Platform Vernaculars: How AI Image Generators Create New Forms of Visual Bias

Jinu K Varghese
Manipal Academy of Higher Education
jinukvarghese7@gmail.com

Abstract

This study investigates how AI image generation platforms develop distinct platform vernaculars systematic visual languages with recognizable aesthetic signatures that create new forms of cultural bias. Through mixed-methods analysis combining content analysis of 306 AI-generated images, interviews with 16 visual professionals, and survey validation from 430 respondents, we document three key phenomena. First, platform choice accounts for 54% of variance in visual outcomes ($\eta^2 = 0.542$, $p < 0.001$), with professionals achieving distinct recognition accuracy: Flux (82%), Midjourney (78%), Stable Diffusion (71%). Second, rather than displacement, 71.9% of professionals report AI enhances creative capabilities through strategic integration models. Third, systematic cultural bias manifests through 73% Western demographic defaults in neutral prompts, though professionals develop sophisticated mitigation strategies achieving 82% bias reduction effectiveness. These findings establish platform vernaculars as algorithmic aesthetic hierarchies that require new forms of visual literacy, challenging assumptions about AI homogenization while revealing persistent representational inequities demanding professional resistance strategies.

Introduction

Building on Gibbs et al.'s (2015) concept of platform vernaculars as "conventions and grammars of communication that emerge from platform affordances," this study extends the framework to AI image generation. Platform vernaculars in AI imagery constitute systematic visual languages with recognizable aesthetic signatures, each encoding particular assumptions about image creation, visual culture, and creative agency.

Unlike social media vernaculars emerging through user interaction, AI platform vernaculars materialize through algorithmic processes that inscribe aesthetic tendencies and cultural assumptions directly into visual outputs (Latour, 2005). These vernaculars function as recognizable visual dialects that professionals learn to navigate strategically, creating differentiated communities of practice around Midjourney, Stable Diffusion, and Flux.

This investigation addresses three questions:

1. Do AI platforms develop systematic visual patterns constituting recognizable aesthetic signatures?
2. How do visual professionals integrate AI tools while maintaining creative agency?
3. What cultural biases manifest in AI-generated imagery, and how do professionals respond?

Operating within a Socio-Semiotic Network Model integrating Technological Mediation Theory (Lievrouw, 2014), Visual Social Semiotics (Kress & van Leeuwen, 2021), and Actor-Network Theory (Latour, 2005), this study examines how AI technologies reshape visual communication across technological, practice, and social dimensions.

Methodology

This mixed-methods study employed three phases (Creswell and Plano Clark 2018);

Content Analysis: 306 images (102 per platform) generated using Midjourney v6.0, Stable Diffusion XL 1.0, and Flux Pro (Rombach et al. 2022) with culturally neutral prompts ("A group of children playing in a field, laughing and chasing butterflies"). Cultural neutrality is defined as prompts without geographic, ethnic, or cultural specifications. Platform differences analyzed using ANOVA.

Interviews: 16 visual communication professionals (graphic design, photography, illustration, web design) with minimum five years' experience and active AI usage (≥6 months).

Survey: 430 visual professionals: Validated questionnaire measured platform usage, bias recognition, and creative impact using 3-point Likert scales

Analysis: Descriptive statistics, reflexive thematic analysis (Braun & Clarke, 2022), triangulation across phases.

Findings

Platform Vernaculars: Empirical Evidence and Professional Recognition

Statistical analysis confirms platform vernaculars as measurable phenomena, with platform choice accounting for 54% of variance in visual outcomes ($\eta^2 = 0.542$, $p < 0.001$). ANOVA analysis demonstrates significant differences across all evaluation metrics ($p < 0.05$), establishing distinctive aesthetic signatures rather than superficial variations. Professional recognition testing validates vernacular emergence through platform identification accuracy: Flux (82%), Midjourney (78%), and Stable Diffusion (71%).

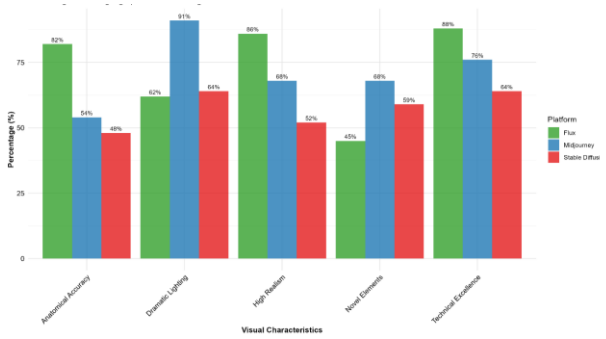

Figure 1: Platform-Specific Visual Characteristics.

Content analysis reveals distinct platform characteristics: Midjourney exhibits cinematic aesthetics with dramatic lighting (91% of output) and enhanced colour saturation (4.5/5), creating a painterly vernacular optimized for emotional impact. Flux demonstrates photorealistic precision with superior anatomical accuracy (82% high ratings) and technical execution (4.5/5), establishing a commercial photography vernacular. Stable Diffusion shows greatest stylistic flexibility ($\sigma = 1.7$ variability) reflecting its open-source architecture, enabling community-driven aesthetic development though with aesthetic quality reduction.

Professional Adaptation: Strategic Integration over Displacement

Survey analysis contradicts displacement narratives, revealing 71.9% of professionals report that AI enhances creative capabilities through strategic integration across three models: AI as Ideation Tool (60.7% adoption), AI as Technical Assistant (57.4% adoption), and AI as Collaborative Partner (61.2% adoption). These emergent strategies align with established guidelines for effective human-AI interaction, which emphasize iterative refinement and user control (Amershi et al. 2019). New skill development requirements (76.5%) correlate positively with creative enhancement, indicating professional evolution toward higher-value activities combining traditional expertise with algorithmic literacy.

Platform-specific specialization creates differentiated communities of practice, with 61% expressing aesthetic preferences aligning with pre-existing visual styles, suggesting platform selection represents cultural affiliation rather than purely technical choice.

Cultural Bias and Professional Resistance

Content analysis documents systematic Western-centric bias, with 73% demographic defaults when processing culturally neutral prompts. Professional awareness demonstrates consensus recognition: beauty standards bias (82.3%), racial/ethnic bias (79.5%), cultural bias (76.2%), gender bias (72.8%), and age bias (68.1%).

Despite pervasive bias, professionals develop sophisticated mitigation strategies achieving platform-specific effectiveness: Flux (82% bias reduction), Midjourney (68% improvement), Stable Diffusion (59% enhancement). Strategic approaches include explicit cultural descriptors (73% usage), cultural prompt library development (31% participation), and hybrid workflows (67% implementation), demonstrating active resistance rather than passive acceptance of algorithmic limitations.

Contributions and Significance

This research makes theoretical and practical contributions. First, it introduces platform vernaculars as a novel framework for understanding how AI systems create distinctive visual languages that function as algorithmic aesthetic hierarchies, challenging AI homogenization assumptions. Empirical validation establishes vernaculars as measurable phenomena rather than subjective impressions.

Second, documentation of strategic professional adaptation contradicts displacement narratives, revealing sophisticated integration strategies that preserve human creative agency while leveraging algorithmic capabilities. This evidence informs professional development and educational policy for AI-integrated creative practice.

Third, systematic bias analysis combined with effective mitigation strategies provides crucial evidence for platform accountability frameworks and ethical AI development. Professional resistance strategies demonstrate how practitioners negotiate technological limitations while maintaining cultural competency.

These findings advance understanding of human-AI collaboration in creative industries while revealing complex negotiations required to preserve cultural diversity within algorithmically mediated visual communication, offering new perspectives on technological influence in visual culture.

Ethics Statement

This research received institutional ethical clearance from the Institutional Ethics Committee (IEC1:18/2024) at Manipal Academy of Higher Education. All participants provided informed consent prior to participation. Interview participants and survey respondents were assured of confidentiality and anonymity. Data collection and analysis procedures adhered to established ethical guidelines for human subjects research, with particular attention to protecting participant privacy and ensuring voluntary participation.

Acknowledgments

I acknowledge the 16 interview participants and 430 survey respondents who contributed their time and expertise to this research. Their insights were invaluable in understanding the complex relationships between AI technologies and professional visual communication practices.

References

Amershi, S.; Weld, D.; Vorvoreanu, M.; Fourney, A.; Nushi, B.; Collisson, P.; Suh, J.; Iqbal, S.; Bennett, P. N.; Inkpen, K.; Teevan, J.; Kikin-Gil, R.; and Horvitz, E. 2019. Guidelines for human-AI interaction. In *Proceedings of the 2019 CHI Conference on Human Factors in Computing Systems*, 1-13. New York: Association for Computing Machinery.

Braun, V., and Clarke, V. 2022. *Thematic analysis: A practical guide*. London: SAGE Publications.

Creswell, J. W., and Plano Clark, V. L. 2018. *Designing and conducting mixed methods research* (3rd ed.). Thousand Oaks, CA: SAGE Publications.

Gibbs, M.; Meese, J.; Arnold, M.; Nansen, B.; and Carter, M. 2015. #Funeral and Instagram: Death, social media, and platform vernacular. *Information, Communication & Society* 18(3): 255-268.

Kress, G., and van Leeuwen, T. 2021. *Reading images: The grammar of visual design* (3rd ed.). London: Routledge.

Latour, B. 2005. *Reassembling the social: An introduction to actor-network-theory*. Oxford: Oxford University Press.

Lievrouw, L. A. 2014. Materiality and media in communication and technology studies: An unfinished project. In *Media technologies: Essays on communication, materiality, and society*, edited by Gillespie, T.; Boczkowski, P. J.; and Foot, K. A., 21-51. Cambridge, MA: MIT Press.

Rombach, R.; Blattmann, A.; Lorenz, D.; Esser, P.; and Ommer, B. 2022. High-resolution image synthesis with latent diffusion models. In *Proceedings of the IEEE/CVF Conference on Computer Vision and Pattern Recognition*, 10684-10695. Piscataway, NJ: IEEE.