Easy and Fast? Rethinking the Future of Content Creation Tools

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Thank you for the introduction.
The UIST vision talk is my favorite program at UIST.
It is a significant honor to give this talk, and I appreciate the conference organizers for giving me this opportunity.

In this talk, I would like to share what I have been thinking in recent years and hope to discuss this with you all.
What I say might not be so new. Some things may be obvious for some of you.
My intention is not to show an entirely novel vision, but to give the opportunity to re-think our current situation and discuss what to work on next.

By the way, this is my first talk without a live demo or images.
The intention is to have you think without being distracted by demos and visuals.
This is a new challenge for me, but I believe that this is the right way to go.
With that said, let us begin.

Background

I have been working on content creation tools.

Our group has been working on content creation tools, such as 2D image editing, animation, and 3D modeling for more than 30 years. In addition to these digital contents, we have also been working on authoring tool for functional physical things such as furniture and garments.
We leveraged various interaction techniques such as direct manipulation, sketching, and AR/VR. We also developed various algorithms combining search, physical simulation, numerical optimization, and machine learning.

Content creation has been a challenging problem and has been a source of innovations in interaction and enabling algorithms.

Background

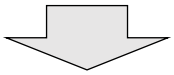
The goal has been “easy and fast”, making it easy and fast for everyone to create contents

The goal has always been “easy and fast”, enabling people to create something interesting easily and quickly. This has been well received by the community. People appreciate the ability to do something that was previously difficult, now easily and quickly, without training.

We have published many papers along these lines. My students earned degrees and excellent jobs working on content creation tools. Some of the research results are widely used in practice. We have been very happy. However, not “happily ever after”

Background

The goal has been “easy and fast”, making it easy and fast for everyone to create contents



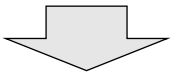
This is almost achieved by generative AI.
Simple prompt -> sophisticated results

Now, as you know, generative AI is fundamentally changing the landscape. With a simple text prompt or sketch, we can create beautiful images and 3D models easily and quickly without training.

Initially, I was not worried about it too much. Early generative models were mainly designed for photorealistic images and the results were poor. However, generative models quickly expanded, covering 3D models, illustrations and animations.
In addition, these methods are quickly integrated into products, and many people have started using.

This prompted me to think seriously about the implications of this for my research.

"Easy and fast" is already done!



What shall we do?

I eventually realized that I have to admit that "Easy and fast" may be already achieved.
The problem is already solved! What shall I do now? Is there any problem remaining to be solved?

This is the question I would like to discuss this with you today.

I would like to share my personal story here.
When I was a student, almost 30 years ago, I attended a talk by a person who led IBM deep blue. It just defeated human chess champion, Garry Kasparov, which was significant news. The talk was very popular and interesting, describing the algorithms and behind-the-scenes stories. However, at the very end, they showed a slide titled "Future Work" as in typical presentation. I was surprised. Future work? What are you talking about? You already achieved your ultimate goal! There should be no future work. You should move on to something different.

I was so naive. I never expected that the same thing would happen to me. Research on content creation tools was still new at that time.

I think many of you are students. You should be aware that your research career can be longer than that the lifetime of your current research field. You should be mentally prepared for this.

Now, let me return to my talk.

Immediate Problems

- Higher quality
- More control
- Real world objects

There are certainly immediate problems to work on.

One direction is to further improve the quality of the output. The results are often not exactly what we want, and manual editing is still necessary. Application domain is also limited. But this may be not our job. This direction is intensively investigated by the computer vision and graphics communities and we see new developments almost every day.

Another direction is to make the process more controllable. This is where our HCI community can best contribute. For example, Professor Maneesh Agrawala's group at Stanford is actively working in this area and making significant contributions.

In addition, the design and making of real-world objects are still a challenge. It still requires a lot of manual effort to design functional real-world objects and fabricate them.

These problems are important. Many people are still working on them,

including our group.

Immediate Problems

- Higher quality
- More control
- Real world objects

However, this is not what I want to discuss today.
As I think more about this problem, I came to realize that there is a much more fundamental, important question to consider.

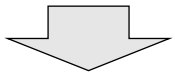
Is “easy and fast” really the right goal?

The fundamental question is “is easy and fast” really the right goal to pursue?
Does it really make people happy?
Does it benefit humanity?

The assumption has been yes, and for a long time, I have never questioned this.

But now, I think that this is the very question we should ask ourselves.

Is “easy and fast” really the right goal?



“not really”

And, as you might expect, the answer is, unfortunately, “not really”, or “maybe not”.

Inconvenient truths about “easy and fast”

#1 Can only go so far

#2 Missing sense of control

#3 Malicious use and bias

#4 A world filled with slop

#5 The curse of efficiency

#6 Global uniformity

The concept of easy and fast actually has many negative sides. In other words, there are “inconvenient truths” behind easy and fast.

Here is the list of negative aspects I can think of. This is not intended to be exhaustive.
If you can think of other missing items, please let me know in the discussion session.

Now, let me explain them one by one.

#1 Can only go so far

"Easy and fast" is achieved by limiting scope.

Limited scope -> tailored functionality.

Not much space for exploration and elaboration

Quickly get bored, less satisfaction

The first problem is that easy and fast can only go so far.
Easy and fast is achieved by limiting the scope and providing tailored functionalities for the scope.

My sketch-based 3D modeling program, Teddy, was successful because it was designed for a specific target, creating Teddy bears easily and quickly. The system name and visuals were there at the beginning of the project. My multi-touch shape deformation technique was designed to deform 2D teddy bears. Specific targets make interaction simpler, easier to learn and fast to create.

However, it inherently limits the room for exploration and elaboration, making people quickly bored with less satisfaction.

#2 Missing sense of control

It is difficult to feel that "I *created* this!".

Limited satisfaction and responsibility.

The second problem is the missing sense of control.
Easy and fast results in less involvement, reducing the sense of control or agency.
It makes it difficult to feel that "I created this". It instead brings an impression that it is create by the AI, not by me.
This leads to limited satisfaction and limited responsibility for the results.

#3 Malicious use and bias

Easy and fast helps creating fakes to cheat people.

AI is built by “stealing” artists’ work.

Results can be biased, bringing harm.

#3 Malicious use and bias.
Easy and fast makes it easy for bad people to do malicious things, such as creating fakes to cheat people.
People argue that many AI models are built by stealing artists’ work without permission.
Innocent technology development can be affected by bias, bringing harm.

#4 A world filled with slop

Digital slop deprive our attention and time.

Physical waste pollute the earth.

It discourages efforts toward high-quality content.

#4. A world filled with slop.
Easy and fast is flooding our world with low-quality garbage, physically and digitally.
Physical waste is heavily polluting our earth.
Digital slop may seem harmless, but it is depriving our attention and time.

More seriously, the flood of slop also discourages effort to produce high-quality content. I recently talked to a professional advertisement production company, and they said that is getting increasingly difficult to convince their clients pay money to create sophisticated advertisements. They prefer to put money into producing massive amounts of cheap advertisements because they are more effective.

I believe the same is happening in the entire content creation industry, from news articles to manga, anime, and games.

#5 The curse of efficiency

The endless pursuit of efficiency becomes the goal.

We might be losing something important.

#5 The curse of efficiency.
This one is rather philosophical, but I think this is also a well-known, important concern.
As technology brings more and more efficiency, being efficient becomes the goal.

But what do you do with the saved time? People just use the time to save more time.
Does endless pursuit of efficiency really make you happy?
We might be losing something important.
This is the problem illustrated in the famous novel *Momo* by Michael Ende.

By blindly pursing easy and fast, we may be unintentionally playing the role of the gray gentlemen in Momo.

We must be aware that we may be unconsciously contributing to the spread of this curse by blindly pursuing easy and fast.

#6 Global uniformity

Generative AI outputs are all similar.

Everybody on earth use the same model.

Uniformity is boring and undermines dignity.

#6 Global uniformity, or the disappearance of diversity.
Generative AI outputs are all similar.

Before AI, the internet already caused global uniformity by making everybody everywhere on earth see the same information simultaneously, decreasing diversity across countries and regions. Still, information interpretation and generation were mostly done by diverse people, so there was certain inherent diversity in the produced content.
However, with generative AI, interpretation and generation are done by monolithic AIs, so diversity is inherently limited. Everything looks similar.

I think this is a serious problem for human culture. Lack of diversity makes our society boring and it can undermine human dignity.

Inconvenient truths about "easy and fast"

#1 Can only go so far

#2 Missing sense of control

#3 Malicious use and bias

#4 The world filled with slops

#5 The curse of efficiency

#6 Global uniformity

So, I have listed several inconvenient truths about easy and fast.
These issues have something in common, which is that

“Easy and fast” is killing rich human culture

Easy and fast is slowly killing rich human culture.
I know this is an exaggeration, I think this is partially true.

If you look at this phrase alone, this looks sound familiar. Similar arguments are made a lot in different contexts such as fast fashion and fast food.

However, I have never associated our own research efforts in content creation. This was a new realization for me, and it was depressing.

Then, what shall we do?

Then, what shall we do? These problems are so fundamental and difficult.

There may be no solution. It may be better to stop working on this and start working on something else.
Or even if tractable, the solution may be outside the scope of HCI research or computer science.
Getting faster and automation is the very nature of computing, so it maybe fundamentally wrong to solve these problems in computer science.
This may be the topics for philosophers and artists.

Is there anything we can do as a research community in HCI or computer science?

This is the question I want to ask here, and I hope to discuss this with you.

I can stop my talk here and start the discussion. I want to hear your thoughts.

Still, I would like to suggest a few possible directions to explore before giving the microphone to the floor.

Beyond "easy and fast"

#1 Value in process

#2 Rethink purpose

#3 Rethink Uniqueness

Here are the possible directions I would like to suggest today.

Again, please note that this list is not meant to be entirely novel or exhaustive. This is a just a few samples from many possibilities and I just want to hear from you later.

Let us look at them one by one.

#1 Value in process

True value is in the process, not the output.

- For enjoyment
- For exploration
- For communication

We should identify and enhance them.

One direction is to focus on the value in the content creation *process,* not just output.

In many creative activities, the process is more important than the output.

Small children purely enjoy the process of drawing, enjoying the interaction among their hands, pens, and the paper. Professional designers and artists draw many sketches to explore ideas, and the process helps them formulate and externalize their thoughts. People also draw sketches to communicate their ideas and thoughts to others.

In other words, the content creation process not only produces output, but also causes irreversible change to our brains, helping us better understand the world and ourselves.

We should identify value in the content creation process itself and find ways to enhance it.

#2 Rethink purpose

Why do we create?

- Personal and social well-being
- Sustainability
- Diversity and inclusion

Tools should take them into account.

Another direction is to rethink the purpose of content creation. In the "easy and fast" approach, the purpose of creation was not really questioned. We just assumed that creation is valuable and tried to make the process easier and faster. However, we now should seriously discuss why we create, and what value we want to bring to the user and society by creation.

For example, how can content creation tools contribute to personal well-being, making people happy and healthy? How can content creation contribute to the pressing problem of sustainability? We might be able to approach the goal by designing authoring tools that minimize material waste, promote material reuse, and maximize durability.
Another important social problem is diversity and inclusion. How can authoring tools can help people to design more inclusive contents and things?

We already see some research efforts in this direction, content creation for social good, but I think that we can do more.

#3 Seek uniqueness

Fighting against global uniformity.
Uniqueness is a core value of creation.

Build tools to help people to be unique

Digital representation of unique “self”?

The third direction is to bring back originality and uniqueness to creations fighting back against global uniformity caused AI.
Uniqueness and originality are a core value of creation.

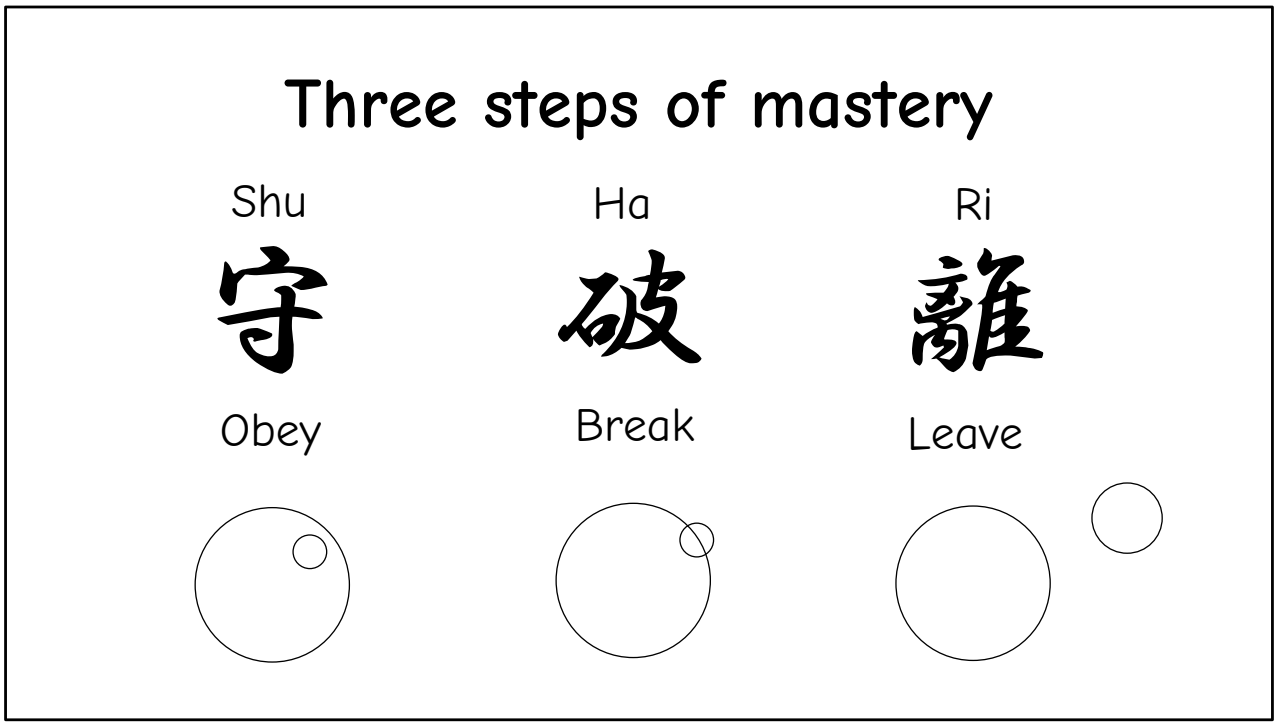
Ideally, I would like to build tools that bring joy and the feeling of fulfillment as the user tries to be different and original.

Honestly, this is a very open question, and I have no specific idea of how to solve this problem.
However, but I think this is an important and interesting direction to explore.

I imagine that computer systems have a digital representation of the unique “self” of each user and embed it into all their creations.
It is a kind of digital signature, one that should be deeply tied to a person and creation process, something impossible to be copied or stolen.

Maybe using our human body (or physical environment) as a part of

creation process, as in physical reservoir computing ?



To discuss uniqueness further, I would like to introduce a Japanese concept on mastery in arts, Shu-Ha-Ri.

It is a Japanese concept describing the three stages of learning toward mastery in traditional arts, such as sushi making, calligraphy, paining, tea ceremony, acting (Kabuki), martial arts (Judo and karate), and sord fighting (Kendo). These arts have hundreds of years of history, and mastery must build on that history. I comprises three stages.

By the way, in traditional Japanese art, each stage takes 10 or 20 yeas, very long time.

The first stage is shu or obey. One must lean the fundamentals from a master, repeating the form to master the basic techniques without deviation.
The second stage is Ha or break. After having mastered the rules or styles, apprentices begin to break them. Adapt the forms and experiment with changes.
The third stage is Ha or transcendence. Leave the existing forms and establish your own rule or styles.
At this stage, you become a true master of the art, with your own original style,

unlike anybody else.

I think Picasso is a well-known example. He mastered traditional paintings in his early days and completely broke away from the tradition and established his own style. His unique style came not from nowhere, but is built on a deep understanding and mastery of traditional painting.

As you know, the same principle applies to research. Students first learn the form, then gradually start doing something new, probably by making slight changes. Then, the ultimate goal is to move away from existing research framework and build your own world.

I have another story to share. When we discussed anonymity at a UIST program committee meeting, Professor David Lindlbauer at CMU said “perfect anonymity is impossible. I can smell a Patrick Baudisch paper from a thousand miles away”. I think it is the highest compliment, and something we all should seek for.

This “uniqueness that comes after mastery” is opposite of “easy and fast” and has not been within the scope of HCI. It takes too much time!
However, if you want to do something new and meaningful in content creation, this direction may be worth looking into.

New research format?

Current format:
Formative study -> implement -> evaluate

Alternative format?

Again, the problems I have listed, such as malicious use and global uniformity, are so fundamental and are beyond the scope of the current HCI research format.

Recent HCI papers follow a fixed format. They start with a formative study to clarify user needs, then implement a method that satisfies the user needs, then evaluate the system. It is getting so popular and reviewers are now requesting this format.
I think such an established format is verry effective to address immediate problems today.
However, I think this can prevent novel explorations to answer the fundamental problems.

I believe we need a new research format or at least welcome new challenges.

This vision talk is a good example, but maybe too limited.
We should keep exploring new formats to keep our field vibrant.

Summary

"Easy and fast" has almost been achieved.

"Easy and fast" may not be the right goal.

We should go beyond "easy and fast".

In summary, I started the discussion with the observation that "easy and fast" might have been already achieved.
Then, I argued that easy and fast may not be the right goal. It has some inherent problems, such as limited quality, limited satisfaction, and global uniformity.
I then suggested three possible directions to explore: focusing on the process, rethinking purpose, and bringing uniqueness.

These problems are difficult to define and solve with machine learning techniques or AI because of the lack of training data and metrics. Where is the training data to make content creation process meaningful? How do we measure the benefit in human well-being? How do we measure originality and uniqueness?

We need to talk to people and learn from them to tackle these fundamental problems. This is the place where purely technological approach does not work and where we, the human-computer interaction community, can contribute. There is still so much we can do, and I hope to

work on these issues together with you all.

Thank you

This concludes my talk.
Thank you

Related Work

- Beyond Productivity: Rethinking the Impact of Creativity Support Tools, 2025
  "user-centric aspects such as self-reflection and well-being as critical dimensions of assessment"
- The Role of Slowing Down in Fast-Paced Game Jams, 2024
- Designing for Playfulness in Human-AI Authoring Tools, 2023

I did not really do intensive literature search, but I found some recent papers discussing similar issues.

In "Beyond Productivity", the authors examined measurements used in Creativity support tools and argue that user-centric aspects such as self-reflection and well-being should be considered.
In "role of slowing down in fast-pace game Jams" authors showed that a mindfulness intervention in rapid creative process reduces stress.
In "designing for playfulness", the authors argue importance of playfulness in authoring tools.

All these papers are very recent, and if you know other papers, please let me know.