Stakeholders and Methodologies in Resource Provision

Despite all the systemic hurdles that could possibly arise, the existence of a designer already proves to be inherently challenging. Apart from an economy that usually doesn't "wait" on creatives anyway – often having to deal with long working hours and sometimes financial uncertainty, especially when freelancing – , a designer's security then proves to be furthermore dependent on the key players' decisions on how to provide the resources, deemed necessary for a smooth and high-yielding workflow.

For the sake of enabling a more optimal analysis, let us simplify these essential factors into three main components, namely: education, toolkits, and the distribution of assets.

Education

Once more specifically referring to the profession of a graphic designer, it is crucial to underscore that the term in question lacks any legal protection. The profession is not necessarily bound to a degree or formal training. Often individual businesses will specify measures to more optimally identify the type of graphic designers they are considering to engage with: Commencing with junior or entry-level designers, which typically necessitates pre-existing technical knowledge in visually realizing design work and generally involves none to two years of professional experience; progressing to the role of a mid-level designer, typically requiring professional expertise ranging from two to five years; and finally, the senior designer, with an experience usually exceeding five years, often being assigned more executive tasks.
(Dziobczenski; Person, 2017, p.45.)

In the context of permanent employment, pre-existing technical knowledge in many cases assumes a university degree, and, on lesser occasions, a finished apprenticeship.

However, especially regarding freelance work, everyone would technically be able to claim to be working as a graphic designer professionally, with the acquisition of clients usually based on already fulfilled work. Therefore, one could presume graphic design to be a comparatively accessible field, since autodidactic learning can serve as an alternative point of entry. In Fact, thanks to the ubiquity of the World Wide Web, access to learning materials and tutorials has made this approach much easier.

Nevertheless, numerically, a bachelor's degree represents the prevailing norm *(15)* and a strong case in favor of formal design education could still be made, chiefly due to the fact, that good design relies on much more than just technical competence, as one might argue. Optimal execution of design work, particularly in more intricate projects, hinges on elements continuously cultivated within the academic context, such as historical and cultural awareness, research skills, critical thinking, design strategy, and an overall heightened level of conceptual understanding.

These facets can collectively contribute to a designer's proficiency, since in times of technical change, template culture, and automation, betting on technical proficiency alone may perhaps only be a short-lived distinguishing feature. Therefore, art and design schools still hold immense power in this debate. Yet proper design and art education remain not universally available. With a substantial number of applicants and only a limited number of admissions, the application process can be quite demanding and exclusive. Admission is solely dependent on the preferences of a handful of art professors. Essentially the professional pathway of many is decided by only a few.

Toolkits

In the realm of professional gadgets, graphic design seems to face relatively stark constraints. In the areas of desktop publishing and typesetting, image editing, vector graphics, and even more advanced digital disciplines such as UX/UI design, Adobe Inc. currently stands at the ultimate forefront of software provision. Since the emergence of digital tools as an integral component of graphic designers' work processes, the California-based software giant – founded by computer scientists Charles Geschke and John Warnock in 1982 – has proven itself to be an unparalleled industry standard.

Later commonly referred to as PostScript *(16)*, Geschke and Warnock sparked the desktop publishing revolution by crafting a programming language that would enable precise digital descriptions of shape, image, and text formations, ultimately introducing the present digital design workflow. Though ironically not having found initial inventorship, the technique eventually caught the attention of Apple Computers in 1983, acquiring a 15 percent stake and concurrently introducing laser print engines, compatible with PostScript software usage on Macintosh computers in 1985. At this point the software interface allowing for a comprehensive digital layout was still separately powered by the Aldus Corporation, developing an application named Page Maker. During this period, each of the three camps appeared to have had clear role distributions and distinct individual agendas. This changed drastically with the onset of the 1990s, as Adobe rose to a total yearly revenue of $168.7 million in 1990 and having already been a stock-listed company for a few years now. In this historically and economically significant period, known as the company's "era of acquisition", Adobe began to involve itself in a considerable amount of mergers,

thereby laying the groundwork of an unrivaled media software empire. *(Pfiffner, 2003, p. 148–149; pp. 150–152.)*

Beginning with the Aldus Corporation, the initiated merger in 1994 signified a critical tipping point. Preceding this, Adobe and Aldus had been fiercely competing for quite some time, as both companies offered directly contending graphic editing software. Aldus began licensing a PostScript drawing program from Altsys Corporation named FreeHand in 1988, subsequently intensifying the rivalry with Adobe Illustrator. In 1991, while Adobe still saw itself in the midst of developing Photoshop for Mac, Aldus acquired PhotoStyler for Windows. Adobe consequently released Photoshop in 1993, now likewise compatible with Windows computers. In the same year, Aldus secured After Effects and its developer CoSA, positioning it as their entry into the video editing market, akin to Adobe's Premiere. Yet from a fiscal standpoint, Adobe severely outperformed Aldus. Within their respective design cases, products developed by Aldus often just came in second as the designers' software of choice and despite generating revenues amounting to $174 million in 1992 alone, Aldus only recorded a profit figure of around $6.8 million. *(Piffner, 2003, pp. 150–152.)* Ultimately, with no qualified successor in sight for the executive position and no significant improvement of their financial position, Aldus saw themselves compelled to merge with Adobe, finally enforced in 1994. From that point on forward Adobe would continue to dominate in their field and by 1997 saw 80% of the revenue *(17)* originating from application sales alone. The acquisition of Macromedia in 2005 eliminated one of the last key competitors, who at that time had purchased FreeHand, therefore having ownership over the last eligible alternative to Adobe Illustrator.

Adobe additionally introduced programs such as Shockwave and Flash, used for creating and distributing web animations, as well as entering the media player market with Adobe Media Player in 2008.

Boasting a revenue of $17.61 billion in 2022 *(18)* and recognized by industry analysts to be the leading force in over 40 analyst reports *(19)* across various categories, and, as it seems, Adobe exhibits no sign of noteworthy competition at eye level either presently, or in the near future.

Adobe has certainly enabled a historic wave of simplifying admittance into the craft of a graphic designer, a profession previously reliant on expensive tools and entire workshops, now having every necessary tool compactly digitized on a computer. Adobe's ability to technically conceptualize large complex design processes into intuitive and fast software represented a major attribution to multiple design disciplines.

Nonetheless, graphic design remains a costly undertaking. Primarily computers, particularly when prioritizing maximum performance, can be substantial investments for designers. Secondly, initially granted perpetual licenses for Adobe tools, where the application was granted after one-time purchases, were exchanged for a monthly rental system. This System, referred to as SaS ("software as a service") *(20)*, has often been critiqued for being unjustifiable, pointing to consistent and recurring monthly revenue for the company, while only providing minimal improvement to their offered software.

"Even given all of the above, the developer is in no way obliged to deliver more features – you are only paying to access the software. Of course, Adobe's success was predicated on one big assumption: the customer wanted to subscribe to the Creative Cloud. One major reason for this success was that Adobe held an effective monopoly, at least across the suite of products it produced. No other business had the breadth of industry–leading software including Photoshop, Illustrator, InDesign, Lightroom, and Premier Pro. There's also a push–pull effect operating here: a relatively low monthly cost for all the apps, coupled with the risk of losing access to the software you've used to create your outputs."
–Mike Smith; Petapixel

Possibly, an argument could be made suggesting that Adobe is aggressively pressing to establish what some may perceive as a monopoly. The web-based service Figma, originally having offered either limited free access or premium monthly subscription, was a widely appreciated platform for professionally creating vector graphics and UX/UI- prototypes for web and app-based products. The surge in remote work and virtual collaboration, triggered by the COVID-19 pandemic, led to an additional increased demand. In response, the company further broadened its services to cater to even more individual use cases within the design field . At the end of 2022, with a purchasing price of around $20 billion, Adobe made the bid on fully absorbing Figma, despite already providing vector drawing as well UX/UI-design capabilities with their

applications. However, the U.S. Department of Justice, having recently become more willing to regulate large-scale expansions of Tech Giants – such as filing a lawsuit against Microsoft after their acquisition of Activision Blizzard –, has put a temporary hold on this purchase temporary hold *(21)* by citing their antitrust law. Likewise, the European Commission announced its intention to launch a comprehensive investigation into the deal following initial concerns raised during a preliminary review *(22)*.

Distribution of Assets (1)

Since graphic design is a discipline of communicating through text and imagery, designing is evidently highly dependent on visual base resources (or Assets) available, in order to effectively convey the intended visual messages, through reusing, remixing, and recontextualizing. Hence, typefaces remain the key component in both digital and printed projects, but obtaining their licenses remains a tricky conundrum. Logically, licenses for higher quality typefaces, inlcuding optimized kerning capabilities, are mainly stemming from professional type designers or foundries and therefore tend to be (understandably) more cost-prohibitive. *(Boehm, 2020, p. 147.)* Simultaneously, large tech companies such as Google, Microsoft, Apple, and Adobe have independently started to distribute and integrate their curated selection of type materials into their products, though with a primary emphasis on digital system fonts. Yet this coexistence faced some initial challenges during the genesis of the desktop publishing era. From the mid-1980s to the 1990s a new digital power vacuum for asset distribution emerged and each of the tech companies felt compelled to claim it for themselves.

During the genesis of personal computing, computers were originally constrained to the confines of monospaced fonts. Only with the release of the first Macintosh in 1984, the type-aficionado Steve Jobs (having previously visited calligraphy classes at Reeds College) introduced a variety of expressive fonts to his new operating system. As Adobe introduced their PostScript Language in the same year – eventually leading to their cooperation with Apple's laser printers as well as Aldus' desktop publishing software – the newly found company incremented specifications allowing third parties to create compatible fonts. This specification, known as the Type 3 font format, utilized PostScript language elements, albeit lacking hinting mechanisms to assist in rendering characters more effectively. Adobe maintained exclusive control over a higher-quality proprietary PostScript font format, known as Type 1, through encryption and thus established them as the sole licensor of high-quality fonts. This meant that individuals, seeking to use high-quality typefaces digitally, had to acquire licenses directly from Adobe *(23)*. Moreover, type designers and foundries that had not established partnership agreements with Adobe found themselves compelled to configure their typefaces for PostScript usage in the inferior Type 3 format.

Adobe generated substantial revenue by creating a vast collection of complete and highly sought-after typefaces, either licensed from original foundries or designed by renowned type designers. In this approach, Adobe remained unopened to compromise with its key partners, even regarding Adobe's special relationship with Apple. Therefore wanting to minimize their reliance on Adobe, originally sworn Tech enemies Apple and Microsoft initiated a corporation on finding PostScripts and overall font technology alternatives, eventually leading to the creation of the type file format

known as True Type *(24)*. In their collaborative agreement, Apple agreed to permit Microsoft's use of TrueType, and, in return, Microsoft would provide Apple with a PostScript-compatible interpreter. Adobe's Warnock openly detested this partnership, and several arguments ensued leading to the sale of all of Apple's existing Adobe shares. After some to-and-fro, both Microsoft and Adobe, being weary of the ongoing conflict and realizing the advantages of potential cooperation, settled on a collective initiative that would become Open Type *(25)*. OpenType Formats functioned as a wrapper, enabling the integration of both font types and ensuring cross-platform compatibility.

(2)

Besides the typographical component, Stock image libraries serve as invaluable visual resources for designers, offering a vast array of imagery that may be impractical to additionally produce in-house. These databases include industry giants like Shutterstock, Getty Images, and once again, Adobe, boasting their expansive Adobe Stock collection with over 345 million assets *(26)*, including millions of photos, graphics, and illustrations, but also video and audio files. Not only are these libraries capable of providing designers with quick and easy solutions to purchasing and commercially using assets of every kind, but they can also enable other creatives lucrative opportunities to share some of their work with a broader audience, potentially serving as a supplementary source of income. Given that stock image libraries work as major providers of resources, they wield significant influence (whether intentional or not) in shaping visual rhetoric and consensus, especially in more corporate contexts. This frequently leads to the overutilization of generic content and

styles by creating diluted and in-authentic corporate aesthetics *(27)* that often result in a lack of originality in designs, being largely attributed to their commercial constraints. Crucially, stock image libraries have faced criticism about the lack of diversity *(Chichester, 2021, p. 7.)* or even for their perpetuation of stereotypes perpetuation of stereotypes *(28)*. Furthermore, with the exception of Public Domain Archives and some additional royalty-free Image Platforms (to be discussed in greater detail in the following chapters), price barriers often restrict smaller designers from participating in this market. Licensing costs can be high and their terms are often complex to some, especially regarding commercial use.

(3)

A newly emerging aspect that falls somewhat between these three analyzed categories is artificial intelligence. With the potential of serving as an advisory and educational assistant, its ability to explain and aid in complex conceptual procedures, as well as serving in the form of tools consequently capable of creating assets; artificial intelligence models are beginning to wield an overall considerable power *(29)*in the industry. Models for AI image generation and alteration have started to become integrated parts within the realms of graphic visualizations. In fact, the aforementioned image stock databases are already beginning to experience economic challenges as a result of their emergence, mainly due to the fact that these models often create similar results much faster, cheaper, and particularly more specifically adhering to the demands set up by their users. Most notable tools in image generation include Midjourney *(30)*, Open AI's Dall-e-2 *(31)* and Stability AI's Stable Diffusion *(32)*, although with the first two only being available through monthly payment

contracts and especially with no insight into their own source code. But some of the stock agencies have adjusted their course accordingly:

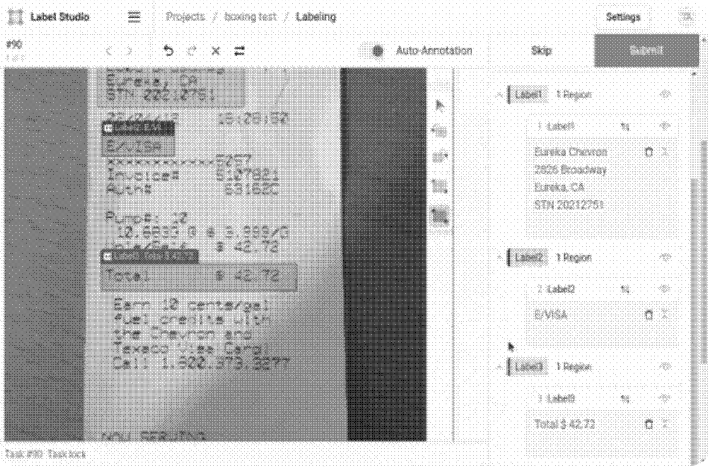
Shutterstock's *(33)* and Getty Images' *(34)* new AI features allow for the editing but also complete AI generation of images. Nonetheless, Getty Images' legal team has initiated a lawsuit against Stability AI *(35)*, the company commercially implementing Stable Diffusion as an image generator, for copyright infringement, alleging the misuse of photos from Getty's database to train their AI. Recently Adobe has implemented artificial intelligence into their workflow as well, with integrated AI features now being built in Illustrator and Photoshop, accelerating and increasing quality of creative outcomes to a substantial degree. Moreover, Adobe Firefly *(36)* functions as a standalone image generator, providing both premium plans for optimized services but also a free-of-charge image generator for the general public.

(4)

Besides AI Tools now gaining relevance as means to generate entire visual, auditory, and even audiovisual Assets, efforts have been made to even solve conceptual design decisions as a whole. As an example, LayoutLMv3 *(37)* , serving as a multimodal transformer, is the outcome of collaborative research efforts between Sun Yat-sen University in China and Microsoft Research Asia, specifically focusing on advancing Document AI tools. Document AI refers to the application of artificial intelligence technologies to the analysis, understanding, and processing of documents. Through unified text and image masking in its pre-training phase, the model gains a holistic understanding of both textual and visual elements. What distinguishes LayoutLMv3 from its counterparts is its

uniform pre-training strategy, applying a "word-patch alignment" objective. This specific technique allows the model to understand how words and patches in images correspond to each other. The versatility of LayoutLMv3 extends to a wide range of Document AI tasks, thanks to its unified architecture and training objectives. Notably, the model excels in text-centric tasks such as form and receipt understanding, along with document visual question answering. Simultaneously, it demonstrates state-of-the-art performance in image-centric tasks like document image classification and layout analysis. In essence, LayoutLMv3 showcases a comprehensive skill set, making it adept at handling diverse challenges in document processing and analysis.
(Huang; Lv; Cui; Lu; Wei, 2022, pp. 1–8.)

Firstly, this should not be a main cause for concern. Considering AI layout tools will likely be able to automate and smoothen certain aspects of the graphic designer's work – similarly with image-generation models –, critics *(38)* believe it to be more than plausible that these tools act as a complementing and enhancing figure rather than perhaps fully replacing the profession. However the impact could depend on how designers embrace and integrate these tools into their creative processes. It is crucial that these tools prioritize inclusive accessibility and transparency. Failure to do so – especially in cases where significantly superior services are restricted to only those who can afford it, but also where information and technical knowledge are disclosed selectively – could result in an even more severe technological and social divide. *(Avis, 2020, pp. 45–72.)*



(WaterKnight: LayoutLMV3 for Token Classification)

Document Layout Analysis performed with LayoutLMv3