Design and Photography: Pinhole, Perpendicular, Programmatic

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Abstract: This article advocates a transformative reevaluation of photographic discourse, redirecting its focus from visual aesthetics to the underlying programmatic principles initiating them. It explores photographic systems as a central concept in the oeuvres under scrutiny, uncovering a profound alignment with design philosophy that starkly contrasts with prevailing interpretations. This theoretical recalibration critically addresses the historical neglect of photographic apparatuses, asserting their indispensable influence across the annals of photographic history despite their notable absence in conventional narratives. Through analysis of the distinctive artistic oeuvres of Aïm Deüelle Lüski, Tuula Närhinen and Tamás Waliczky, the article illustrates the seamless interplay between photographic methods and speculative design, challenging the conventional metrics of photographic value. By advocating this shift, the article invites a comprehensive rethinking of photographic education and practice, urging an in-depth exploration of the conceptual frameworks that underpin the medium, thereby fostering a richer, more nuanced understanding of photography's essence and potential.

Keywords: Pinhole camera, apparatus, program, Vilém Flusser, Tuula Närhinen, Tamás Waliczky

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For the critic and scholar of photography, the challenge traditionally posed in addressing the unique oeuvres of photographers has been primarily that of articulating the aesthetic, discursive or societal merits existing in and arising from photographic works. The challenge has rarely been to determine *what* a photographic work actually is (or might or should be). To this day, when addressing photographic works, we hardly ever think, speak, or write about anything *but* photographs (of sorts). Similarly, for most photographers, their work is only the photographs which they have produced themselves, or have otherwise been made available for viewing on their behalf. Nonetheless, as photographs and their derivative images have become ubiquitous in recent decades, it has become increasingly harder to attribute intention or worth to this or that singular photographic image (or quasi–photographic image[1]). Scholars have spoken of a ubiquity of photographs, a deluge, or flood (most explicitly: Hand, 2012; Parry and Lewis, 2021) and artists have celebrated this condition (Umbrico 2006). Under these conditions, it seems futile, if not impossible, to single out this or that image and to pronounce it as undeniably distinguishable from, let alone superior to, sibling-images. As in water, so too in contemporary photography, mass cannot easily be distinguished from its granular constituents.

This state of affairs does not mean all floods are identical, however. Nor does it imply that once photographic floods are streamed and streamlined, dammed or piped, we can remain indifferent to how they started flowing. Accordingly, this essay addresses photographic oeuvres (mostly but not necessarily by proclaimed artists) wherein time and much labour have been invested in initiating novel flows – photographic works whose image characteristics are secondary, if

not marginal to their genesis. While some of the photographers mentioned below might still produce images for viewing and presentation, these are arguably irrelevant outcomes. Rather, it is the photographic system, constellation or assemblage which yields the images which are the locus of the oeuvres concerned here. One point of departure for this challenge is Vilém Flusser's (2000, 76) construal of the photograph as 'an image created and distributed by photographic apparatus according to a program'. Contra Flusser, however, I explicate the terms apparatus and program to propose here that photography may be philosophized as a critical form of design, albeit one that is completely unacknowledged by its own designers.

To be clear, this undertaking is not about dusting off the 'is photography art?' question. The parameters of this age-old query and the conclusions drawn from it have never been useful. I am equally impartial to attempts to prove that some design is of artistic novelty or that all designs must be considered in artistic terms. Rather, I am interested in arguing that the best way to understand photography today, inasmuch as it might be art (which it clearly need not be), is as mass-*producing* art – a form whose apparatus-dependence necessitates questioning the reciprocal relationship between humans, their natural faculties and the objects and technologies they create. This is, coincidently, also the self-declared charter of speculative design (Dunne and Raby, 2013) which is similarly disinterested in products per-se. Put differently, photography's historical success lies not in *how* it appears and less in what it is *made of* (physically or chemically). Rather its success, and arguably its purpose, emerges from what it affords: processes of speculation, decision-making and recursive bifurcation. For example, the revelation of one optical unconcoiusness (Benjamin, 2008) affords the production of latent optical unconciousnesses necessarily waiting in loom. And such latencies, whether entirely-speculative or soon-to-be-emergent, in turn destabilize optical consciousness in the main. Similarly, if a given apparatus is programmed by a given program, that very same apparatus might have been, or is simultaneously being, programmed by another program which is concurrently programming, or has programmed, other apparatuses.

Clearly, when including the words design and photography in the same sentence, it is tempting for photo-scholars and photographers alike to hark back to one rudimentary technology: the pinhole camera – a simple camera obscura. Indeed, most camera obscura illustrations featured in the history of photography present a basic volumetric structure wherein one planar surface is punctured, light then flows through a hole, forming a traceable image on the opposite planar surface. The size and proportions of the structure (mostly a cube or box, although not necessarily) determine variables like focal length, image perspective or distortion and distribution and type of detail. This then is a right-of-passage exercise for budding photographers: design a pinhole camera and construct it yourself (be it from a shoebox, used coffee can, or the bedroom at your parents' home). Pinhole cameras remain popular amongst educators, but for most photographers this classroom exercise is where deliberate attempts at design end. From here on, only pre-designed and pre-existing cameras will be used. These may be purchased at the local thrift store or online, they may be fully mechanical or integrated with a computer, but they will always be the work of an agent other than the photographer. (Most usefully for unenthusiastic students, pre-punctured pinholes are nowadays sold online).

Vilém Flusser famously pondered the meaning of the term 'apparatus', as derived from the Latin verb *apparare* (to prepare). In his philosophy, photography is far more than a technological tool that naturally, mechanically, or automatically produces an image. Rather, it is a complete system which is wholly in place: 'The photographic apparatus lies in wait for photography; it sharpens its teeth in readiness. This readiness to spring into action on the part of apparatuses, their similarity to wild animals, is something to grasp hold of in the attempt to define the term etymologically' (Flusser, 2000, 21-2). But what does 'prepare' mean in this context? Contrary to and Joel Snyder and Neil Walsh Allen's advocacy of artful preparation of the image (1975,

as well as Snyder 1980) – choice of exposure variables, lens, film stock (or nowadays colour profile), etc. – for Flusser, the photographic image is almost without exceptions prepared *by the apparatus*, not the photographer. It is thus always already prepared, and the photographers' choices and actions, in fact their entire demeanour, are limited to engagement with that which has been pre-prepared.[2]

Some artist-photographers are known to have used a pinhole camera at some point in their after-school career. For most, it sufficed to occasionally experiment with a camera lacking an aperture accommodating the human eye, usually a mildly subversive technique to accentuate the role of human vision in photography. Because pinhole cameras do without proper optical lenses, the images they generate are never formed tracelessly. Rather, they maintain an intrusive presence reminiscent of the shape, edges, and overall materiality of the pinhole, which, similarly, is intended to evoke the clarity and precision which both orthodoxy and custom expect from any camera. While such occasional experiments are certainly not mainstream, quite a few such artworks have been produced that way. One remarkable example is *Book Cam 1* by Taiyo Onorato and Nico Krebs, which playfully interacts with the concept of the pinhole camera as a contemporary emblem of everything it is not: common wisdom on photography, photo-scholarship, and most notably Ansel Adams' Zone System, the ultimate modernist attempt at artful pre-preparation of the photograph, ridiculed in its own time but brilliant nonetheless. (figure 01).

Figure 1. Taiyo Onorato & Niko Krebs

Far less common are photographers using pinhole cameras throughout their career. One of the most interesting is Aïm Deüelle Lüski, who has been using them exclusively since 1977. Such persistence in a career of over 45 years is extremely rare, but this is hardly its most intriguing merit. Deüelle Lüski's cameras are exceptional in that they are handmade and custom-built from start to finish, inside and out. Earlier on, he used materials such as cardboard or plywood which were simply accessible design choices. Later cameras featured natural wood, and on occasion included clay. Cameras built in recent decades incorporated materials such as plastic and metal which obviously required more sophisticated craftsmanship.

In so working Deüelle Lüski breaks free from the chains of pre-designed camera apparatuses, but other shackles are still in place. Therefore, he uses dental drills to open the 'lens' apertures in his cameras. Such artisanship allows for greater autonomy while avoiding pre-preparation or the pitfalls of discrepancy which pinholes open wide (as would surely be confirmed by anyone who has ever attempted to drill micro-millimetre apertures in aluminium foil, the go-to material for pinholed surfaces). Indeed Deüelle Lüski's cameras often contain not one but multiple pinholes, designed to admit light simultaneously at the moment of exposure.[3] Depending on

the exact positioning of such pinholes – whether projecting light on the same section of the opposite planar surface or not – multi-pinhole cameras produce images that are not only raw but also rough, certainly by standards of contemporary photography. Most importantly, they are also decentred, blurred, and abstract, owing to their multiple focal points.

While Deüelle Lüski is not indifferent to his own products, his project betrays a certain indifference to the classic products of photography. Moreover, his oeuvre intentionally turns its back on the consecrated desires of photographic production, namely the duty from which no photographer is exempt to meticulously plan what will be recorded on the negatives or sensors within their cameras, and consequently (or hopefully) featured in their photographs. The commonplace devices for such control are, with almost no exceptions, commercially available apparatuses reflecting the technologies and fashions of their day. Crucially, apparatuses seldomly make appearances in histories of photography[4], but they nonetheless eclipse all such histories. Indeed, since at least the 1880s and in some places long before, every photograph bore a birthmark whose photographer could not have erased.

According to Flusser, although it is based on scientific principles and technical complexities, the photographic apparatus is easy to handle. It is, nonetheless, not an apparatus on which you merely click a button, as Kodak's nineteenth-century pitch would have us believe.[5] Rather, the photographic apparatus in this construal is functionally simple yet structurally complex (Flusser 2013, 132). Thus, instead of accepting Kodak's 'fire-and-forget' description, Flusser suggests a concept of dynamic interaction between the apparatus and its user, as brilliantly demonstrated by Deüelle Lüski. For him, photographs are little more than a side-effect of a device that he designs and constructs himself in response to a philosophical problem. Moreover, every such device is not only *of* its own breed, but also its *entire* breed. Put differently, all his cameras are one-off's, such that no identical or even similar cameras will ever be constructed again. The reason for this is simple: Deüelle Lüski insists on devising a new camera for every shooting session. This means he spends weeks or often months, perhaps longer, designing and building a camera that will then be used for no more than one shoot. From the standpoint of most photographers, such a work process is puzzling, the equivalent of designing and constructing a new hammer for every nail. But it is precisely this exhausting task that Deüelle Lüski is interested in. He explains this as an attempt to address a philosophical issue: 'It all began the moment I realized one cannot turn the same device at the world in different situations, cannot go on using the familiar device used by all photographers as if it has no essence of its own' (quoted in Azoulay 2013, 26). Exhausting as this task may be, it is hardly Sisyphean. From a purely Flusserian perspective, the only conceivable Sisyphean task in this context, one we all take on voluntarily, is that of taking photographs with the same apparatus, which is neither of our own making nor our own at all. Further, since in Flusser's philosophy, photography is designated as the prototype of all technical apparatuses, only struggle against the apparatus can elevate photographic practice to 'the level of consciousness'. What's more, Flusser adds, 'A philosophy of photography must reveal the fact that there is no place for human freedom within the area of automated, programmed and programming apparatuses […]. The task of a philosophy of photography is to reflect upon this possibility of freedom […] in a world dominated by apparatuses' (2000, 81-82).

In 1998, Deüelle Lüski went on to build his 'Horizontal Camera'. This ended up providing the entire project with its raison d'être – systematic criticism of the vertical in photography. By vertical, Deüelle Lüski refers to the practice, prevalent since the invention of perspective, of having the image form on a vertical planar surface – whether a wall, a sheet of film or a digital sensor. Deüelle Lüski's terms are somewhat perplexing as the distinction between horizontal and vertical might not always be obvious and is rarely fixed. Tilt the camera forward or backward and vertical becomes horizontal (think of Weegee's famous murder scenes taken with an elevated camera, tilted 90 degrees forward and looking down on the ground). Deüelle Lüski's

intention is to offer critique on the vertical placement of light sensitive surfaces opposite the lens opening. In other words, the concept which Deüelle Lüski problematizes in his oeuvre is the *perpendicular* in photography (rather than the vertical). (figure 02).

Figure 2. Aïm Deüelle Lüski,
Ball Camera, 2004

Be that as it may, the compelling exploration in Deüelle Lüski's practice has become the horizontal (or non-perpendicular) placement of the negative, or often negatives, within the camera. This causes the image to be exposed to more light on the edge adjoining the aperture, and to receive significantly less light on the farther side. The resulting images are not only non-perspectival but also obscurantist. This makes abundantly clear that the vertical (that is, perpendicular) position selected in the past has always been but one geometrical and philosophical possibility. Deüelle Lüski's horizontal photography should thus be understood as questioning all prevalent forms of photography, in that it indicates that the components of these have only been solutions to a single problem: how to produce referential pictures (most-often by mimesis). As unique as this process is, it is nevertheless not completely free of external pre-preparation, as Deüelle Lüski has always used commercial film and photo-paper. Despite this, his work remains the exception that proves the rule: almost all other photographers succumb to greater degrees of pre-preparation.

Conceivably, photographic apparatuses are hard objects. A camera is usually constructed of metal, glass, plastic, etc., but it is not its hardness that makes it capable of yielding photographs. Similarly, it is not the wood of the individual chess pieces that enables a game of chess; rather, it is the rules of the game that allow play, or the elaboration of visual information[6]: 'What one pays for when buying a camera is not so much the metal or the plastic but the *program* that makes the camera capable of creating images in the first place […]' (Flusser 2000, 30, italics mine). The term program should be first understood on a basic technological level, as the sum of all operations an apparatus can be set to perform – that which the apparatus is prepared to do. In the case of photography, however, the concept of program also extends to the photographer's multiple decisions while making a photograph. All those are also conditioned by the programmatic possibilities built into the apparatus. The apparatus may therefore be understood as also programming its human user. This concept extends our previous technological definitions well

into the broad cultural context of present–day post–industrial society. At first glance, it may seem somewhat counterintuitive to describe photography with a concept so intimately associ-ated with the computer, but Flusser insists: 'Computers are apparatuses that process information according to a program. This is the case for all apparatuses anyway, even simple ones, such as the camera […]' (1998, 259). This insistence raises the suspicion that photography should have never been historicized athwart the (analogue) medium of painting. Rather, it would have been better articulated (retrospectively) vis–à–vis the (digital) computer, in itself a designed and de-signing 'super–medium' (Kittler, 2006, 49).

Therefore, the human photographer, even one struggling against the apparatus, cannot de-feat the program. The photographer's involvement, as dictated by the inner contradictions of pre–preparations, is therefore confusing. In fact, looking at any photographer and comparing their actions with the actions of a fully automated camera, it may be tempting to overestimate human freedom of choice. For it looks as though the fully automatic camera is always tripped by chance, whereas the photographer only presses the release when they approach a situation in the world that corresponds to their intention, their worldview, their desired form of information. If we look more closely, however, we can confirm that while the photographer's demeanour may at times be directed against the apparatus, it somehow always adheres to the inner instructions of other apparatuses and conforms with other programs. This is disturbingly evident even in Deüelle Lüski's oeuvre.[7]

Put differently, if we accept Flusser's programmatic world image (2011c), it follows that ap-paratuses and photographers are bound together, in forever asymmetric submissiveness: 'The apparatus does as the photographer desires, but the photographer can only desire what the appa-ratus can do. Any image produced by a photographer must be within the program of the appa-ratus and will be, in keeping with the considerations outlined earlier, a predictable, uninforma-tive image. That is to say that not only the gesture but also the intention of the photographer is a function of the apparatus' (2011b, 20). In other words, and marrying Flusser's taxonomy with Don Norman's (2013), the affordances of photographic apparatuses prevent the emergence of non–redundant information, despite their signifiers. Befittingly, and probably to the dismay of most photographers, this should be dubbed 'user–circumvented design'.

And if the photographic apparatus incorporates photographers, engulfs them and their view-ers, as well as various programs, the question who owns an apparatus becomes moot. Moreover, when we consider the photographic apparatus in the aggregate, we may notice that within it there are several interwoven and contradictory programs: one for capturing, another for controlling, and possibly a transmitting program as well. Beyond these, there must be many more: those of the photographic industry that programmed the camera; those of the industrial complex that programmed the photographic industry; those of the socioeconomic system that programmed the industrial complex… ad infinitum. In fact, since every program requires a meta–program by which it is programmed, it may be concluded that there is no program for all human apparatuses. Who then holds the power of choice? Flusser (1986) argues that it is the toolmakers (or information programmers in contemporary parlance). They too may be subject to an open–ended hierarchy of programs which is unexclusively human, with layers of non–hu-man programming, be they evolutional or technological, above or in place of human layers.

The oeuvres of Tuula Närhinen and Tamás Waliczky interrogate both options, evolutional programs and technological ones, respectively. The concern in Närhinen's *Animal Cameras* se-ries (2002) is with the myriad ways animals see the world. To that end, she built pinhole cameras to understand 'What does the environment look like through the eyes of a bird, a rodent, a fish, or a moose, for instance?' Clearly, seeing, looking and other such verbs invoke both human and humanistic connotations – 'seeing is knowing' and the like. However, this is not the immediate intention here, as animal seeing is firstly interrogated by Närhinen as, quite simply, the most

efficient and popular type of sensing, practised by almost all members of the animal kingdom. In building and using pinhole cameras, Närhinen has clearly measured and calculated locales and habitats wherein such seeing may occur. This affords opportunities 'to peek out of a vole's tunnel, dive under water, hide in the underbrush or view the foliage through the eyes of a moose' (Närhinen, 2022). (figure 03).

Figure 3. Tuula Närhinen, The Hare Cam from the series Animal Cameras, 2003 (production view)

While these ends have indeed been met by Närhinen's cameras, they are not the most important aspects of her work since both a human eye, as well as other types of cameras, could have conceivably been placed within a vole's tunnel, à la National Geographic. More important are the goals which have knowingly *not* been met by Närhinen, because they simply cannot be met by humans. Surely, the anatomical structures of many types of animal eyes have been studied by humans and some can be artificially replicated: several eyes, their size and location within the animal's body and relative to one another, their foveations etc. What cannot be replicated in any humanly designed camera (pinhole or other), is the band sensitivity of such eyes and the neurology which accompanies it. While human neurology is arguably where the age-old humanistic 'eye as mind' equation stems from (and the only place it exists), animal neurology is undoubtably of a different order. What is crucial is the band sensitivity that is followed by neurology: the fact that many animals see the world with and through electromagnetic bandwidths other than our own. Snakes can detect infrared radiation, reindeer often rely on ultraviolet, while birds sense the Earth's magnetic fields (an ability without which they would not have been able to migrate across the globe). These are but a few examples showing that even had Närhinen embedded other band sensitivities within her cameras (a choice she intentionally did not make), we would still have not been able to see or sense like other sentient beings. We lack the electro-

magnetic sensitivities other beings possess. Thus, what Närhinen's oeuvre emphasizes is not the fact that most camera apparatuses are limited but rather that they are *limiting*: programmed by humans, according to exclusively human specifications and sensitivities, and meaningful only to them. Alternative forms of scopic programming, like her own, might yield other reciprocal connections between natural faculties humans possess and nature's faculties humans always depend on, despite their own denials.

Human cultures are often defined by their methods of elaboration and preservation of information. Yet many such methods require tedious procedures. This arguably is the simple intention behind all inventions of photography: to process visually available information faster and to preserve it more efficiently than humans can. This is also why creativity today no longer depends exclusively on the ability to fabricate physical objects. Instead, it should be understood as the ability to program apparatuses and to direct them to culturally desired outcomes. In the case of photography, however, the question of programming is elusive, for two main reasons. The first is easier to explain: a photographic apparatus, construed in the strictest sense, mostly contains components that are not located within a single space. Rather, it is always a whole composed of many different components that can be spatially clustered, but seldom are. Even the simplest photographic apparatus is composed of a physical body, usually with a lens, a controller or processor, which need not be physically attached to the body, and some other necessary protocol. The latter includes the environment where the photographs can be produced. Previously this used to be called a darkroom; nowadays it is called screen. In that regard, Adobe's decision to name their powerful photo-editing tool LightRoom cannot be understood as anything but a reference to, or a joke at the expense of, the history of photography. Thus, the various components of a photographic apparatus are often spatially dispersed, as well as temporally distributed. Whatever programming comes into play, it is not generally directed by the photographer themself. Rather, it is outsourced and run elsewhere by programmers: some design the camera's architecture, others construct its hardware features, and still others write its software.

Figure 4. Tamás Waliczky, Camera for Abstract Film, 2017/2018

Tamás Waliczky is interested in the roles programmers occupy. His series *Imaginary Cameras* (2016-19) problematizes commonplace definitions of photography as set apart from other programs for generating referential visualizations, most notably 3D software and gaming engines. These are increasingly seen as photography's evil doppelgangers – devoid of its ontological privilege (physics and chemistry) but outplaying it on its own epistemological turf. While Deüelle Lüski and Närhinen's cameras are extremely unlikely, they are nonetheless existent and useable. Conversely, Waliczky's cameras are imaginary in the everyday sense of the word (chimeric, fanciful, and fantastic) but not entirely unlikely. In fact, their design foregrounds a strong bearing to the history of photography, and particularly to the by-now-unfamiliar photographic apparatuses: stereo(scopic) cameras, the zoetrope (and zoopraxiscope), and the orthographic camera, to name a few. (figure 04). Their meticulous fabrication is synthetic, however: their superficial pledge to the so-called analogue history of photography conceals their true genesis as digitally manufactured 3D models. These are peculiarly presented as analogue prints: photographs of never-photographed photographic cameras. As such, they arguably become photography's doppelgangers' doppelgangers.

Importantly, previous periods in the history of photography have coincided with shifts in human ways of seeing. This holds true for seeing in its myriad cultural contexts (*what* is accepted as seeing, *what* seeing is acceptable, etc.) as well as for natural ways of seeing (*how* seeing takes place and *where* sensing becomes seeing). To that end, Waliczky presents varying potential ways of seeing (and mapping vision) with imaginary photographic cameras which *might* have been invented had the history of photography (or its historiography) followed other technological trajectories. This is indeed a form of variantology, but it is much more, as such alternative trajectories are nowadays re-emerging. Waliczky (2022) argues that 'the worldviews of the inventors… predetermined the operation of new tools and the quality of the images they produced'. This is an overtly Flusserian statement that does not preclude the possibility that Waliczky's own worldviews also predetermine new operations within tools, devices or apparatuses (not all of which are imaginary). Consequent worldviews will, through their respective programs and apparatuses, similarly produce new forms of seeing, new image floods, and new imaginaries.

Contemplating on the writing of the seventeenth-century German poet Angelus Silesius, Flusser outlined two ways of seeing: one through time, the other to eternity (1999, 39-40). The former is embedded in long-familiar devices such as the microscope and telescope. The latter is reflected in the actions of far-sighted humans. Standing on a hill and staring beyond the horizon, the people of Mesopotamia foresaw draughts and floods and marked lines on clay tablets, indicating canals to be dug. Estimating the changing course of the Euphrates, these prophets found a way to irrigate their present and future fields. These were the first designers. Modern designers of the mid-nineteenth century also saw droughts and potential floods. They thus dug a canal so big that an entire new river started flowing in: photography. Designers like Deüelle Lüski, Närhinen and Waliczky are now attempting to divert this mighty river to new fields.

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Notes

[1] Quasi-photographic images require extensive computer treatment of data *prior* to their production *as images*. They afford the same cognitive accessibility as photographs but are also actionable and programmable. For explication of this term please see Toister 2016.

[2] For the sake of brevity, suffice to note that Flusser's definition of image can be understood in correspondence with Walter Benjamin's definition of image in his famous 'Work of Art' essay, 2008.

[3] Based on conversations and personal correspondence (2012-2019).

[4] If ever they do, other than in Josef Maria Eder's history, Eder 1978.

[5] 'You press the button, we do the rest' was Kodak's advertising slogan, coined by George Eastman in 1888.

[6] Like Flusser, I use the term information in its Shannonistic sense, Shannon 1948.

[7] Had this not been the case, Azoulay's attempt to find geopolitical intelligibilities in Deüelle Lüski's images, such that still stems from (or instead enforces) pictorial referentiality, would not have been possible. Azoulay 2013.

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