BETWEEN GRAPHICAL 'EXCELLENCE', LITERACY, AND POLYSEMY: A BI-NATIONAL STUDY OF DIGITAL POLITICAL VISUALIZATION RECEPTION

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Visualization, the visual encoding of information, is a communicative technology which suggests practitioner heuristics, usage affordances, and literacy standards in interpretation. As such, visualizations' design practices are deeply rooted in a cognitively-oriented model of information transfer, wherein "graphical excellence" (Tufte, 2001) should result in a 'correct' reading aligned with the intended meaning (Kamat et al., 2014). In turn, audiences are expected to acquire "graphical literacy," the skills and knowledge required in order to 'correctly' decode a well-made visualization and arrive at its intended meaning (Roberts & Brugar, 2017). Evidently, from this perspective, visualization offers limited interpretive flexibility (Cocking & van den Hoven, 2018), wherein meaning assignment is primarily dictated by practices of visualization creation, rather than audiences' considerations.

However, in the past decade, the use of visualizations in digitally-networked communication has risen dramatically, primarily in social media and data-journalism. Digital political visualizations constitute a ubiquitous and engaging rhetorical genre (Amit-Danhi & Shifman, 2018), within which "graphical excellence" best-practices may conflict with politicians' use of "strategic ambiguity" (Eisenberg, 1984) to increase appeal. Put differently, a digital political visualization's 'correct' reading may not be a reading that visualization practitioners would consider literacy-driven or stemming from excellence in design (Roberts & Brugar, 2017). Thus, digital political visualizations'

effectiveness is a fickle, culturally-constructed concept, as a semantically-fixed graph is arguably an unattainable ideal (Kennedy et al., 2018; van Eijck et al., 2011). Studying digital political visualizations as mere communicative vessels neglects audience-side considerations and ambivalent decoding processes that resist determination (Hall, 1980).

In this paper we amalgamate perspectives to view visualization as a communicative technology, a rhetorical genre, and a persuasion-tool by tackling a scholarly gap around audiences' reception and decoding of digital political visualizations. To do so, we explore the relationship between graphical excellence, audience's graphical literacy performances, and the ensuing polysemy in personal and group readings of digital political visualizations. We ask: *How do audiences decode political messages embedded in visualizations shared online?*

Method

To unfold audiences' dynamics of digital political visualization reception, we convened 8 focus group sessions of 8-10 participants each (67 in total) in Germany and Israel. Participants were recruited in two age groups (20-35; 40-55) and varied in educational, political, and socio-economic backgrounds. We designed a protocol that combines individual reflections and group discussions, in which participants first utilized an individual decoding-sheet to record their reading, followed by a group discussion. This protocol was implemented in two contexts (see Appendix), a health crisis (COVID-19), and a locally polarizing topic (migration or judicial reform). We introduced three stimuli: (1)COVID-19 "flatten the curve" visualization; (2)Informationally- and graphically-complex visualization; and (3)Ostensibly persuasive, low-information visualization. For these stimuli, the participants first recorded their individual reading and opinion of the visualization, followed by a group discussion on its merits and faults. A final stimulus was discussed in a group decoding session around a side-by-side comparison of two conflicting visualizations, based on the same data and visualization mode (polarizing topic) or a graphically-excellent visualization posted to a polarizing politicians' social media page (COVID-19).

The sessions were transcribed and were analyzed alongside the individual response sheets using inductive thematic qualitative analysis: in-group statements were contrasted with participants' individual readings, followed by thematic analysis of group discussions to define recurring themes around discrepancies and points-of-tension in decoding the different stimuli. The bi-national aspect of our study strives to draw on similarities, rather than differences, in the two national contexts to assure wide applicability of its findings.

Preliminary Findings

Following thematic coding of group discourse and individual decoding-sheets, we note that all visualizations – regardless of graphical excellence, topic or level of persuasiveness – resulted in highly polysemic readings. Readings were also decidedly influenced by group dynamics: participants often reformulated and shifted their individual interpretations during group discussions in which domain-literacy

performances were used to assert dominance and indicate identity-alignment. When a dominant participant cemented a misguided or partial reading of a visualization, it took several discussion turns until an alternative reading would emerge, suggesting that group dynamics offer interpretive benchmarks according to which participants chose their alignment in expressing their interpretation.

Overall, participants found the task of verbalizing or transcribing their readings of visualizations to be a challenging endeavor, with certain participants foregoing it altogether. They attributed this difficulty to pre-existing graphical avoidance tendencies or expressed varying degrees of willingness to commit to a singular reading. We thus suggest that the inevitability of polysemic meanings in political visualizations requires audiences to develop a different set of graphical literacy skills. In Fig. 1 we demonstrate the interpretive range that emanated from differences in graphical literacy in individual readings, and the subsequent group discussions. We find that participants approach visualizations with differing positionings towards the rhetorical genre and the communicative technology: they may refuse to engage altogether (graphical avoidance) or choose to evaluate their rhetorical and analytical components by both recognizing the intended meaning, and choosing to add onto or modify it.
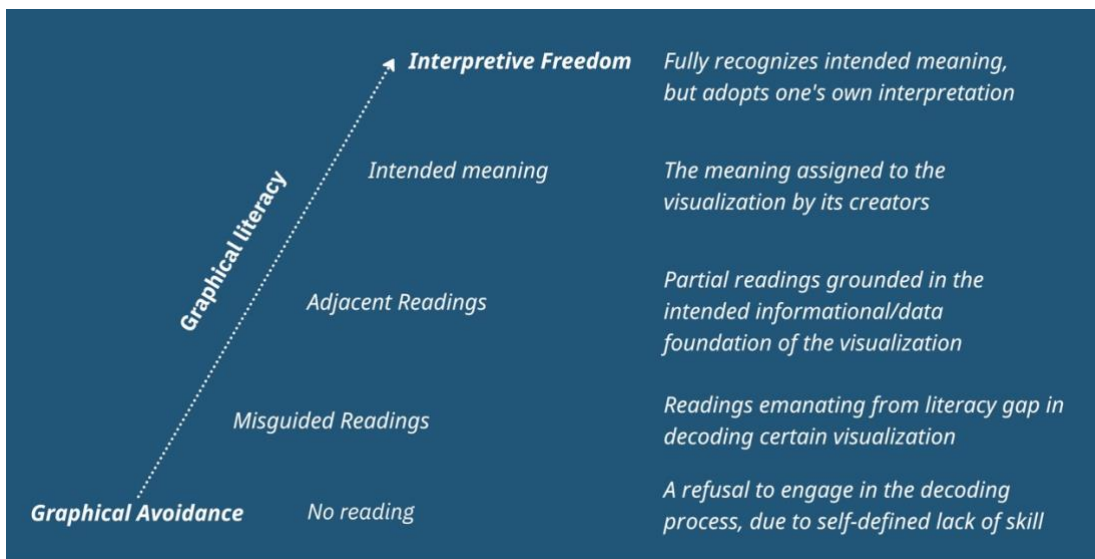

Fig. 1: The spectrum of graphical polysemy in digital political visualizations

Across our focus groups, participants thought of graphical literacy as *the ability to read beyond the intended meaning* and to discern underlying political strategies among the inevitable polysemy of political visualizations. They stated: "*If there are caveats, tell me what the caveats are […] make the data points accessible, allow me to create the knowledge and reach my decisions*" (Judicial Reform 20-35), asking to be given a choice in converting data into information and knowledge, rather than be fed 'bottom lines.' In both national contexts, participants asked to be provided with both data/information, *and* "*the possibility of interpreting it*" (Immigration 40-55), expressing appreciation to excellence in design, but also pushed against design choices that limited their agency in interpretation. Specifically, when discussing the idea of a 'good graph'

for political deliberation on social media, our participants pushed against the content-driven focus of graphical excellence, by claiming that any political graph "*takes a point of view, and makes it into fact*" by the mere act of visualizing (COVID-19 20-35). Thus, our participants suggested that a literate reader should decode the intended meaning, but *exercise interpretive freedom and flexibility in deciding what it actually means*, as part of the due-diligence of a political content consumption online.

We therefore suggest that graphical literacy is not merely a set of skills and intellectual abilities, but is imbricated with worldviews, normative assumptions and is affected by group dynamics. It is from this amalgam that audiences come to engage with digital political visualizations as their 'reading' is equally an expression of political identity, group alignment, and prowess, as it is of their intellect. It is thus imperative to view political visualizations' role in the digital informational landscape with both strategic ambiguity and audience's individual and collective interpretive freedom in mind, by making 'graphical excellence' a dual pursuit, in which both audiences and visualizers take on responsibility in the creation and interpretation of digital political visualizations towards a benign and normatively beneficial digital deliberative space.

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	COVID-19		Locally Polarizing	
Flatten the Curve				
Informationally Graphically Complex				
Persuasive, low-information visualization				
Group Decoding				