



Repurposing Riso

The Many Modes of Risograph Machines

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Introduction

A blinking red light is rarely good sign. A visual code for warnings, emergencies, and errors, the one I see is on a risograph machine, alerting me to a paper jam. Even though I have just emptied and reloaded the paper, it persists. Stress mounting, I try again, hoping this time to hear the steady rhythm of the printer operating smoothly.

The machine is being shared with a five other people in a workshop. Some are drinking fizzy water and chatting, while another holds up pieces of paper to the light, aligning color separations to be printed, layer by layer. A fountain gurgles in the background, echoing through the studio's exposed ceilings and concrete floors.

While the ambience is relaxed, the machine is in demand. The workshop is at capacity and only a few hours long. A woman sits on a stool close behind me, tapping the table as she waits. She has brought her own paper with perforated circles and adhesive backing; she is printing labels for weed salve she is selling at a craft fair the next day. Unable to calm the blinking red light, I give up and ask for help.

This was not my first encounter with a risograph machine, or in fact, this very printer. But anyone who has experience with a riso knows that the duplicators can be temperamental. Nevertheless, many remain undeterred by riso's often mercurial nature: an Instagram search for “#risograph” yields hundreds of thousands of images, demonstrating the visual variety possible with riso. Stencil, a risograph wiki, also hosts “An Atlas of Modern Risography,” highlighting the international breadth of riso use for prints, zines, and art books.

As a frequenter of printmaking and independent publishing events in the Bay Area, I have observed firsthand a rise in riso-printed materials over the past few years. I began to wonder why people have turned to this technology as a vehicle of

expression, despite newer alternatives. My objective for this project was to understand: *what motivates the purchase and the repeated use of risos for creative production?*

Informed by my own experiences and interviews with subject matter experts, I posit the risograph's popularity is a response to technological advances and resulting societal changes, acting as a reprieve to digital modes of aesthetic and community engagement. Moreover, with widespread appeal and multiple modes of use, the machine is a bridge between the various niches that value it as a form of creative capital.

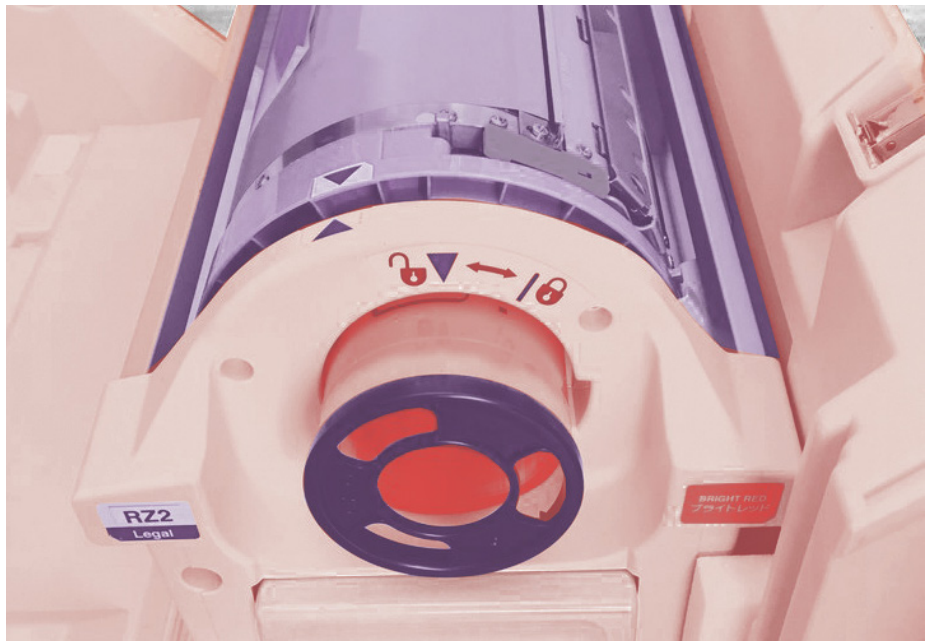


At the workshop described, rubbing out roller marks on the prints eventually rendered.

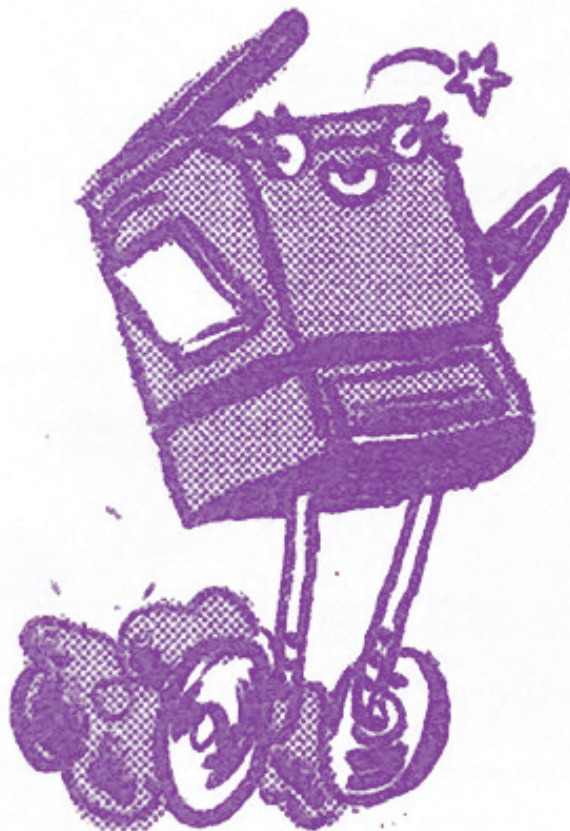
People who graciously agreed to be interviewed for this project and are quoted throughout the text.

| Name | Description |
|----------|---|
| Eishin | Artist, owns two secondhand risos |
| Amy | Artist, owns two secondhand risos, hosts workshops, publishes as Awkward Ladies Club |
| David | Artist and curator, manages riso-related programming at the Berkeley Art Museum & Pacific Film Archive (BAMPFA) |
| Justin | Artist and publisher for hire, owns two risos (one secondhand and one new), hosts workshops, publishes as Paper Press Punch |
| Kevin | Salesman at Bay Area RISO dealer, Standard Business Machines |
| Chris | Creative Director at YouTube, manages riso operations and led efforts for purchase |
| Leonardo | Creative Director at Facebook, manages operations of Analog Research Laboratory |
| Raphael | Artist, owns a secondhand riso acquired as a gift, publishes as Play Press |

A risograph drum, which releases ink through the master, a stencil of the scanned image. (Courtesy of Awkward Ladies Club, awkwardladiesclub.com)



LETS ALL LEARN A LITTLE BIT ABOUT RISO PRINTING!



(Courtesy of Paper Press
Punch, Instagram:
@paperpresspunch)



*(Courtesy of
Awkward Ladies Club,
awkwardladiesclub.com)*

A Brief History

Upon first glance, most risograph models resemble familiar Xerox machines, with their boxy, gray exteriors, protruding buttons, and hinged tops that protect glass scanning beds. But the prints that risos render have a painterly quality, and herein lies their appeal: the risograph makes digital scans of documents and reproduces them with ink, like an automated screenprinting process. While I focus on their use for creative production, risograph machines were not originally designed for this purpose nor are they expressly used in this way.

Quality output at a high speed

Though the risograph's underlying technology has been adopted by other companies, it draws its name from its original manufacturer, the RISO Kagaku Corporation.¹ Founded in 1946, the RISO Kagaku Corporation manufactures “*printers, printer peripherals and related consumables,*” beginning with ink and introducing RISO printers in the mid-1970s.² The company describes their invention as a digital duplicator that “*combines traditional stencil printing principles and original RISO technology to generate quality output at high speed.*”³

Thus, a key aspect of the riso's draw has always been its value: the risograph is cheaper than both an inkjet printer and a laser photocopier for jobs of more than 50, but less than 10,000 copies.⁴ This calculation is based on a logic that upfront investment will be returned in later savings – via reduced costs for ink, electricity, and maintenance. Marketed for its efficiency as a low-cost, high-speed printer, it has traditionally been popular among organizations with tight budgets, such as schools and nonprofits.

¹ I refer to RISO as the corporation, riso as the risograph machine, and risography as the practice of risograph printing.

² RISO Kagaku Corporation. “Quick Guide.” Accessed December 2018. riso.co.jp/c/english/company/quick_guide/index.html

³ Ibid.

⁴ Burek, A. (2018). “A Very Basic Guide to Low-Tech Risograph Printing, Third Edition.” Oakland, CA: Awkward Ladies Club.

According to RISO, machines are “widely used in education, industry and local governments to produce educational and conference materials, leaflets, direct mail and much more.” (Source: RISO Kagaku Corporation)



Our printers are used daily in all kinds of ways.

Uptake by artists

⁵ Akrich, M. (1992). *The Description of Technical Objects*. In *Shaping Technology / Building Society: Studies in Socio-Technical Change*, edited by W.E. Bijker and J. Law, p. 205-224. Cambridge, MA: MIT Press.

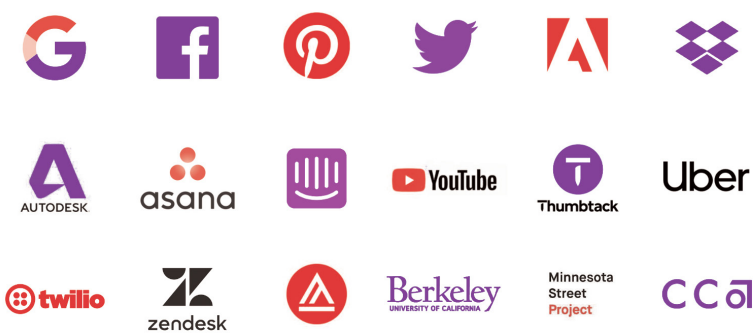
In the past decade, however, artists have repurposed risos beyond their inscribed use:⁵ they have reshaped the machines for own creative processes. Buying multiple ink drums and changing them manually, artists now use what were intended to be one-color duplicators to produce multi-color prints. Artists do still benefit from the cost savings argument: the independent printers I spoke to explicitly mentioned cost calculations, arriving at the conclusion that self-printing would save money when compared to services at FedEx and Kinko's. With the availability of secondhand exchanges like Craigslist and eBay, printmakers can additionally track down even more economical machines and parts no longer being manufactured.

Although buying refurbished machines is the norm among many artists, this niche creative market has grown over the past five years. According to Standard Business Machines, the main Bay Area RISO dealer, the creative market is responsible for 30% year-over-year growth in their RISO-generated revenue. RISO

serves this market with custom ink-mixing services and two-color duplicators that cost up to \$20,000.

One artist I spoke to articulated an observed taxonomy of creative printers, including (a) those who print for mostly for themselves, for friends, or “for hire,” (b) publishers who take a more direct role in curation and distribution, and (c) rarer print enterprises that may be venture-backed. Successful print-for-hire businesses – with or without profit-driven patrons – have begun upgrading to newer models, as refurbished and discontinued machines do not always perform as advertised. “It’s pretty cool to get a brand new drum and know that you didn’t just spend \$100 on eBay to get something that’s broken,” said Justin, a Seattle-based printer I spoke to who owns both secondhand and new machines.

Some artists have also infiltrated corporations, particularly among technology companies in the Bay Area. Of particular note is the Facebook Analog Research Laboratory, with outposts in nine offices from London to Tel Aviv, “where employees can roll up their sleeves, get away from their computer, and do print making,” said Leonardo, a creative director that manages operations of the lab. Leonardo explained how every new Facebook hire is introduced to the print studio on the first day of orientation, and a group poster-designing exercise is part of the onboarding process. Although Facebook’s poster culture originated with screen printing, the focus has shifted to risography, a less labor-intensive and more accessible process, as the company has scaled. Moreover, as Facebook’s use of risos has grown, other Bay Area technology companies have begun purchasing them as well.



A few of Standard Business Machine’s RISO customers in the Bay Area. (Courtesy of Standard Business Machines)

I first learned about [riso] maybe eight years ago, something like that. I feel like it was one of those things that as soon as one person told me about their new obsession with the printing, it also came up in so many other ways...very zeitgeisty.

My friend who is a graphic designer and artist in Los Angeles – someone who I've known for a long time – he was the first to tell me about it. Basically, he had gotten the bug and had gotten kind of obsessed, which I think was common for those folks who were a little earlier on the draw to it...

Somehow finding machines and the materials and just realizing that mix of it being potentially low cost and high production – I think it caused that kind of wave of enthusiasm. Or maybe it was just that the possibilities with riso are so great.

David

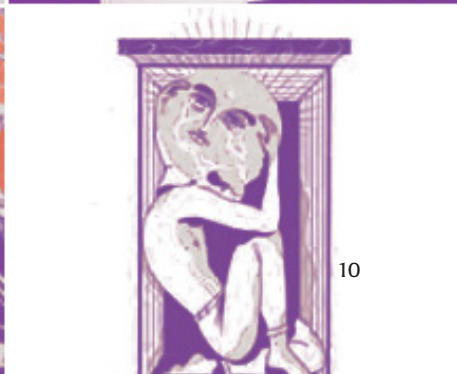
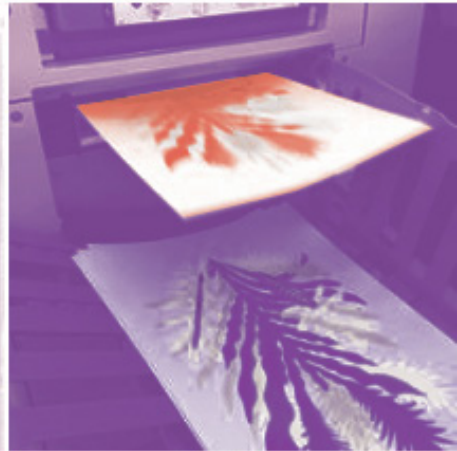


#risograph



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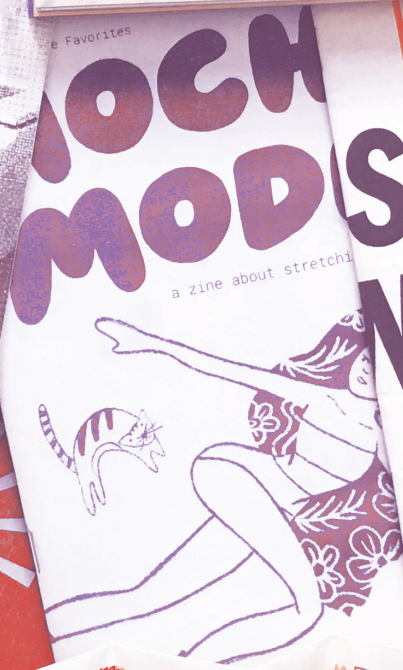
Recent



FIVE
ZINES
ABOUT
THE
INTERNET



A VERY BASIC
GUIDE TO
LOW-TECH
RISOGRAPH
PRINTING



SOME
SHAPES
IN COLOR



[Riso]'s always been used for high-volume printing, for people looking to get high speed at a low cost. Our number one market up until the past four years was education. It wasn't until – I want to say five, maybe six years ago – that Facebook came to us, interested in a RISO for their Analog Research Lab.

The application they had wanted to use it for was something we had never really seen. Instead of having these used for high-volume printing at a fast speed, they're using it to basically emulate a screenprinting process.

...from [Facebook], it's grown from word of mouth. Now, five years, six years later, we've got Google, Twilio, Adobe – all of these high-tech companies that are using this decades-old technology for something that it was never really intended to be designed for. But they've transformed it for their own purpose. And it's kinda exciting.

Kevin

Purposes of Use

While it is technically possible to use risos for creative, color-separated prints, the machine was not designed for this intent. So why do even high-tech companies arduously duplicate physical copies, when digital media offers a much easier process and faster, widespread distribution? In the following section, I elaborate on the motivations of creative printing with riso, focusing on *seizing attention* and *facilitating connection* as primary intentions of use.

Seizing attention

As theorist Johanna Drucker describes, “*the desire to make a voice heard, or a vision available*” is the impetus that drives independent publishing.⁶ The risograph machine acts as a device to enable forms of visual expression, rendering experiences in an immediate and evocative way. For instance, Raphael, a riso owner I spoke to, described how he prints exclusively in red and black. While this decision was initially made because of resource constraints, he has come to embrace the aesthetic for its boldness:

“They’re very confronting colors. Alarming together, in a sense. Almost kind of violent...[Using only these colors] allows me to focus on other stuff, instead of trying to convey some kind of realism or technical color proficiency; it’s more about translating the work in a really clear way.”

Raphael also prioritizes working with women, people of color, and generally anyone whose perspectives are marginalized. “*It’s all about accessibility,*” he said, “*It’s all about prioritizing voices and art that isn’t being published by real or big-time publishers.*”

⁶ Drucker, J. (2004). *The Century of Artists’ Books*. New York: Granary Books, p. 7.



write it

what zines
do you want
to see more
of in the
world?



(Courtesy of Play Press,
Instagram: @playpresszines)

⁷ BAMPFA. "Way Bay: January 17–June 3, 2018." Accessed December 2018. bampfa.org/program/way-bay

Institutional risos are similarly used to seize attention, whether for internal or external communications. At the Berkeley Art Museum and Pacific Film Archive (BAMPFA), for instance, the riso is used to generate promotional event calendars or other materials related to museum programming, such as the riso-printed postcards included in the 2018 exhibition, Way Bay.⁷

Within corporations, the machine is used for posters or other assets, in a landscape where attention is scarce. Chris of YouTube rationalized the efficacy of riso posters as a method of communication *"because no one reads the email blasts at home, and they definitely don't read them at the office."*

Likewise, the production of printed materials at Facebook began as means of occupying mindshare. The first posters were made to articulate company values such as "DONE IS BETTER THAN PERFECT," "WHAT WOULD YOU DO IF YOU WEREN'T AFRAID?" and of course, "MOVE FAST AND BREAK THINGS." Now called "red-type posters," these are notably printed with red, in lieu of Facebook's signature blue.



A status update posted by Mark Zuckerberg on February 1, 2012, the day Facebook announced its IPO. (Source: Mashable)



Mark Zuckerberg
My desk — at Facebook HQ.
Like · Share · about an hour ago via mobile

Album: Mark Zuckerberg's Photos
Shared with: Public

[Facebook Analog Research Lab founders] Ben Barry and Everett Katigbak found it really impactful to reflect and echo some of the things that were being said around the company, some of the things that Mark or Sheryl would say that were really inspiring.

They would put their words onto a red-type poster, what we call them; it's a cream-colored paper with this really beautiful red ink. Then they would plaster these things that were being said all over the campus overnight or on the weekends. Those messages became a very important way to inspire the community.

...Red-type posters are kind of a protected species. We don't let other teams, or the community at large at Facebook, create things that look like red-type posters. Red-type posters are our values, or really important things that are said a high level. So those aren't commonly made. We rarely make or remake new red-type posters.

Leonardo

Facilitating connection

The machine additionally acts as a means for people to gather, enabling convergence within physical space. Among institutions, the purest form of this type of riso-mediated social exchange was at the Berkeley Art Museum. "We try and help people who are doing community-oriented projects, so a lot of activist groups," said David. "We help print protest posters and things like that, or just information for just good community work, focusing on things that are not for sale, unless it's for a fundraiser."

As for the corporations with printers, Leonardo from Facebook similarly used the term "community" as the beneficiary of the Analog Research Lab. This term was applied broadly, to fellow Facebook employees as well as the greater public, as there are future plans to make certain outposts open to area residents.

A few riso-printed postcards distributed as a part of the from the 2018 BAMPPFA exhibition, Way Bay. (Source: Twitter user @larrybobsf)

For artists, one form of social connection is the printing workshop, like the ones I have attended and described earlier in the introduction. Justin, another printer who hosts regular workshops, had also recently formed a residency as a way to engage with a selected artist for a longer period of time.



Risos enable connection with both other artists, as well as people to whom they sell their work. Amy traced handoffs of a few different machines among people she knew, indicating how they are nurtured as communal assets over a lineage of owners. The shared use of older, secondhand technology additionally leads artists to convene online when troubleshooting, often on forums such as Stencil,⁸ Copytechnet,⁹ and a public risograph printing Facebook group.¹⁰

Eishin, a Japanese artist I interviewed, described social connection as a motivation for her creative practice as well. However, she focused on the conversations had with customers about her work, which often documents food and drinks from local establishments. “Whenever I’m tabling at some events, people start to make recommendations,” she said. “Like, ‘This beer was good’ or ‘Did you go to this ice cream store?’ So it’s something we can talk about...it’s really fun to see people’s reactions.” Eishin’s interest in risography is additionally personal, deepened by her ethnic identity; after learning that the machines are of Japanese origin, she now learns more about local riso use and sometimes does print jobs when she travels to Japan.

⁸ Stencil. “A RISO wiki for artists, designers, and printers.” Accessed December 2018. stencil.wiki

⁹ Copytechnet.com. “Forum: Digital Duplicators.” Accessed December 2018. copytechnet.com/forums/digital-duplicators

¹⁰ Facebook. “Risograph Printing (Public group).” Accessed December 2018. www.facebook.com/groups/1530616300575734

Eishin at her table at the 2017 San Francisco Zine Fest. (Courtesy of Eishin Yoshida, Instagram: yo_eishin)





Amy's studio. (Courtesy of Awkward Ladies Club, awkwardladiesclub.com)

Why Now?

As Sellen and Harper write in their thorough exploration of paper in the office, “*New technologies, as long ago as the mid-1800s, were offering something ‘better.’*”¹¹ Indeed, why do people persist in using this retro-fitted technology for expression – despite the availability of newer alternatives?

Admittedly, the rise of secondhand riso machines is in fact enabled by networked technologies: these include market-places like Craigslist and eBay, as well as previously mentioned online troubleshooting forums. In spite of these digital resources, I maintain that the popularity of risograph-printed materials are “*a distinct counterpoint to the dematerialization (i.e., electronic delivery) of independent art and graphic design practice.*”¹²

Through the production of paper artifacts and the facilitation of convergence in physical space, risography thus acts as a deliberate act of resistance to contemporary technologies. With visible imperfections and limited production runs, the “*auratic multiples*”¹³ that risos render are a novel contrast to infinite replicability and persistence of digital files.¹⁴ Moreover, the manual, repetitive nature of risography is a striking inversion of “frictionless” online experiences.

In the following section, I elaborate on *visible imperfections* and *frictional interactions* as two distinct properties of risography that offer a respite from digital life.

¹¹ Sellen, A.J. and R. Harper. (2003). *The Myth of the Paperless Office*. Cambridge, MA: MIT Press, p. 5.

¹² Haylock, B. (2011). “Beyond D.I.Y.: On Risography and Publishing-as-Practice.” *The International Journal of the Book* 8 (4): 119-128.

¹³ *Ibid.*

¹⁴ boyd, d. (2010). “Social Network Sites as Networked Publics: Affordances, Dynamics, and Implications.” In *Networked Self: Identity, Community, and Culture on Social Network Sites* (edited by Z. Papacharissi), p. 39-58.

Visible imperfections

¹⁵ Norman, D. (2013). *The Design of Everyday Things (Revised and Expanded Edition)*. New York: Basic Books.

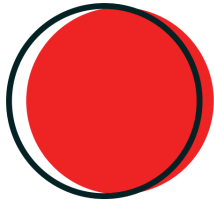
As a digital duplicator, the risograph machine is situated at the nexus of digital and analog technology. While it offers digital scanning capabilities, the riso does not have the hidden affordances of digital devices.¹⁵ Machines offer a clear, simple settings to control output, including print speed and image resolution via photo-line and light-dark modes.

But from the perspective of artistic production, this sparseness leaves much room for error. Most common is the misalignment of color layers: this is particularly pronounced when duplexing, or printing on both sides of the page, often done manually. *“As a printing machine, we can get multiples easily, but they’ll all feel slightly unique and different; maybe they’ll be offset,”* said Chris.

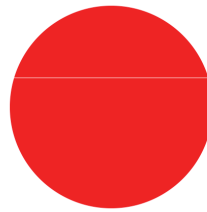
Other imperfections may include the streak of a dead pixel in the scanner, inconsistent opacities of insufficient ink, or marks from ink-stained rollers. (Common printing errors are pictured opposite). *“This machine, it’s great, but it prints all weird,”* said Justin. *“That’s kind of the charm of it.”* The riso’s charm also results from the ephemeral nature of printed matter, which is not immune to natural senescence or eventual discarding. As posters at Facebook are hung either with staples or tape, Leonardo stated: *“They’ll sometimes fall down, so eventually they’ll end up swept up.”*

While the imperfections make the process of production visible, there remains a sense of recognition for printing proficiency. This is demonstrated with a higher number of colors and tight registration of layers, as it is with screenprinting, riso’s artistic predecessor. Justin, as a professional printer for hire, described some riso prints as *“crude;”* when asked to elaborate, he clarified this as *“not necessarily super technical printing. Still having a Xerox kind of aesthetic but with color as opposed to some of the four-color, photo-type riso printing that some people are really good at.”*

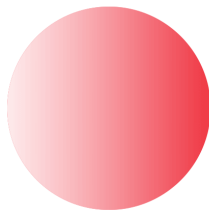
Advancing to this form of mastery involves repetition, bearing some resemblance to the iterative processes of software development. Indeed at Facebook, Leonardo said the Analog Lab is most used by engineers, *“to experiment and play.”* He continued: *“That’s kind of the culture at the company, is to hack things, experiment, try new things, take risks. I think that extends into our printmaking as well.”*



Offset layers



Dead pixel



Inconsistent opacity



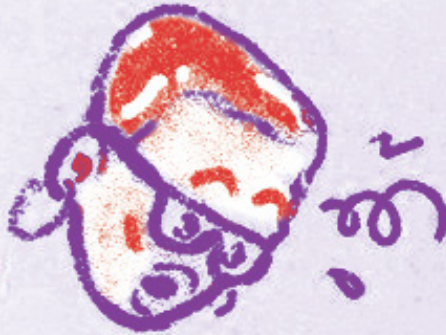
Roller marks

The printing process is like Screen printing but with photocopying.



(Courtesy of Paper Press Punch, Instagram: @paperpresspunch)

The scanned image is built as a negative onto a master sheet.



The master is wrapped around the color ink drum.

The drum rolls and presses ink through the master onto the paper.

Color drum

Master sheet is a negative of scan



Each color has its own drum. Each color is printed separately.

It's not like a color copier, where you get an exact print every time. Especially when your multi-color alignments could potentially be off. It starts to have more of a human quality, which, I guess is kind of an odd way to describe a machine.

There's more human error kind of baked into this digital machine. Well, it's not fully digital, since it's a physical machine. But even if these are digital prints, it starts to feel like screen printing. So it starts to have this imperfection.

Chris

I named [my machine] Ron, because that's the name of the [former] owner....I see him being old. Something like 60? 65? And retired. So sometimes he's sleeping? Or grumpy.

But sometimes, he's really nice, really good. And if I can catch that, it's like – no stress. But I need to make sure. Is he in a good mood? Does he have enough ink? Yeah. He's old.

Eishin

Frictional interactions

Bearing marks of their making, riso's one-of-a-kind results lend a human-like quality not only to the prints, but also to the machine itself. Describing the riso as an animate object was particularly pronounced for owners of secondhand models, who expressed developing intimacy with their printers in the process of maintenance.

Raphael described performing “*some surgery*” on the riso he was given to bring it back to life: “*My machine is just kind of goopy and bleeds ink everywhere,*” he said. “*It’s like a old dinosaur.*” Knowing a machine’s provenance seemed to shape the owner’s relationship with it as well, reinforcing a certain tolerance for error. Eishin named her printer after its former owner, for instance, and Amy referred to her machines by the cities where they were previously located, acknowledging that “*they both have their little quirks.*”



*Eishin's RISO model, Ron.
(Courtesy of Eishin Yoshida,
Instagram: yo_eishin)*

However, artists seemed to accept these quirks and develop working relationships with their printers through the repetitive nature of document reproduction. Troubleshooting was described as an emotional experience, but a necessary learning curve. *“Well that was really stressful,”* said Eishin on attempting to repair her machine, *“But it was good for me to know how the riso works.”*

Likewise, Amy expressed an initial lack of confidence in her technical skills: *“My nightmare scenario was having someone come pay me to print something, and then having my machine break halfway through.”* However, the accrual of experience seems to stimulate an affectionate bond with the risos, despite their flaws. As Eishin remarked, *“You have to grow up with them, take care of them.”*

While frictional interactions with risos transform into a relationship of care among artists, they are characterized as a form of leisure among corporate employees. Expanding on his notion of risography as a form of play, Leonardo explained the rationale of Facebook’s printmaking studios as an employee privilege:

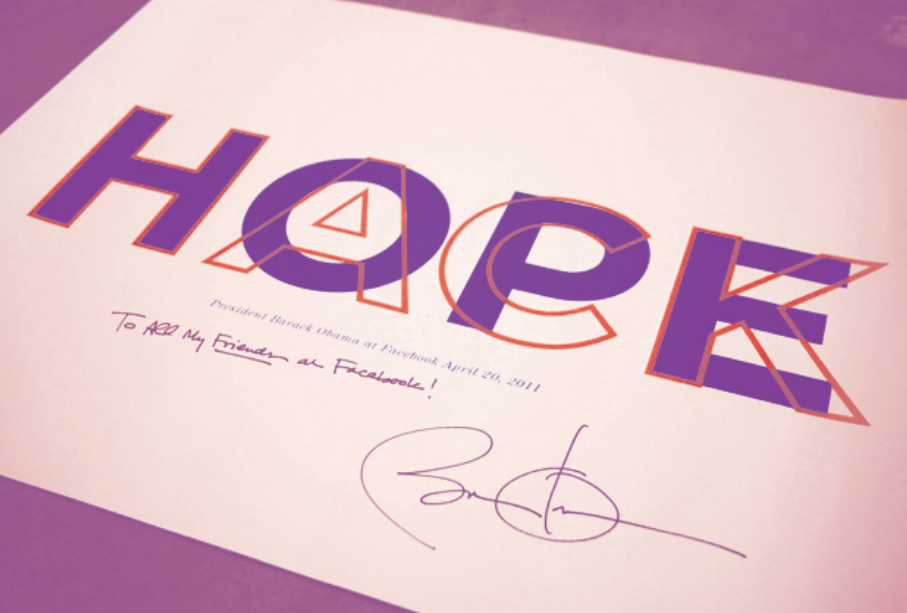
“These are brilliant people doing the best work of their careers, and even they need a break from their day to day. The best way to reset from your digital life is to go and do something very analog. It’s like a really easy reset button, or recharge button. We see it as almost therapeutic for engineers to come in and get their hands dirty.”

This reasoning aligns with the virtues of hands-on work advocated by authors Sennett¹⁶ and Crawford,¹⁷ whose books on the topic Google characterizes as in the domain of “self-help.” Yet the notion of “recharging” from digital life – among employees of a company charged with fostering election interference, online abuse, and “addictive” technology – additionally characterizes a certain naive nostalgia; the mechanical friction of risography seems therapeutic in that its errors are much more easily remedied than the larger societal ills which have emerged from its platform.

Furthermore, Facebook’s offering of risos as a form of recreation for its employees seems intended to insidiously warp the self-perception of their labor. In addition to calling out the strange

¹⁶Sennett, R. (2008). *The Craftsman*. New Haven, CT: Yale University Press.

¹⁷Crawford, M. (2009). *Shop Class as Soulcraft: An Inquiry into the Value of Work*. New York: Penguin Press.



Poster designed by Analog Lab co-founder Ben Barry for Obama's visit to Facebook. (Source: 99U. adobe.com)

juxtaposition of posters at the Facebook headquarters calling for visitors to “BE OPEN” next to iPads managing non-disclosure agreements, Stanford professor Fred Turner writes:

“The posters and murals [that the arts programs] produce encourage Facebook’s workers to imagine themselves not as architects of a global surveillance apparatus, but as creative technical artists and perhaps even builders of a new, individual-centered expressive democracy.”¹⁸

¹⁸ Turner, F. (2018). “The Arts at Facebook: An Aesthetic Infrastructure for Surveillance Capitalism.” *Poetics* 67: 53-62.

Facebook’s usurping of the arts is admittedly anomalous among tech companies, however. The number of risograph machines in technology companies may be rising, but they are far from the norm among engineering-driven cultures. Acquiring a riso may in fact require organizational friction, due to tussles over budget constraints or difficulties in making a business case for creative practices.

As Chris of YouTube stated, “Unfortunately I think most tech companies are still in that mindset that everything has to be measured in order for you to know that it’s successful.” He continued to describe how it took him three years to convince his organization to purchase a machine: “My boss comes from the world of finance and he’s just like, ‘I don’t get it. You don’t need this. This is a digital company, what are you making posters for?’”

PAPER
IS
THE
MOST
IMPORTANT
THING



Amy at work. (Courtesy of Eishin Yoshida, Instagram: yo_mylittlevictories)

Embracing Riso's Multiplicity

As its primary purpose is to render duplicates, the riso is inherently characterized by a sense of multiplicity. But this also extends to its many modes of use: the people I spoke to described the machine as a way to express marginalized voices, to generate income, to foster community, to recharge from a desk job, and so on. From an economical printing solution to a means of artistic production, the repurposing of riso embodies the *social construction of technology*,¹⁹ or the idea that technology does not determine human action, but rather, human action shapes technology. Across the various user groups, the riso's draw lies in its versatility and its hybrid, human-machine nature.

Yet examining the contrast between users of older, finicky machines and high-end, two-color printers more closely helps to raise *“the question of what it means to ‘make’ a print – to have control over this process, and to possess the means to make it.”*²⁰ The primary types of riso users I studied – independent artists and employees of tech corporations – are distinctly niche and often oppositional. The way that the riso adapts to each group's context suggests that it acts as a *boundary object*, a concept first articulated by the theorists Star and Griesemer:

*“[Boundary objects] have different meanings in different social worlds but their structure is common enough to more than one world to make them recognizable, a means of translation. The creation and management of boundary objects is key in developing and maintaining coherence across intersecting social worlds.”*²¹

In a time when mainstream rhetoric emphasizes how much technology at large manipulates us and exacerbates social divides, the risograph machine is a technical object that humbly challenges this logic. The riso's multiplicity proposes an alternative narrative, one in which technology can bridge gaps – not only between social groups, but also between the analog and the digital, the human and the machine.

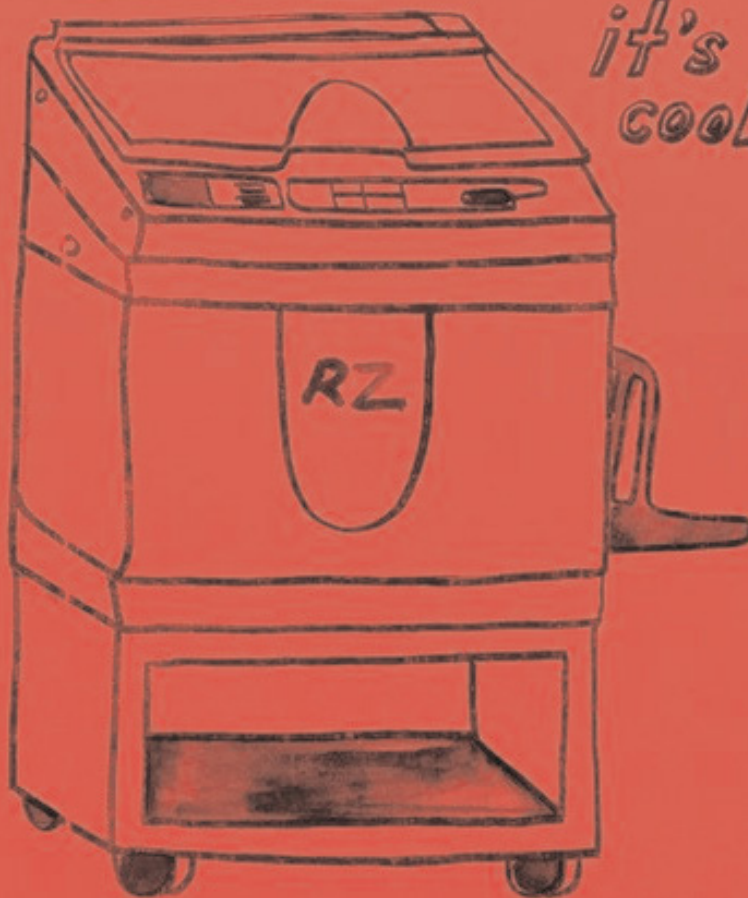
¹⁹ Bijker, W. (1995). “King of the Road: The Social Construction of the Safety Bicycle.” In W. Bijker, *Of Bicycles, Bakelites and Bulbs: Toward a Theory of Sociotechnical Change*. Cambridge, MA: MIT Press.

²⁰ Dourish, P. and M. Mazmanian. (2011). “Media as Material: Information Representations as Material Foundations for Organizational Practice.” Working Paper for the Third International Symposium on Process Organization Studies, Corfu, Greece.

²¹ Star, S. and J. Griesemer. (1989). “Ecology, ‘Translations’ and Boundary Objects: Amateurs and Professionals in Berkeley's Museum of Vertebrate Zoology, 1907-39”. *Social Studies of Science*. 19 (3): 387-420.

RISOGRAPH

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