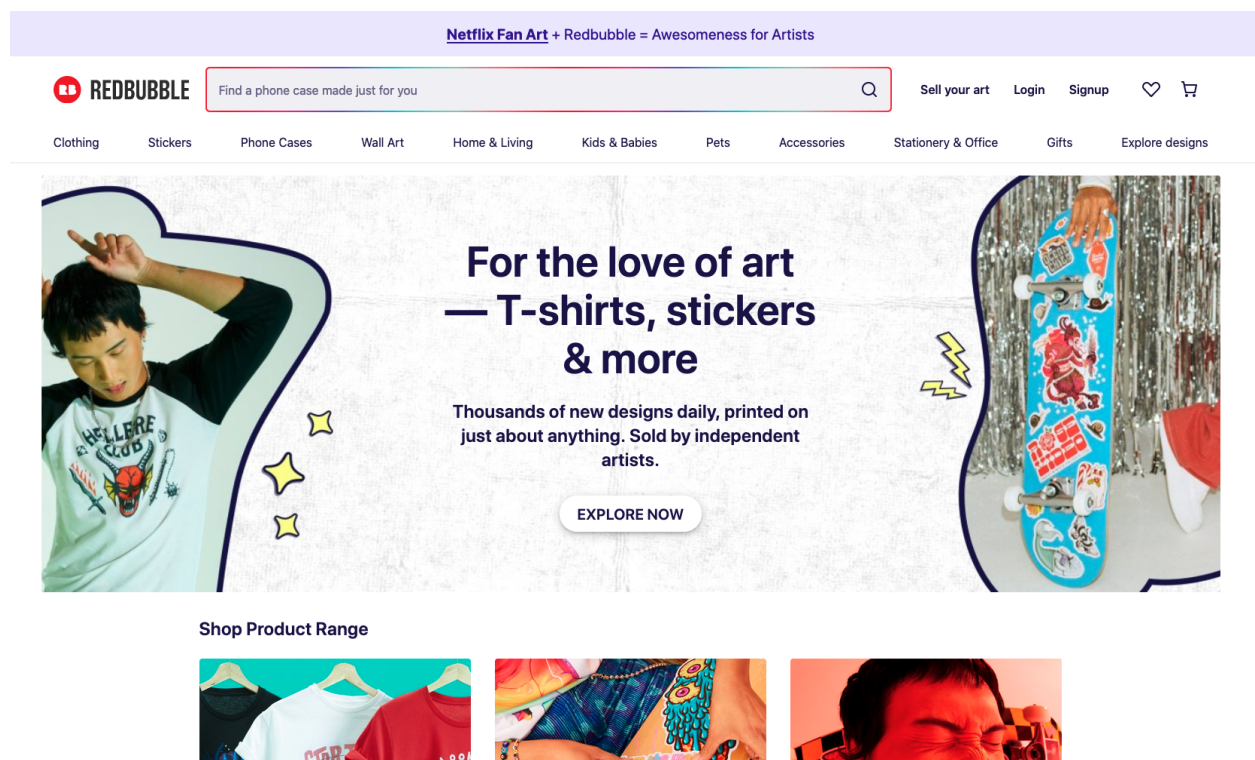


Observation of AI growth, using Redbubble as an example:

I wouldn't call this a case study as it is more of an observation. This observation serves to highlight the potential growth of AI in online marketplaces by comparing the number of designs uploaded by a generative AI user (referred to as 'AI User') as compared to a normal artist (referred to as 'Human Artist') to Redbubble over a period of less than a month.

What is Redbubble?



Redbubble (<https://www.redbubble.com/>) is a global online marketplace where registered users (who are primarily artists) may submit artworks to sell as prints on products such as t-shirts, mugs, notebooks and phone cases. When a product is purchased from the site, the artist whose design was printed on the product will receive a small margin from that sale. Artists (me included) who upload their works to print-on-demand services rely on it as their main or side income.

Why I chose to observe on Redbubble

Redbubble has the option to show when a user has joined the site, which I use as a major criteria for identifying whether a user is an AI user, or a human artist. 2022 is the year when the image generative AI systems Dall-E 2, Midjourney, and Stable Diffusion had been released (in succession). With the year 2022 as the cut-off point for when image generative AI is made available to the public, we can reasonably assume that a user who had joined Redbubble prior to 2022 is a human artist.

TeePublic (<https://www.teepublic.com/>) is another print-on-demand site that allows for easier browsing of all designs, but it lacks the option to show when a user has joined the site. However, TeePublic has a unique feature where new designs that are uploaded will be put on sale for the first 72 hours. I used this feature to roughly gauge how many new designs a user may upload in a day when I first observe them. (This will also be used as a criteria for whether a user is an AI user or a human artist.) AI-made designs dominate the “New Tees on Sale” tab as AI users (that I manage to identify) on the site tend to upload at least 20-30 new designs at a time. It is harder to pick out human-made designs when browsing newly-uploaded designs as human artists often lack the capacity to come up with as many designs in a short period of time as AI users.

Nevertheless, I will still make my observations on Redbubble, though I may reference TeePublic when the situation applies. I am aware that other print-on-demand services exist, but as I am more familiar with the two mentioned above, my observations will be based on these two print-on-demand services, plus the social media of its users where applicable.

The relevance of social media in identifying users

When social media is mentioned in my criteria for identifying AI users and human artists, it is usually referring to websites such as Facebook, Twitter/X, Instagram, Tumblr, and Pinterest. Artists often use social media sites as a way to showcase their works and to also promote any products or services.

When identifying AI users or human artists, I would also browse their social media sites to look for further signs of their alignment.

(Interestingly, through my observations, AI users tend to promote their print-on-demand designs on Pinterest and Instagram. Twitter/X is popular for both human artists and AI users in general.)

Criteria for identifying AI users on Redbubble (and TeePublic):

Most AI users do not disclose whether they use generative AI to produce their designs, hence the need for these criteria in the first place to differentiate between human artists and AI users. The more criterias are met, the higher the likelihood.

Please note that these criteria are based on my own observations and experience as a freelance artist, and are not based on any extensive studies.

Criteria for identifying Human artists:

- Has been selling on the site before 2022.
- Has a consistent art style according to their brand.
- Has a strong art presence in social media not limited to just posting and promoting their designs on Redbubble and other print on demand services. The more social media sites they have, the better.
(Bonus if they also have a personal website where they post their art and services.)
(Also bonus if they have art dating before 2022 that is consistent with their current art style.)
- Has a reasonable amount of high-quality works uploaded on Redbubble in the time they have been on there. (A reasonable amount would be equivalent to less than 100 high-quality designs a year.)

Criteria for identifying AI Users:

- Joined the site in late 2022 to the present.
- Inconsistent art style according to their brand, and/or inconsistent art style within the same categories if they have multiple types of design styles. (Bonus if the “art” has telltale signs of generative AI.)
- The titles of their designs are not dissimilar to prompts used to generate an AI image. They also do not change the titles and descriptions for multiple designs derived from the same prompt. (i.e. no version number or anything to differentiate between multiple designs.)
- There is little to no art on their social media from before 2022. Most of what is on their social media is their print-on-demand designs (or promotions of them).
- They upload at least 20-30 designs of similar quality and theme within 24 hours. (Bonus if they upload new designs on a daily basis.)

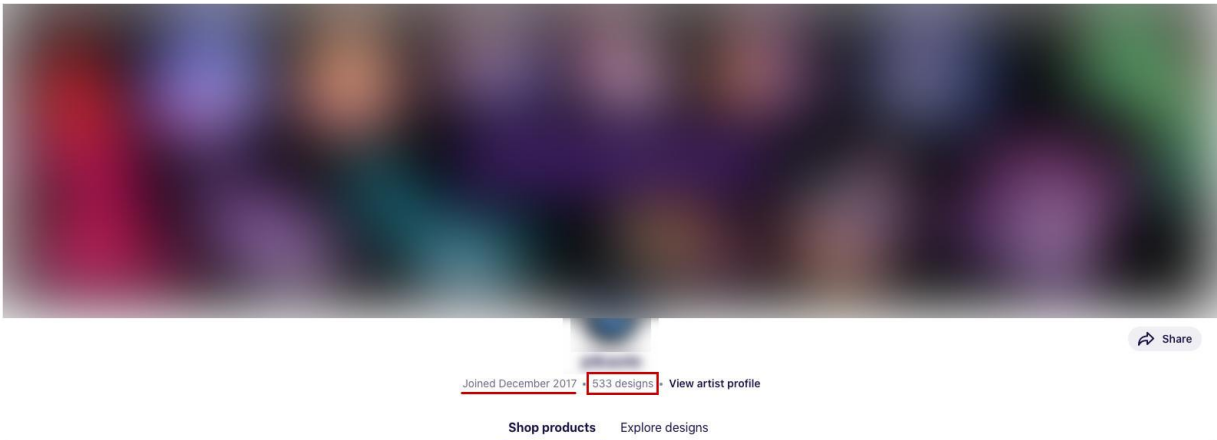
With these criteria in mind, I have picked out a few human artists and a couple of AI users to showcase how fast AI is dominating the online marketplace for artists in Redbubble (and Teepublic).

The Human Artists:

For the purpose of my observations, the artists I have chosen to observe here are established users in Redbubble who appear as featured artists on the website. (Names and designs are blurred to protect the privacy of these individuals.) Here, I have highlighted the number of designs and the date of when these artists joined Redbubble.

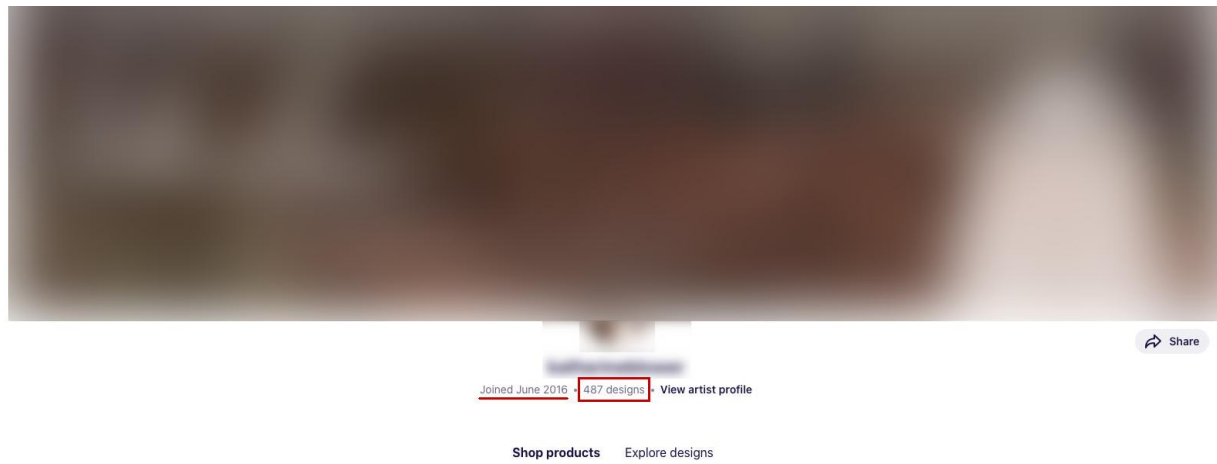
Artist 1:

Joined December 2012, 533 designs



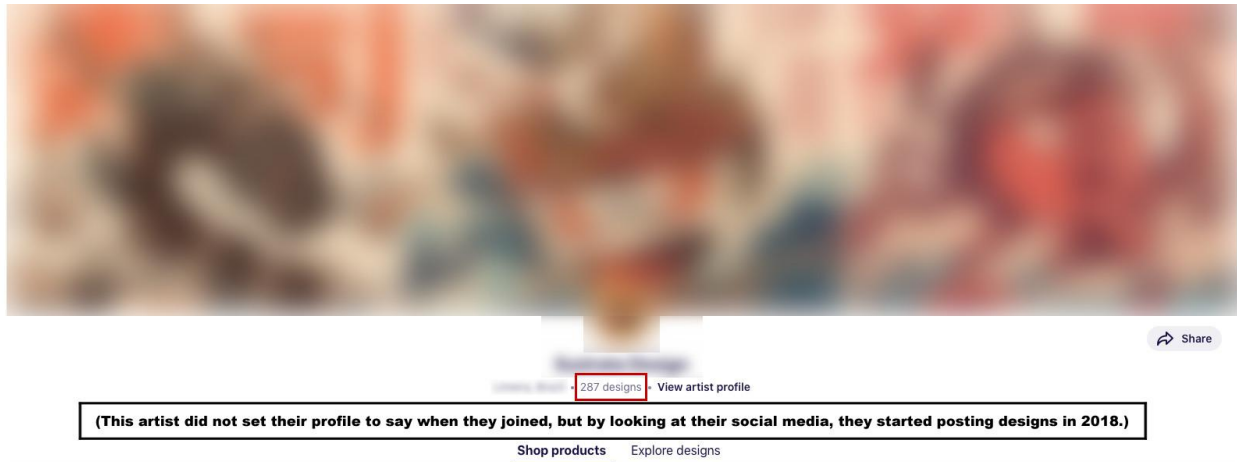
Artist 2:

Joined June 2016, 487 designs



Artist 3:

Joined (presumably) 2018, 287 designs

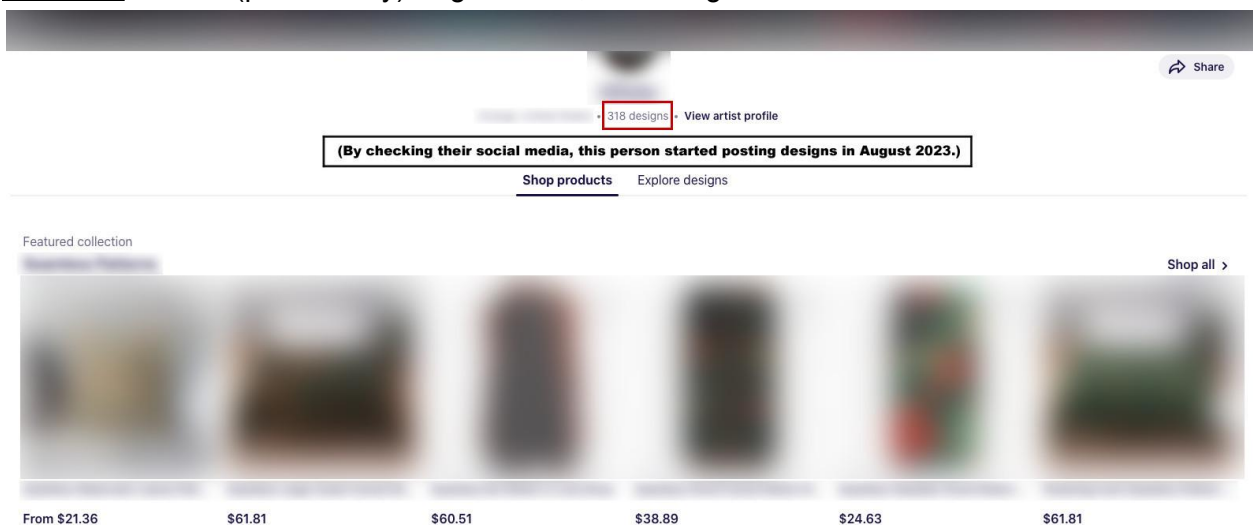


These screencaps are taken in the month of October, 2023. Calculating the average number of designs uploaded in a year (by dividing each artist's number of designs by the number of years they have been on the site), Artists 1, 2, and 3 can be said to have an approximate upload rate of 88, 69, and 57 designs per year respectively.

The AI Users:

Similarly to human artists, not all AI users upload designs to Redbubble at the same rate. The persons I've chosen to observe are those that I've managed to identify and have uploaded what I presume to be a high volume of designs in a short period of time. (Like above, names and designs are blurred out to protect their privacy.)

AI User 1: Joined (presumably) August 2023, 318 designs



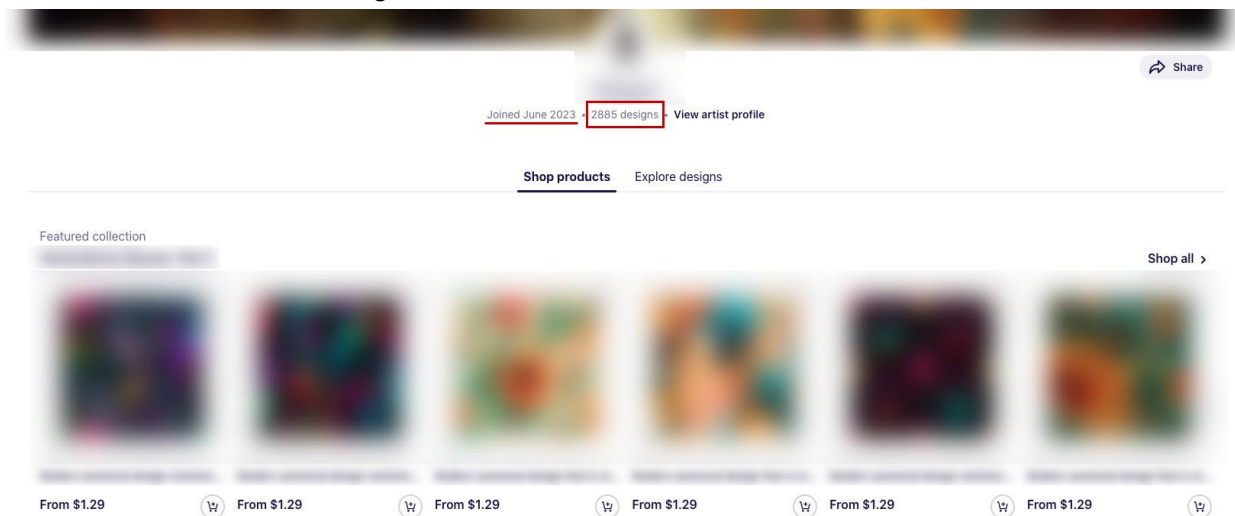
The screencap above is taken in the month of September, 2023. Considering that they started posting their designs in August of the same year, they managed to upload over 300 designs in a single month, which is comparable to what established human artists put out over their lifetime on Redbubble!

Of course, it could be argued that they could have spent the last year (or two) coming up with these designs before uploading them on Redbubble, which would make the rate a little bit more reasonable.

However, the next AI user I observed is what I consider to be an extreme case of voluminous uploads to print-on-demand sites.

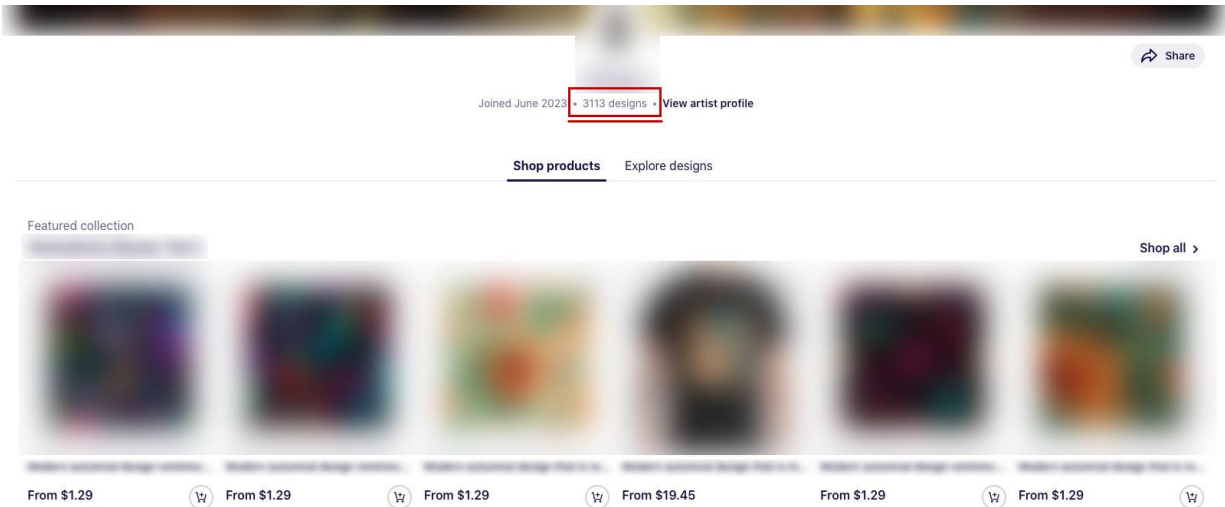
AI User 2:

Joined June 2023, 2885 designs



The above screencap is taken in the month of October 2023. From here, you can see that this is a considerably larger number than the previous user. By calculating the average number of designs uploaded in a month, this user has an approximate upload rate of 721 designs per month, more than twice the rate of the previous AI user!

By observing this user again 10 days later, they have uploaded an additional 228 designs within that time (as seen in the screencap below), which is somewhat consistent with the rate of 721 new designs per month, give or take.



I have gone further to observe this user's daily uploads in both Redbubble and Teepublic, and they upload between 15 to 50 designs a day on both Redbubble, and TeePublic.

To be able to make a comparison between the growth of AI designs vs human-made designs, we should calculate the estimated yearly rate of design uploads for the above two AI Users. By multiplying the monthly rates by 12, User 1 has an estimated 3816 yearly upload rate, and User 2 has an estimated 8652 yearly upload rate. (This is assuming these users maintain the monthly upload rate observed.)

Comparing the yearly upload rates between Human Artists and AI Users:

Human Artist	Average upload per year		AI User	Estimated upload per year
1	88		1	3,816
2	69		2	8,652
3	57		-	-

Note that due to a lack of extensive data and statistics, these results are to be taken as rough estimations. Nevertheless, it still illustrates the possible rates that a user could achieve when it comes to uploading designs on Redbubble. By comparing the two types of users I observed, it could be seen that AI users have the capacity to upload at least a 100 times the amount of designs that human artists could output in a lifetime!

Conclusion

Although my observations were made in too short a period of time to allow for any extensive data collection, from what little I could gather, it is apparent that the rate of output of generative AI (not just for images) far exceeds what humans are capable of. The results of this observation illustrates the ease of which generative AI is able to produce ready-made products to be sold in an online marketplace, and how fast it may dominate said marketplace.

This is not a good outcome for everyone involved; consumers, human creators, and AI users.

Written by Caryn Chong
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