

Fulfilling the Promise of the Bauhaus:
Integrating the Arts and Building-Making Through
Building Information Modeling and Digital Fabrication Technologies

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Confession: I intend to rewrite the history of the Bauhaus. Now I'll grant you that revisionist historians usually don't announce their intention ahead of time, and nearly always deny it after the fact. Their goal is to slip a new version in by the back door and hope no one will notice when they leave. But let's face it, by the end of this essay you would have figured it out anyway, so why put up a facade? In fact, my very purpose is to show you how and why I've undertaken the project.

Besides, you might even agree with me that occasionally (not every day mind you, but once in while) cases crop up where rewriting history is the reasonable thing to do. For instance, let's say a group (such as the Bauhaus) set out to do one thing (integrate the arts and architecture through technology) and then did the exact opposite (exclude the arts from architecture to a degree never before seen in human history), which in turn led to a century of buildings all over the world that are downright anti-human.

In such a case it might actually be advisable to rewrite its history, or at the very least to re-imagine what might have happened had their real goal actually been met. Don't you think native Central Americans might find it quite pleasant to imagine Columbus landing on the shores of India instead of the Caribbean?

"So exactly how are you going to rewrite Bauhaus history?"

"Remember Marty in *Back to the Future*?"

"Sure, I loved that movie."

"I'm going to collage 1920's and 30's Bauhaus architecture with Bauhaus arts and crafts from the same time period and then show them to people."

"I don't get it."

"Practically every contemporary building of the last 100 years is a direct descendant of Bauhaus design imagery."

"You're going to rewrite part of the Modernist Architectural Bible so people will design buildings the way you want them to?"

“If people can see what Bauhaus buildings should have looked like back then, it might open their eyes to how buildings should look like in the future.”

“So you’re going to make some collages and post them someplace?”

“I’m going to rent a big warehouse and have an exhibit.”

“Seems like an expensive first step.”

“When I’m done with the exhibit, I’m going to open an institute for art and architecture and continue the work.”

“Not very ambitious, are you...”

The Bauhaus was a government-funded school of arts and crafts in Germany during the 1920’s and 30’s. Architects – notably Walter Gropius and then Mies van der Rohe – ran the school. The Bauhaus arguably defined modernity as it is known today. The building you work in, the furnishings you buy, the products you use, the typography you read, nearly all of it can trace its roots to the Bauhaus. The artists and architects of the school are now considered by many to be some of the most important practitioners in history.

Because of their extraordinary contribution to the design arts and their revered status amongst contemporary designers, criticism of their work is not taken lightly. Small scale riots have broken out in classes where I’ve presented the idea, and personal conversations between design students and myself generally run along this line...

“I would never dream of changing the works of the great masters.”

“I’m just doing what they intended - they just couldn’t pull it off with 1920’s technology.”

“Don’t you believe it’s presumptuous to think you can improve their works?”

“If I can improve their works, that’s great, but my first goal is to *integrate* their works, which also happened to be their first goal.”

The central goal of the Bauhaus was “to integrate the arts and architecture through technology”. It was one of the opening statements in their first manifesto. The technology they were talking about was post-World War I industrialized mass production. This was a major development for the building industry because prior to that time buildings were essentially handmade using traditional materials and techniques. For the first time, quality sheet and rolled goods were

pouring out of factories in large sizes and quantities making possible innovations such as the curtain wall and pipe handrail. The building artisan class was eliminated from the building-making process almost overnight.

“You’re obsessed.”

“I hope not, I don’t like obsessed people.”

“How long have you been thinking about the Bauhaus and changing their buildings?”

“25 years, more or less.”

“You’d better give into your obsession and making something of it.”

“You really think I’m obsessed?”

“Completely.”

It’s possible I suppose. How many other people have you known that write letters to their profession? I’ve never seen letters with greetings like “Dear Medicine”, or “Dear Accounting”, or “Dear Firefighting”, but I have seen many letters to “Dear Architecture,” mainly because I write them to myself from time to time. Here’s a recent example...

Dear Architecture,

September 24, 2011 3am

Sorry it’s been so long since my last letter. I’d love to write more but school and projects are keeping me super busy.

Say, did you see my poster for the PhD show? Notice anything? No pictures. Not a one. I felt a little funny about it because everyone else’s poster had beautiful color photos and graphs and all kinds of cool stuff. Mine looked like the nutrition label on the side of a cereal box. I just wanted you to know I did it on purpose to make a point: architects don’t provide visual content – artisans do.

But you knew that already, right? You’ve seen this play out for over 30,000 years. You were there the very first day a thoughtful cave dweller picked up a stick and painted images of the hunt on one of your walls. You watched a tent maker weave a delicate pattern in the camel hair of her desert shelter. You helped Ghiberti make the doors for the Baptistery in Florence and you were very pleased with the gargoyles on the Chrysler Building. And luckily you’ll be there for the next round – when somebody finally figures out that the

contemporary buildings going up around us are nothing but empty canvas waiting for stories to be told.

I'm fairly certain that day will come relatively soon. I think we can get out of this rut and put Howard Roark's ego behind us. Maybe this year, or the next. Maybe ten years from now. One day, architects will recognize their greatest gift - which is the making of frameworks for real storytellers to fill. We (the architects) have our job, and they (the artisan storytellers) have theirs. Somehow the roles got confused over the last 80 years. Somehow, architects started thinking they could do both. But it's just not true. Architects are just not storytellers and that's why contemporary buildings have no stories to tell.

Now every time I say this someone jumps up to say I'm wrong – that contemporary buildings tell a beautiful and complex story and that the general public (and by inference, me) doesn't "get" that story because it's so utterly sublime. That the lack of literal story is the narrative of our times and that it reflects the public sphere and blah blah blah. Seriously. There is no story on contemporary buildings and that's because architects cannot tell stories. Period.

Architects are bookbinders. Artisans provide the words for the pages and architects stitch the pages together for a public that is willing and eager to read. We don't bind stories written by, or about, ourselves. We bind the stories of painters and sculptors and weavers and mold-makers and welders and wheatpasters and poets who fully live the community and have something to say about it. There's an entire army of them out there sitting on their hands, waiting to help.

So my poster had no images. Rather, it was a place where images could be placed – just like a contemporary building. If only I could find a way to encourage artisans to provide them. But maybe that's where you can help, dear sweet Architecture. You've seen it happen thousands of times before. Can you do it again? Could you help me find the artisans that could give real life and meaning to buildings? I'd be ever so appreciative.

Yours, John

It's unfortunate that the Bauhaus didn't have today's building-making technologies. It would have been the perfect way to achieve their stated objective. Two technologies in particular would have made a huge difference.

The first is open-access building information modeling (BIM). The second is digital fabrication (DigiFab).

BIM makes it possible for anyone to contribute digital parts to a virtual building. DigiFab makes it possible for machines to fabricate those parts directly from the model. This means anyone from anywhere can help design a project anyplace and know that it will be fabricated with robot perfection. “Architectural aesthetics are defined by technology – always,” says architect Kevin Klinger.

“I’ll help you if we can make building facades electronically interactive.”

“Are you sure buildings should be turned into giant television sets?”

So here’s what happened... for 30,000 years, human beings have been embellishing buildings with images of themselves, their environment, and the stories that define their lives. The human need to embellish (whether it’s by tattoo, cave painting, cutting, pediment friezes, or graffiti) is genetic. But in the economic wake of World War I, the Bauhaus came along and stopped that practice entirely. No images, no humans, no environments, nothing but plain “industrially manufactured” blank walls in white or gray. That’s it.

“The story is that there is no story.”

“That’s not much of a story.”

“The absence of story has a certain power.”

“It wouldn’t make a very good movie.”

“Modernist buildings require a deeper level of understanding.”

“But why shouldn’t average people be able to understand the story as well?”

“Because then the buildings would have to be about the people.”

Everybody loves the alliteration “Form Follows Function.” It’s catchy, simple, easy to remember, and seemingly carries a deep and profound message. Freshmen design students use it in their email signatures. If you ask them to write a report about design, you can expect at least half will use it somewhere in their text. And generally speaking, I’m okay with it except for how people define “function”. It commonly means, “What goes on inside the building.” The problem with Form Follows Function is that it sets the bar so low that... *any box will do*.

What if I tell you that the real function of every building is more important than it’s utility? What if I said that the real function of a building is to reveal the strength

and character of the people and community in which it is built? What if I said that the sponsor of every building project has an obligation to the community to fulfill that higher purpose? Buildings are not warehouses for people – they are symbols of the people and of the community. Architect Philip Johnson says, “Some civilizations are known mostly by their buildings, some *only* by their buildings.”

I care about this notion so much that I decided to reboot my career on the basis of rewriting the history of the Bauhaus as if they had actually integrated the arts and architecture using today’s building information modeling and digital fabrication technologies. It’s partly because of a story about a narrative building a professor once told me...

“There’s a building in India that I visit whenever I’m there.”

“Is it old?”

“Yes, very old, and its purpose is to tell the story of our many gods.”

“There are hundreds of Hindi gods, isn’t that right?”

“Yes, there are hundreds.”

“And they are depicted in relief panels on the walls of the building?”

“Yes, and you can only visit the building at night.”

“Is it lit?”

“A man with a lantern hung from the end of a long pole walks from one end of the building to the other. People that want to read the story must stay close to him, because the only illumination is the pool of light cast on the wall by the lantern.”

“And so he keeps the group focused on one story at a time as he tours the building?”

“Yes, the story is linear, so it is best told one step at a time, without jumping ahead or falling behind, but by staying in the present. The modern mind tends to wander.”

“It’s a beautiful concept.”

“Many people have died trying to protect it over the centuries.”

Here’s the most radical indictment of modernist architecture I’ve ever come across: mass murder. Was the erasure of the human image and story from

facades buildings all that much different than erasing them from the face of the planet? Isn't it part and parcel of the same general intent? If you're wiping the Jews out of Europe, the Tutsis out of Rwanda, the Muslims from the Balkans, the Armenians from Armenia, the Kurds from several countries, the northern tribes out of Cambodia, aren't you doing the exact same thing? Or maybe the case of modernist architecture is even worse because you're eliminating all people and all stories? Is modernist architecture the perfect genocide?

Morpheus: "Let me tell you why you are here. You're here because you know something. What you know you can't explain. But you feel it. You've felt it your entire life. That there's something wrong with the world. You don't know what it is but it's there, like a splinter in your mind driving you mad. It is this feeling that has brought you to me. Do you know what I'm talking about?" (The Matrix, 1999)

I suppose every person that writes revisionist histories starts by going to the library (so they can get their new fake facts correct). So it was with me. I checked out every single book about the Bauhaus from the architecture library and ferried them home in 4 trips on my bike using my largest backpack and rear basket. The stack is about 4 feet high and it's on the floor here next to me as I write. I leafed through every book 2 or 3 times to get a general feel.

That was the easy part. My general plan was to make paper collages. I've been making them for about 30 years ever since I learned that super (Bauhaus devotee) architect Richard Meier used to make them during long airline flights. "People in the seats next to me always thought it was a bit strange when I got out my little box of scissors, paper and glue and starting making patterns, but it was a nice way to pass the time," Meier once remarked during an interview.

About a year ago I made a paper collage depicting a contemporary Arizona building reclad in the relief panels found on the Angkor Wat temple in Cambodia. A professor of art barely glanced at it.

"That image scares me."

"I know it does, but I can't figure out why. Don't you think buildings that tell stories are more interesting than buildings that don't?"

"Yes, but that image still scares me."

I started collecting all the images of Bauhaus buildings I could find in my stack of books, and also from the internet. Right away something didn't feel quite right. The buildings were really very nice. I would love to live or work in one. I've admired them for as long as I can remember. My dad used to tell me about Walter Gropius. When he was a student at Harvard in the 50's and worked at the

Fogg Art Museum as a guard, Gropius would walk through the museum on his way to the architecture building and say hello. My dad loved Walter Gropius.

“Uh-oh.”

“Collages not working?”

“Maybe this wasn’t such a good idea.”

“You’ve made lot’s of collages, it’ll be alright.”

“I’m not so sure I should be messing with these buildings.”

“You can’t stop now, just keep going.”

“Yes, but these are really great buildings.”

One slight problem for me is that the Bauhaus architects didn’t produce all that many buildings while they were teaching. Thousands afterward, but only a handful while they were actually at the school. It made collecting the images a little faster, but I was surprised at how few there actually were. Somehow I always thought there would be many, many more.

While I might have felt undersupplied in the architectural image category, I was definitely oversupplied in the rental warehouse category. The place I rented is huge - perfect for what I had in mind, at an ideal location in Tempe, and it has that funky industrial vibe artists want. The building owner’s ambitions to lease out the remaining portions to fancy restaurants and microbreweries soon became a distraction. At one point I even proposed a brewpub concept myself in order to keep other people out of the space.

“You want to start a brewery?”

“I want to take the wine-making practice of blending grapes and adapt it to beer.”

“You’ve actually made beer before?”

“Yes, 5 gallons last year.”

“And you think that qualifies you to start a brewery?”

“None of your other prospects have actually signed a lease have they?”

“No, you’re the only one.”

“That’s is my best qualification – I’m willing to sign a lease.”

“Then let’s get you into the brewery business as well.”

Next I started to collect images from Wassily Kandinsky, the abstract painter. When I was an undergraduate art student I tried to imitate his pre-Bauhaus style. His advice to students wondering what to paint was “if you’re unsure make 3 paintings a day for 1 year, then you’ll know what you want to paint.” I’ve said that same thing to many students, but to my knowledge no one has actually tried it.

In any event, here’s the thing about Kandinsky’s Bauhaus period abstractions: color. Lots and lots of color. Every color imaginable. And forms. Lots and lots of forms. Every form you can imagine. Circles, triangles, squiggles, arcs, streaks. And flat. No depth whatsoever. Flat flat flat. It was at this point I was starting to get downright scared.

“This is not going to work.”

“It has to work.”

“All this color and form is the exact opposite of what the buildings were about.”

“You can’t quit now, just keep going.”

Next stop Lazlo Maholy-Nagy, the sculptor. At least his Light-Space Modulator series of metal sculptures had something in common with the buildings, though again there was more variety in form, especially through his use of the circle. But in searching through his works I found something I didn’t know – he was also made collages with photographs.

“Did you know Maholy-Nagy made quite a few collages with photographs, and there were people in every single one of them.”

“I’ve never seen a Bauhaus image with a person in it before.”

“Maybe you didn’t know the Bauhaus as well as you thought.”

That statement turned out to be truer than I ever expected, because the next set of images I collected were from Bauhaus photography students. And there were people in practically every single one. People on the beach, people making funny faces, serious people, nude people, people superimposed over other people, and people in costumes. Lots of people in costumes, particularly for the Bauhaus Ballet and Theater, of which I had never even heard.

How in the world my courses in 20th Century Art and Architecture History managed to avoid the subject matter of the Bauhaus Ballet is beyond me. Perhaps some faculties teach selective history (rather than revisionist history) and would prefer that certain aspects of an artistic movement not be investigated?

“I’ve read your dissertation proposal.”

“Thank you very much.”

“It’s not going to be your dissertation, and it will never happen at this university.”

“Uhm, okay...” (Laughing *very* nervously)

“Go make a relief panel, that’s really what you want to do anyway, so just go make one.”

“All right then, thanks very much.”

Then came an avalanche - Oskar Schlemmer’s work for the Bauhaus Ballet and his paintings. Hundreds of drawings and paintings with people in one form or another in nearly all of them. People, people, people. And in his body of work I also came across a statement wherein Oskar questioned why there were never any people in professional photos of Bauhaus architectural work (a practice that nearly all contemporary architects promote to this day).

In the end, I found many more images of Bauhaus arts and crafts with people than without. Now I had a real problem on my hands. My folder of building images was full enough, my folder of abstract art was completely full, and a folder I hadn’t even planned on (Bauhaus human form) was overflowing. It was time to make collages. Unfortunately, I had complained for years that contemporary buildings were nothing but empty canvas waiting for allegory, narrative, stories, and images of the human form. It was finally time to put up or shut up. And fear was once again setting in.

“John, I have been giving your September 24 “Dear Architecture” letter a lot of thought. I agree a good artist can improve a mediocre building and a great artist can collaborate on a great building but often the mediocre artist drags down a good building. I’ve had the opportunity to work with several artists under the percent for arts programs and can think of no breakthrough... only disappointment. Keep writing my friend. - Eddie”

Could I actually pull this off? Here was the best architect in Phoenix politely telling me it wouldn’t work. Luckily, a plan on how to execute the collages had

been forming in the lower left-back-right corner of my brain while I was collecting images.

One thing I had been really worried about was how to break-up the building images. Their boxiness is so strong that just pasting a painting on a wall wasn't going to cut it. The buildings themselves were going to have to be transformed somehow. At first I thought that mirroring the building alongside its original image might help, but it just magnified the problem. Then I started putting parts of different buildings together.

"You're a gene splicing DJ mixing sampled art and architecture images."

"Is that a legitimate way to work?"

"Collaboration and collage have the same root word. Quit worrying about whether it's the right thing to do and get on with your project"

So maybe you'll agree with me that re-imagining the work of the Bauhaus in light of their stated goal is a reasonable thing. You might also agree that many Modernist buildings have a profoundly anti-human look and feel. The worst offenders are steel and glass boxes. Claire Bishop calls it the politics of architectural neutrality. The general effect is to put the general public to one side of a 1-way mirror, and the corporate masters on the other – just like in a police interrogation room. Remember the prison boss in *Cool Hand Luke* and his reflective state trooper sunglasses? Unwittingly, contemporary architects have allowed themselves to become agents of the oppressors.

The antidote to the situation is to change the criteria by which buildings are judged. Presently it's all about sleekness. A more appropriate criterion would be the degree to which a *relationship* can be formed between the user and a building. On a blind date it doesn't matter how nice the guy's suit is if he can't carry on a conversation. It's the same with buildings.

"Dear John, I found this article in the October 9, 2011 in the Sunday paper. It's perfect for your dissertation. It's about the construction of the World Food Prize Hall of Laureates. They hired 2 storytellers to help the architects design the building! - I love you, Mom"

If the artists and architects of the Bauhaus had truly collaborated, or if the architects at the Bauhaus had at least allowed themselves to be influenced by the artists in the Bauhaus group, what might have happened?

"You're going to start by using Kandinsky and Maholy-Nagy paintings as building site plans?"

"Yes, floor plans are abstractions exactly like the paintings."

“And you’re going to lay paintings flat and stretch them over the ground?”

“Something like that.”

“Then what?”

“Then I’m going to extrude the forms vertically and apply building, art and photographic images to the resulting shapes.”

“That’s it?”

“Then I’ll pan and zoom around the 3D virtual building I’ve created and take some screen shots.”

The crazy thing is, it worked. It took some practice, but it actually worked. The software I used is a free package called Google Sketchup. It’s a simple BIM tool and many contemporary architects use it to develop preliminary designs. It enables me to put a Bauhaus painting on a virtual ground plane, and then build shapes on top of it. Then I can digitally cut and paste any image I like on the sides and tops of those shapes. I can even send the final digital model to a 3D printer, and have a miniature physical version of the building made with just the push of a button. Overall, it’s simply amazing.

“Did you catch Eric Whitacre’s TED Talk?”

“Never heard of him.”

“Oh my god! You have got to check it out. He posted a video of himself conducting a song for choir on YouTube and then got over 2,000 choristers to submit videos of themselves singing various parts to the song. Then he synched all the videos together into a virtual chorus. It’s exactly what you’re trying to do with art and architecture!”

My ultimate goal is to adopt the “virtual choir” method to the design of buildings – it’s *Curatorial Architecture*. If architects can utilize open-access design technology and then get out of the way, artisans can give meaning to buildings again. The lost artisan class can be re-engaged, and given its rightful place.