that goes there has created quite a different atmosphere—they're almost all intellectuals or artists, the picture of bohemianism, with their capes, broad-brimmed felt hats, untidy long hair and loosely tied cravats. Often we go on foot which is fun, even if it means walking right across Paris. These Tuesday events. . . . are attended by poets, writers, painters, sculptors and musicians, young and old, who crowd into the café and onto the terrace. Drink is unlimited and by midnight everyone has become quite exhilarated. [Olivier 2001]

Picasso posted a sign on his Bateau-Lavoir studio door around 1905 with the words “Au rendez-vous des poètes” (the meeting place of poets). This circle provided Picasso with both ideas and books.

Picasso was competitive; Bliers wrote:

To the end Picasso was an enormously competitive artist, one for whom jealousy and a desire to leave his competitors in the dust often figured centrally. [Blier 2019]

Regarding *Demoiselles* Picasso was especially secretive:

*In the end Picasso “preferred to make misleading statements rather than elucidate the *Demoiselles*.” [Richardson 1996] Similarly, Mary Mathews Gedo revealed, “Even as an elderly man, he remained especially prickly and defensive about his picture and never frankly discussed his sources, development and symbolism. In fact, his behavior went beyond mere lack of cooperation: He actively sabotaged attempts to reconstruct the exact history of the canvas. His refusal ever to acknowledge that he had repainted the right half of the picture under the initial impact of his response to African art constitutes merely the most celebrated of these actions.” [Gedo 1994] The latter is particularly interesting, since as we now know he did not significantly repaint the African *demoiselles*.*

*Over the course of his life Picasso carefully dated and documented much of his work, and he was happy to reflect back on dates and other matters with Zervos and others. This was especially true with large and important projects. Yet Picasso was secretive and even intentionally misleading with respect to this painting. It was probably in part for this reason that Picasso kept many of his notebooks and studies for *Les Demoiselles* secret until the early 1970s, just prior to his death. [Blier 2019]*

That is, Picasso didn't mind lying, and he even said so:

You must not always believe what I say. Questions tempt you to tell lies, particularly when there is no answer. [Richardson 1996]



Let's look a little at Picasso's upfront design. Some of the many sketches he did in notebooks are in Appendix A. It's important to know that the sketchbooks became available to the public in stages.

Among the sketches are nineteen compositional sketches, some in pencil and others in various other media (crayons, watercolor, etc) which show plans for the completed canvas. While the final canvas has five figures, all female, the compositional sketches show seven-person and six-person sketches. In the seven-person sketches there are five women and two men: one man is a sailor and is placed in the center of the group of women, seated at a table with some fruit; the other is—as

Picasso revealed—a medical student entering the scene from the left, holding a book . . . or maybe a skull. That is, the first batch of sketchbooks to be revealed showed only a book in the man's hand; sketchbooks released later showed sketches that, at least, implied the man was holding a skull.

Some of Picasso's thinking about the skull is reproduced from this footnote in "The Philosophical Brothel" by Leo Steinberg [Steinberg 1988]:

5. Barr, Forty Years, p. 60, and Fifty Years, p. 57. Picasso's statement appears to be made in conversation with Kahnweiler in December 1933, published by the latter in "Huit Entretiens," Le Point, October 1952, p. 24 (see now, Picasso on Art: A Selection of Views, ed. Dore Ashton, New York, Praeger, 1972, pp. 153–154): "According to my original idea, there were supposed to be men in it. . . . There was a student holding a skull. A seaman also. The women were eating, hence the basket of fruits which I left in the painting. Then, I changed it and it became what it is now. . . ." The gist of Picasso's statement must have been known before its late publication in 1952. Barr does not recall whether he heard it from Picasso directly, but his Forty Years catalogue states in the caption for our fig. 6 [rpg: Sketch 3 in Appendix A]: "The figure at the left, Picasso says (1939), is a man with a skull in his hand entering a scene of carnal pleasure."

Note that there is no skull in Sketch 3, as remarked later in "The Philosophical Brothel":

[Sketchbooks released later] brought information from Mila Gagarine, successor to the late Christian Zervos in the continuing Picasso Catalogue, that a number of unknown drawings for the Demoiselles had just come to light, including several that referred to the man with the skull—"il s'agit bien d'un crâne, [it is indeed a skull]" she said transatlantically. The new finds were to be published in a forthcoming supplementary volume during 1973. At the same time, William Rubin of the Museum of Modern Art, with whom I had discussed the matter, found occasion to mention the disputed skull to Picasso himself during a visit in April 1972. The result was rewarding. Whoever has been unable to see a skull in the Basel drawing (fig. 6 [rpg: Sketch 3 in Appendix A]), is now officially vindicated, for the drawing hails from a stage when the skull emblem had been long discarded. And the presence of the skull at an earlier stage need no longer be taken on faith.

In some of the compositional sketches and in the final painting, the men have disappeared, the table with fruit on it has moved to the foreground, and three of the women have gained masks—because they were no longer European. Blier maintains that the leftmost woman is Asian/Egyptian & with a mask; the second and third women from the left are (still) European women & without masks, the upper righthand woman is African & with a mask; and the crouching woman with her head turned toward the viewer is African or aboriginal & with a mask and combined frontal and side views. Blier maintains that the crouching woman sets the tone for the painting. The odd, curved boomerang-like shape that starts just below her left eye is thought (by Blier, at least) to be her ear. Blier believes the crouching woman is the oldest and perhaps is intended to portray a mother-like stance with respect to the other women. Other scholars have other interpretations, but we don't really care about any interpretations—we care only that Picasso is manipulating *stuff* in an experimental manner, likely informed by a variety of sources and influences.

Picasso's circle of "intellectuals [or] . . . writers" could have supplied him with books that influenced his thinking and planning for *Demoiselles*. We know that Matisse's Vili figure acted as a trigger. It is known that around the time of *Demoiselles*, Picasso visited the Musée d'Ethnographie du Trocadéro museum in Paris when a variety of African masks and figures were on display. Blier suggests that Leo Frobenius's book "Die Masken und Geheimbünde Afrikas" [Frobenius 1898] (African Masks and Secret Societies) had fallen into Picasso's hands, perhaps from Apollinaire

who is known to have had a copy, and that many of the mask-related and African-inspired studies in Picasso's sketchbooks resemble masks and marking styles from that book—and more so than the pieces on display at Trocadéro when Picasso could have seen them. Whether Blier is correct doesn't matter because we can see the influence of African art and artistic techniques taking over in the sketchbooks.

Similarly, the artistic treatment of the women seems to stem from studies of nude women derived from photographs.⁷ Blier suggests the changes visible in the sketchbooks in how the women were portrayed and drawn stemmed from a particular book (or set of books) by Charles-Henri Stratz, "Die Rassenschönheit des Weibes" [Stratz 1900] (The Racial Beauty of Woman). This influence, she maintains, goes hand-in-hand with the African influence from Frobenius.

Again, it doesn't matter whether Stratz had any influence—or whether Picasso even knew of the book—there is nevertheless a series of changes or evolutions to the posing, posturing, and painting of the women on display in the notebooks. The crouching woman is the most studied, it seems.

What we see in the sketchbooks is described like this by Blier:

For the vast majority of the five months Picasso engaged Les Demoiselles, he worked tirelessly—exploring, researching, drawing, experimenting, mastering new forms of visual engagement, playing with core elements, pulling things apart, and reassembling them anew. During this process he repurposed his brilliant early childhood draftsman skills, using his mind, pen, pencil, brush, and chisel⁸ as he forced himself to reengage core ideas and questions, reframing them into something profoundly new and indeed revolutionary. All of this came together on March 26, 1907, after a night of deep philosophical discussions with his friends, in the cognizance of how far Derain and Matisse had moved things forward in their revolutionary paintings at the Salon. [Blier 2019].



After starting work on the final canvas, Picasso made changes to it: he revised it. We can see the changes by comparing the canvas as it appears in the van Dongen photograph (Figure 5) and final canvas (Figure 3).

Let's start with a controversy that this photograph clears up. Recall that Gedo reports that "[Picasso] actively sabotaged attempts to reconstruct the exact history of the canvas. His refusal ever to acknowledge that he had repainted the right half of the picture under the initial impact of his response to African art constitutes merely the most celebrated of these actions." [Gedo 1994] That is, scholars believed that the original first draft (as it were) of the painting on the final canvas depicted the two women on the far right as European, and that Picasso repainted them with masks, to Africanize them, so to speak. The van Dongen photograph shows that the two women already had masks, but much harsher ones than the ones they end up with. The photograph also shows that the leftmost three women were less fully painted (roughed in) than the rightmost two.

Between the time of this photograph to the finished painting, Picasso seems to have softened the features of the visible women. In the photograph they all look alien or not human. As he worked, he made the two women on the right less violent, less strange, less unworldly. In X-rays taken when the painting was restored in 2003–2004, we can observe that the two rightmost women were largely painted over and redone. The crouching woman's face was lightened, her eyes darkened

⁷Many painters in Paris around this time period, including Matisse, were using photographs of women posing variously instead of live models.

⁸During this planning stage, Picasso also made simple wood sculptures to better understand African art, masks, and figures—this to engage with the same *stuff* those artists used.

a bit, her left eye made smaller and straightened, and the shape of her nose altered—in all, the face was softened and made more human-like. The standing woman on the right was also rendered a little more human and nuanced. The eye shapes and sizes of the other visible women were changed a little as well. In general the women were made less abstract and less severe than in the earlier version.

In other words, Picasso kept messing with the canvas in the way an experimental painter would. Something about the *stuff* in or on the piece talking back seems to happen for both types of artists.



Galenson contrasts Cézanne’s statement “I seek in painting” to Picasso’s “I don’t seek, I find.” To support this contrast, Galenson uses a “Statement to Marius de Zayas” made by Picasso in 1923; the statement is not misused, but I believe it is a little more subtle than the way it’s presented. Here are the relevant parts, reproduced slightly more completely:

I can hardly understand the importance given to the word research in connection with modern painting. In my opinion to search means nothing in painting. To find is the thing. Nobody is interested in following a man who, with his eyes fixed on the ground, spends his life looking for the purse that fortune should put in his path. [1] The one who finds something no matter what it might be, even if his intention were not to search for it, at least arouses our curiosity, if not our admiration.

Among the several sins that I have been accused of, none is more false than that I have, [2] as the principal objective in my work, the spirit of research. [3] When I paint, my object is to show what I have found and not what I am looking for. In art intentions are not sufficient and, as we say in Spanish, love must be proved by deeds and not by reasons. What one does is what counts and not what one had the intention of doing.

We all know that Art is not truth. Art is a lie that makes us realize truth, at least the truth that is given us to understand. The artist must know how to convince others of the truthfulness of his lies. [4] If he only shows in his work that he has searched, and re-searched, for the way to put over lies, he would never accomplish anything.

The idea of research has often made painting go astray, and made the artist lose himself in mental lucubrations [studies; meditations]. Perhaps this has been the principal fault of modern art. The spirit of research has poisoned those who have not fully understood all the positive and conclusive elements in modern art and has made them attempt to paint the invisible and, therefore, the unpaintable.

—https://projects.mcah.columbia.edu/arhumanities/websites/picmon/pdf/art_hum_reading_49.pdf

The full text of this statement is in Appendix B.

I believe the keys to understanding this passage are in the underlined texts. The first instance, [1], is telling us that *seeking*—and whether seeking is involved—is not the important thing, but that *finding* is, which in turn means that *discovery* is what matters, for example in the manner Boswell states: “By refusing to fully know the world, I hope to discover unusual formations in the landscape, and strange desires in the characters.” Finding something can happen after searching for it, for example when you search for your lost keys or for the Northwest passage:

For centuries, European explorers, beginning with Christopher Columbus in 1492, sought a navigable passage as a possible trade route to Asia, but were blocked by North, Central, and South America, by ice, or by rough waters (e.g. Tierra del Fuego). An ice-bound northern route was discovered in 1850 by the Irish explorer Robert McClure.

—https://en.wikipedia.org/wiki/Northwest_Passage (emphasis by rpg)

Finding something can also happen by accident: in 1928, Alexander Fleming was experimenting with bacteria when he went on vacation, leaving a dirty petri dish in the lab sink. When he got back, he found bacteria had grown all over the dish except in an area where mold had formed—studying that mold led to penicillin.

Picasso elaborates on finding versus seeking by talking about what an artist presents in a finished piece, not what happens behind the scenes; this is the point of the third and fourth underlined texts, [3] & [4]. Picasso is talking about finished work, not what goes on before brushstrokes touch the canvas. In particular, he is not talking about what appears in his sketchbooks, what books he reads, what discussions he has, nor what other works of art he looks at.

Note the second underlined statement, [2]: Picasso is saying (or implying) he (at least sometimes) does research (seeking), but doing so is not his “principal objective.”

This leads us to Picasso’s statement “I have never made trials or experiments.” Unfortunately, understanding this requires a lengthy quote from Picasso’s statement to Zayas:

[1] I also often hear the word evolution. Repeatedly I am asked to explain how any painting evolved. To me there is no past or future in art. If a work of art cannot live always in the present it must not be considered at all. The art of the Greeks, of the Egyptians, of the great painters who lived in other times, is not an art of the past; perhaps it is more alive today than it ever was. Art does not evolve by itself, the ideas of people change and with them their mode of expression. When I hear people speak of the evolution of an artist, it seems to me that they are considering him standing between two mirrors that face each other and reproduce his image an infinite number of times, and that they contemplate the successive images of one mirror as his past, and the images of the other mirror as his future, while his real image is taken as his present. They do not consider that they are all the same images in different planes.

[2] Variation does not mean evolution. If an artist varies his mode of expression this only means that he has changed his manner of thinking, and in changing, it might be for the better or it might be for the worse.

[3] The several manners I have used in my art must not be considered as an evolution, or as steps toward an unknown ideal of painting. All I have ever made was made for the present and with the hope that it will always remain in the present. When I have found something to express, I have done it without thinking of the past or of the future. I do not believe I have used radically different elements in the different manners I have used in painting. [4] If the subjects I have wanted to express have suggested different ways of expression I have never hesitated to adopt them. I have never made trials or experiments. Whenever I had something to say, I have said it in the manner in which I have felt it ought to be said. Different motives inevitably require different methods of expression. This does not imply either evolution or progress, but an adaption of the idea one wants to express and the means to express that idea.

In this passage Picasso is again talking about finished works, and in particular whether a sequence of them can be considered an *evolution*—possibly an evolution of ideas or form or approach or something else. He declares in [1] that each (finished) work of art stands on its own (“there is no past or future in art”). In [2] he says that any perceived changes from one (finished) piece of art to a later one is the result of a change in how the artist thinks about or expresses what’s in the piece, not a change to be taken as an improvement on the earlier piece. That is, a sequence of pieces of art does not represent a sequence of revisions. And in particular, in [3] Picasso says that it is a mistake to consider a change from one piece of art to a later one as an *improvement* (“must not be considered as an evolution, or as steps toward an unknown ideal of painting”). Finally, in [4]

Picasso says that therefore, no sequence of his (finished) paintings should be considered a series of “trials or experiments.”

None of this has to do with what happens between paintings and especially before a given painting is created.



James Joyce and “Ulysses” is a good example of how a conceptual artist actually works. On page 141 Galenson wrote “Joyce outlined *Ulysses* as a whole before he began to write the book, and consequently did not have to draft the episodes⁹ in the order in which they were published.” This sounds like textbook conceptual art. But Joyce faced off many times with the *stuff* on the page. In “The Work of Revision” [Sullivan 2013] Hannah Sullivan wrote of Joyce and “Ulysses”:

Ulysses grew slowly and irregularly from notebooks to manuscript, from typescript to The Little Review, and most famously received a final burst of additions in the placard and page proofs produced by Darantiere. Joyce continued composing new episodes as he revised the work he had already completed and in some cases published, and so rather than the sharp division and temporal distance between composition and revision . . . revision became an intrinsic, embedded part of the writing process. Joyce described the blurring of traditionally distinct activities in a letter from 1921 as “trying to revise and improve and connect and continue and create all at the one time.”¹⁰ The paratactic unfolding of this sentence shows that these various activities are simultaneous; in fact, the order in which they are listed is the opposite of a normal compositional process: revision usually comes last, not first. Curiously, this sentence itself resembles many of the long, additive “and . . . and . . .” sentences that the process it describes allowed Joyce to produce. In the end, he finished the novel in the fairly arbitrary sense of “stopping” rather than the Jamesian sense of “perfecting” . . .

This reads to me as showing an example of a conceptual writer using experimental techniques: a blend.



One last example: Eva Zeisel. Eva is a ceramicist and industrial designer who prefers not to be called an artist, even though her work has been displayed at the Museum of Modern Art in New York and at the Pratt Institute. As I was making my final revisions to this thought piece, I happened to stumble onto a profile of her in “A Left-Handed Woman,” by Judith Thurman [Thurman 2022]. Figure 7 shows some of her work.

In her profile of Eva, written in 2006, Thurman wrote the following about their meeting:

In the kitchen, a young Russian model-maker, George Bogdevich, was shaving Plasticine from the prototype of a chalice-like footed mug that is part of Zeisel’s new line of Royal Stafford earthenware. When Bogdevich offered the mug for her inspection, Zeisel chafed it in her cupped palms. Though she was not happy with the proportions (“not enough emotion yet”), this “play” with a model, she said, is the defining moment of gestation. “I think with my hands. I design things to be touched—not for a museum. A piece is ready when it has the shape of something to cherish.”

⁹Joyce divides “Ulysses” into 18 episodes that roughly correspond to the episodes in Homer’s *Odyssey*.

¹⁰Letter to Robert McAlmson, October 1921, quoted by Alyssa J. O’Brien in “The Molly Blooms of ‘Penelope’: Reading Joyce Archivaly,” *Journal of Modern Literature* 24.1 (2000) 7–24, 10.



(a) Courtesy AgIclark1



(b) Courtesy Brooklyn Museum

Fig. 7. Eva Zeisel's Work



Galenson's contribution is to cleanly delineate two major aspects of creating something: *designing* and *making*. Designing is the thinking and planning one does during creation, while making is interacting with the thing being made. Some creators tend to push most or a lot of the designing to the front of the process, before anything is committed to reality, while others tend to mingle the designing and the making. More importantly—and something not discussed in these stray thoughts—some creators believe they are trying to make a fundamental change in, let's call it, the genre in which they work, while others are trying to make something worth making. In a similar vein, some creators believe the conceptual part of the work is the most important, and others will privilege the experimental parts. In essence, these beliefs are the real difference between a conceptual maker and an experimental one. Galenson describes these two approaches well and compellingly.

Everything a person makes talks back.

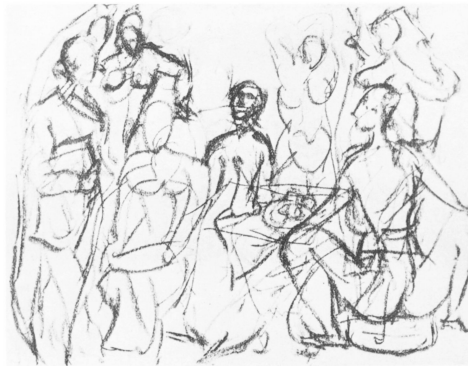
REFERENCES

- Suzanne Preston Blier. 2019. *Picasso's Demoiselles: The Untold Origins of a Modern Masterpiece*. Duke University Press, Durham NC.
- Jorge Luis Borges. 1967. The Art of Fiction No. 39. *The Paris Review* 40 (1967).
- Robert Boswell. 2008. *The Half-Known World: On Writing Fiction*. Graywolf Press, St. Paul MN.
- T. S. Eliot. 1946. Ezra Pound. *Poetry* 68, 6 (Sept 1946), 326–338.
- T. S. Eliot and Valerie Eliot. 1971. *The Waste Land: A Facsimile and Transcript of the Original Drafts Including the Annotations of Ezra Pound*. Harvest, New York.
- Leo Frobenius. 1898. *Die Masken und Geheimbünde Afrikas*. E. Karras, Halle Germany.
- Richard P. Gabriel. 2008. Designed as Designer. *SIGPLAN Not.* 43, 10 (oct 2008), 617–632. <https://doi.org/10.1145/1449955.1449813>
- Richard P. Gabriel. 2014. I Throw Itching Powder at Tulips. In *Proceedings of the 2014 ACM International Symposium on New Ideas, New Paradigms, and Reflections on Programming & Software (Onward! 2014)*. Association for Computing Machinery, New York, NY, USA, 301–319. <https://doi.org/10.1145/2661136.2661155>
- Richard P. Gabriel. 2016. “in the control room of the banquet”. In *Proceedings of the 2016 ACM International Symposium on New Ideas, New Paradigms, and Reflections on Programming and Software (Onward! 2016)*. Association for Computing Machinery, New York, NY, USA, 250–268. <https://doi.org/10.1145/2986012.2986028>
- Richard P. Gabriel and Kevin J. Sullivan. 2010. Better Science through Art. *SIGPLAN Not.* 45, 10 (oct 2010), 885–900. <https://doi.org/10.1145/1932682.1869533>

- David W. Galenson. 2007. *Old Masters and Young Geniuses: The Two Lifecycles of Artistic Creativity*. Princeton University Press, Princeton NJ.
- Mary Mathews Gedo. 1994. *Looking at Art from the Inside Out: The Psychoiconographic Approach to Modern Art*. Cambridge University Press, Cambridge UK.
- John Irving. 1986. The Art of Fiction No. 93. *The Paris Review* 100 (1986).
- Stephen King. 2002. *On Writing*. Pocket, New York.
- Herman Melville. 1851. *Moby-Dick or The Whale*. Macmillan Collector's Library, Cambridge Mass. (reprinted in 2016).
- Hayao Miyazaki. 2014. *Starting Point, 1979–1996*. VIZ Media LLC, San Francisco.
- Haruki Murakami. 2004. The Art of Fiction No. 182. *The Paris Review* 170 (2004).
- Haruki Murakami. 2012. *Yume O Miru Tame Ni Maiasa Boku Wa Mezamerunodesu*. Bungeishunju, Tokyo.
- Haruki Murakami. 2015. *Shokugyô to shite no shô setsuka*. HyunDaeMoonHak, Tokyo.
- Fernande Olivier. 2001. *Loving Picasso: The Private Journal of Fernande Olivier*. Abrams, New York.
- John Richardson. 1996. *A Life of Picasso, 1907–1917*. Vol. 2. Random House, New York.
- Mary Shaw. 2022. Myths and Mythconceptions: What Does It Mean to Be a Programming Language, Anyway? *Proc. ACM Program. Lang.* 4, HOPL, Article 234 (apr 2022), 44 pages. <https://doi.org/10.1145/3480947>
- Leo Steinberg. 1988. The Philosophical Brothel. *October* 44 (1988), 7–74. <http://www.jstor.org/stable/778974>
- Charles-Henri Stratz. 1900. *Die Rassenschönheit des Weibes*. Aufl. Verlag F. Enke, Stuttgart Germany.
- Hannah Sullivan. 2013. *The Work of Revision*. Harvard University Press, Cambridge MA.
- Judith Thurman. 2022. *A Left-Handed Woman*. Farrar, Straus and Giroux, New York.
- Lev Semenovich Vygotsky. 2004. Imagination and Creativity in Childhood. *Journal of Russian and East European Psychology* 42, 1 (2004).
- Richard Wollheim. 1995. Minimal Art. In *Minimal Art: A Critical Anthology*, G. Battcock and A.M. Wagner (Eds.). University of California Press, Berkeley CA. <https://books.google.com/books?id=IhMS8li73ZkC>

A SKETCHES AND STUDIES

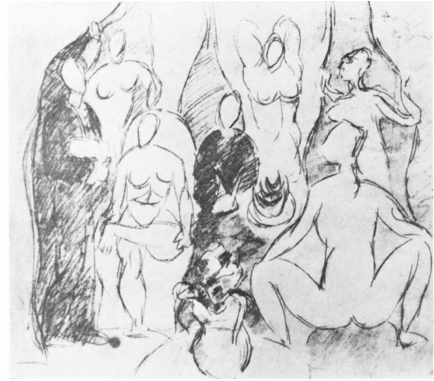
The following is a very small sample of the sketches and studies by Picasso for *Les Demoiselles d'Avignon*. They are not presented in chronological order.



[1]



[2]



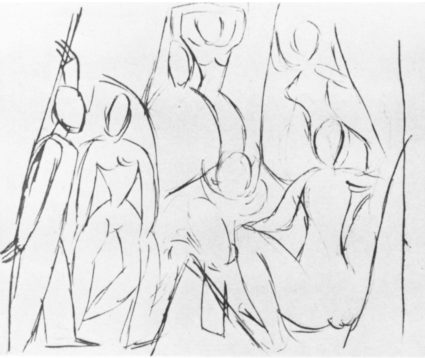
[3]



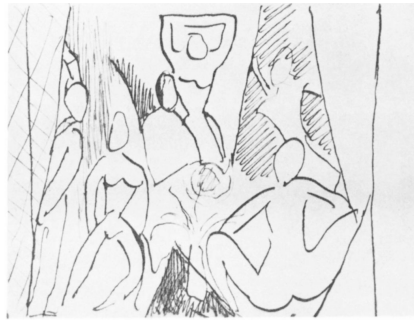
[4]



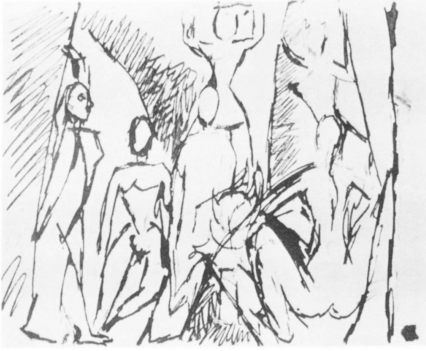
[5]



[6]



[7]



[8]



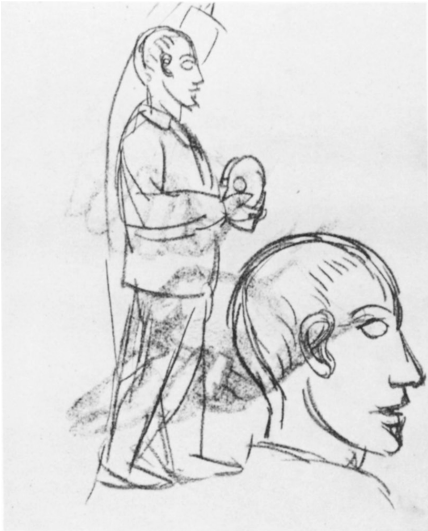
[9]



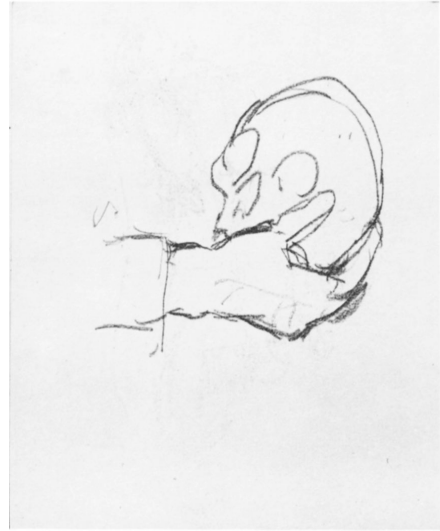
[10]



[11]



[12]



[13]



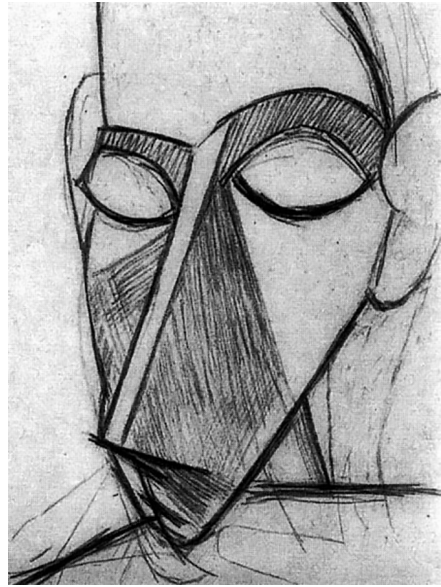
[14]



[15]



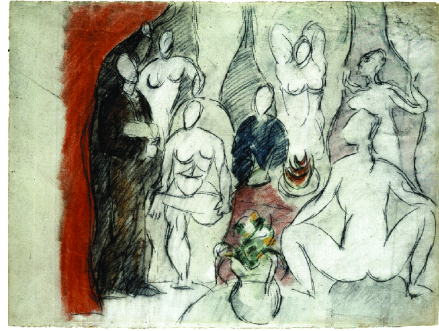
[16]



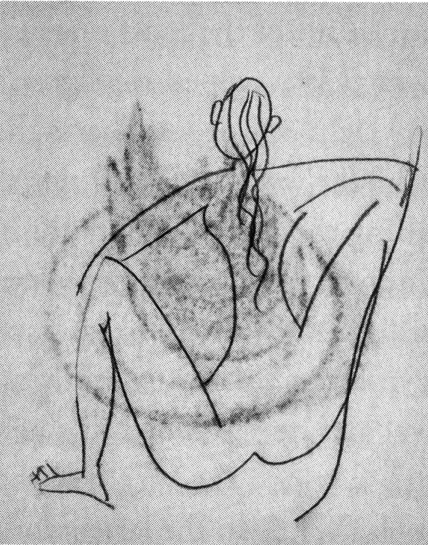
[17]



[18]



[19]



[20]



[21]

B PABLO PICASSO: STATEMENT TO MARIUS DE ZAYAS, 1923

I can hardly understand the importance given to the word research in connection with modern painting. In my opinion to search means nothing in painting. To find is the thing. Nobody is interested in following a man who, with his eyes fixed on the ground, spends his life looking for the purse that fortune should put in his path. The one who finds something no matter what it might be, even if his intention were not to search for it, at least arouses our curiosity, if not our admiration.

Among the several sins that I have been accused of, none is more false than that I have, as the principal objective in my work, the spirit of research. When I paint, my object is to show what I have found and not what I am looking for. In art intentions are not sufficient and, as we say in Spanish, love must be proved by deeds and not by reasons. What one does is what counts and not what one had the intention of doing.

We all know that Art is not truth. Art is a lie that makes us realize truth, at least the truth that is given us to understand. The artist must know how to convince others of the truthfulness of his lies. If he only shows in his work that he has searched, and re-searched, for the way to put over lies, he would never accomplish anything.

The idea of research has often made painting go astray, and made the artist lose himself in mental lucubrations. Perhaps this has been the principal fault of modern art. The spirit of research has poisoned

those who have not fully understood all the positive and conclusive elements in modern art and has made them attempt to paint the invisible and, therefore, the unpaintable.

They speak of naturalism in opposition to modern painting. I would like to know if anyone has ever seen a natural work of art. Nature and art, being two different things, cannot be the same thing. Through art we express our conception of what nature is not.

Velazquez left us his idea of the people of his epoch. Undoubtedly they were different from the way he painted them, but we cannot conceive a Philip IV in any other way than the one Velazquez painted. Rubens also made a portrait of the same king and in Rubens' portrait he seems to be quite another person. We believe in the one painted by Velazquez, for he convinces us by his right of might.

From the painters of the origins, the primitives, whose work is obviously different from nature, down to those artists who, like David, Ingres and even Bouguereau, believed in painting nature as it is, art has always been art and not nature. And from the point of view of art there are no concrete or abstract forms, but only forms which are more or less convincing lies. That those lies are necessary to our mental selves is beyond any doubt, as it is through them that we form our aesthetic view of life.

Cubism is no different from any other school of painting. The same principles and the same elements are common to all. The fact that for a long time cubism has not been understood and that even today there are people who cannot see anything in it, means nothing. I do not read English, an English book is a blank book to me. This does not mean that the English language does not exist, and why should I blame anybody else but myself if I cannot understand what I know nothing about?

I also often hear the word evolution. Repeatedly I am asked to explain how any painting evolved. To me there is no past or future in art. If a work of art cannot live always in the present it must not be considered at all. The art of the Greeks, of the Egyptians, of the great painters who lived in other times, is not an art of the past; perhaps it is more alive today than it ever was. Art does not evolve by itself, the ideas of people change and with them their mode of expression. When I hear people speak of the evolution of an artist, it seems to me that they are considering him standing between two mirrors that face each other and reproduce his image an infinite number of times, and that they contemplate the successive images of one mirror as his past, and the images of the other mirror as his future, while his real image is taken as his present. They do not consider that they are all the same images in different planes.

Variation does not mean evolution. If an artist varies his mode of expression this only means that he has changed his manner of thinking, and in changing, it might be for the better or it might be for the worse.

The several manners I have used in my art must not be considered as an evolution, or as steps toward an unknown ideal of painting. All I have ever made was made for the present and with the hope that it will always remain in the present. When I have found something to express, I have done it without thinking of the past or of the future. I do not believe I have used radically different elements in the different manners I have used in painting. If the subjects I have wanted to express have suggested different ways of expression I have never hesitated to adopt them. I have never made trials or experiments. Whenever I had something to say, I have said it in the manner in which I have felt it ought to be said. Different motives inevitably require different methods of expression. This does not imply either evolution or progress, but an adaption of the idea one wants to express and the means to express that idea.

Arts of transition do not exist. In the chronological history of art there are periods which are more positive, more complete than others. This means that there are periods in which there are better artists than in others. If the history of art could be graphically represented, as in a chart used by a nurse to mark the changes of temperature of her patient, the same silhouettes of mountains would be shown, proving that in art there is no ascendant progress, but that it follows certain ups and downs that might occur at any time. The same occurs with the work of an individual artist.

Many think that cubism is an art of transition, an experiment which is to bring ulterior results. Those who think that way have not understood it. Cubism is not either a seed or a foetus, but an art dealing primarily with forms, and when a form is realized it is there to live its own life. A mineral substance, having geometric formation, is not made so for transitory purposes, it is to remain what it is and will always have its own form. But if we are to apply the law of evolution and transformation to art, then we have to admit that all art is transitory. On the contrary, art does not enter into these philosophic absolutisms. If cubism is an art of transition I am sure that the only thing that will come out of it is another form of cubism.

Mathematics, trigonometry, chemistry, psychoanalysis, music and what-not, have been related to cubism to give it an easier interpretation. All this has been pure literature, not to say nonsense, which has only succeeded in blinding people with theories.

Cubism has kept itself within the limits and limitations of painting, never pretending to go beyond it. Drawing, design and colour are understood and practised in cubism in the spirit and manner in which they are understood and practised in all other schools. Our subjects might be different, as we have introduced into painting objects and forms that were formerly ignored. We have kept our eyes open to our surroundings, and also our brains.

We give to form and colour all their individual significance, as far as we can see it; in our subjects, we keep the joy of discovery, the pleasure of the unexpected; our subject itself must be a source of interest. But of what use is it to say what we do when everybody can see it if he wants to?

“Picasso Speaks,” *The Arts*, New York, May 1923, pp. 315–326; reprinted in Alfred Barr: *Picasso*, New York 1946, pp. 270–271.