Collaborative Argument Across the Visual/Verbal Interface

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New Visions of Collaborative Writing
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Outside the classroom, who practices collaborative writing and why, and what are the implications of these practices for the classroom? What are the multiple meanings of collaborative writing? And since some of these meanings are mutually exclusive, how does our sense of definition influence scholarship, research, and teaching?

New Visions of Collaborative Writing provides responses to these questions in a collection of provocative essays by leading scholars on collaborative writing in composition and in business and technical communication. The essays shed light on collaborative writing in several ways:

• through reassessment of earlier definitions of and assumptions about collaboration
• through explorations of the politics and ethics of collaboration
• through studies of new collaboration sites and practices
• through use of new conceptual frameworks to study the subject.

The concluding section includes exchanges of letters between the authors that emphasize the similarities and differences in their thinking and suggest directions for further study. New Visions is a valuable text for courses and for in-service workshops that emphasize collaborative writing, and an invaluable guide to both the strengths and possible weaknesses of collaboration in composition and business and technical writing classrooms.

Announcements
ATTW at CCCC
San Diego, California

Don’t miss the ATTW meeting at 4 C’s in San Diego on Friday, April 2nd. After our meeting, which will run from 6:30 to 7:45 p.m., join us for a reception to meet and socialize with fellow ATTW members. Check your convention program booklet when you arrive for location.

Collaborative Argument Across the Visual-Verbal Interface

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The essay begins with an intellectual framework for describing a visual-verbal interface. Applying the implications of the framework to collaborative work, the authors illustrate ways in which they used this framework to observe and teach collaborative teams of graphic designers.

A significant literature describing collaborations between writers (Ede and Lunsford; Gageher, Kraut, and Egido; Gillette) and software designers (Holland, Reeves, and Larame) attests to the ways that individuals need to elaborate their words face to face and on the page in order to make their ideas visible and persuasive to themselves as well as to their collaborators. Trade-offs exist between consensus-seeking among co-workers and the efficiency of decision-making. Rebecca Burnet (“Planning”; “Context”) found, for example, that conflict (i.e., especially delays that arise from exploring criteria in the effort to seek consensus) can actually improve the quality of collaborative writing projects, as measured by the number of ideas explored, the ratings of independent judges, the satisfaction of the participants, and so on. On the other hand, in workplace settings, co-authors often seem to rely on organizational hierarchies or strict divisions of labor to avoid such constructive conflict. In a study of 22
intact writing groups, Liana Posner and Ronald Baecker found that only 4 (18%) relied on a democratic system of meaning-making in which authors shared control of the same text at the same time. The remaining groups left meaning in the hands of a single dominant author, imposed a division of labor giving different authors dominance over different sections of text, or allowed different authors dominance at different times.

Trade-offs between sharing meaning and efficiency would seem to intensify when the collaboration crosses the verbal-visual interface, for now consensus-seeking participants have to negotiate different modalities of information. At the moment, this is only a conjecture, as little if any work has specifically focused on groups juggling significant proportions of verbal and visual information as they work. The focus of this essay is to report some preliminary research on collaboration that routinely crosses the visual-verbal interface. We begin with a brief review of the previous literature on visual rhetoric within technical communication. We then turn to an intellectual framework (rooted in Arnhem) for understanding visual-verbal confluences and extend its implications to collaborative work. Last, we report our ongoing research that investigates these implications within collaborative teams.

Previous Work on Visual Rhetoric

Since the 19th century, there has been a wealth of basic cognitive research in the visual system (summarized in Specht and Lehmkühle). Still, the prospects of applying what is known about the visual system to the design of documents had not been systematically considered until Ben Barton and Mathaule Barton called for technical communicators to explore visual rhetoric. Since that time, a great deal of work has been invested in identifying, classifying, and establishing, either analytically or empirically, the importance of the visual aspects of documents (e.g., Benson; Kostelnick; Schriver; Benson and Burnett, "Shaping"; Benson and Burnett, "Pages"; Williams; Williams and Spyridakis). This corpus of work, by and large, has focused on the decision-space of a single writer searching among design options crossing visual and verbal choices.

Less attention has been paid to group decision-making across the visual-verbal interface. In addition, previous work has focused on individuals (i.e., writers) who find verbal modalities more familiar than visual ones. It has been pointed out that, in the age of the computer, writers need to make choices that previously only graphic designers had made (Barton and Barton). The same point applies in the reverse direction, however. In the age of the computer, where text and graphics capabilities are tightly coupled, graphic designers need to make choices that were previously left to writers. Sam Dragga and

Owendyong Gong report a long-standing prejudice among writers that graphics are no more than visual aids to words (47-49). Our work with graphic designers also suggests a reverse prejudice, one that limits the primary import of textual information to its spatial placement in a visual display.

An Intellectual Framework for Visual-Verbal Interdependencies

Given the potential for prejudice on both sides of the visual-verbal interface, it is useful to start with an intellectual framework that specifies the fluid interdependencies between visual and verbal production. We have taken that framework largely from Rudolph Arnheim. According to Arnheim, the visual and verbal are mutually dependent modalities, though with distinct qualities. The success of verbal communication typically depends on the participants of the communication succeeding in a parallel form of visual/magicistic communication. For example, when A refers to the "blue awning on the corner grocery store," B can pick up the reference because the words assist in locating the (mental) image. As Arnheim writes: "What makes language so valuable for thinking, then . . . is the help that words lend to thinking while it operates in a more appropriate medium, such as visual imagery" (231-32). Words and images differ, according to Arnheim, in their capacities for generalization and exemplification. Words are useful for generalizing from visual experience (e.g., all cows are black) as well as abstracting from it (e.g., I think there's too much red in that brochure). Images are most useful for exemplifying, in Euclidean space, pre-existing generalizations or abstractions. Suppose, as Arnheim suggests (238), we start with the concept of my cat, Yoshi. Through precise technical sketching, we can exemplify this concept. But not before we draw something that exemplifies many other super-ordinate concepts—an animal, a mammal, a feline, a domestic cat and, finally, Yoshi.

One of Arnheim's most important insights is the role that verbal categories can play in stabilizing components of a visual/magicistic field. He observes that "language assists the mind in stabilizing and preserving . . . the perceptual concepts that emerge from direct experience" (236). The stabilizing aspects of linguistic categorization prove valuable in helping locate and correct failures in visual portrayals of information. Suppose a designer is trying to draw Yoshi. This designer has succeeded in picturing a generic domestic cat but misses Yoshi in many important features. Yoshi has a white spot on her forehead, and the picture misses that. Yoshi's whiskers curl up at an angle of 37 degrees and the picture has them curling up at 45 degrees. Without language to stabilize through categorization (to freeze as it were) these elements of the image, we could not point out to the
designer the inadequacies that need further attention. A corollary of this insight is that the continuous, dynamic, stream of information available in a visual/imagistic field provides an empirical benchmark for the writer wishing to "capture" visual reality in words alone. Imagine a fiction writer trying to describe a character in a room in the manner of a video camera. To achieve as much authenticity as possible in the (static and discrete) verbal description, the writer will likely need to correct his or her sentences in response to the dynamic and continuous visual experience of panning a room.

Despite Arnheim's recognition of the interdependencies of the visual and the verbal, we should not miss the fact that the myth of their alleged autonomy can nonetheless be useful for the training of both writers and graphic designers. Writers are often judged on their skill to evoke images through their words alone, without conscious reliance on meta-text or visuals. Graphic designers are often judged on their skills to exemplify and thus evoke concepts through the use of images, without overly conscious reliance on text. In an important sense, "talent" in both fields is assessed, in part, by writers' or designers' ability to offer artifacts that convey their conceptual meaning within the maximum expressive capacity of the modality in which they have the most formal training.

Of course, these judgments of autonomy, left unqualified, are a mirage because, as we have seen before, no verbal and visual production can remain within the strict confines of only one or another modality. These judgments of verbal or visual "talent" (and the myth of modal autonomy underlying them) nonetheless persist as constructive norms if only because they urge either the writer or the designer to explore as fully as possible within one's dominant modality. We hold in lower regard the writer who uses a visual as a substitute for what would have been better text to us; as well as the designer who is satisfied with drawing a generic cat labeled "Siamese" instead of drawing a Siamese cat. Inasmuch as the myth of modal autonomy inspires writers to take words as far as words can take them, it also inspires designers to take spatial communication as far as spatial communication can be taken—at that point, the myth of modal autonomy is useful and is likely, for normative reasons, to persist.

At the same time, the myth of autonomy becomes dysfunctional when it is confused with the false idea that the other modality is not, all the time, implicitly or explicitly required—both for completing the work and for critiquing it in process. In the world of professional work, one can have little hope for a writer who refuses to rely on visuals in the text or who refuses to look to visual experience to critique the text produced so far or for a designer who avoids text as part of the overall design or who avoids verbal feedback to critic or justify the work in process.

The Arnheim Framework Applied to Cross-Modal Argument and Collaboration

The problems wrought by the myth of modal autonomy are exacerbated in group work involving writers or designers who must cross the visual-verbal interface as a routine part of their group process. The exacerbation of these problems arises in groups because, insofar as they aspire to seek consensus, group members must rely on public cross-modal argumentation in order to account for and complete their work. To set up a contrast between public and private argument, consider that a lone writer can tune the verbal text through a private invocation of internal images. A lone designer can debug visual text through a private invocation of linguistic categories. In a consensus-seeking work group, however, private accountings in the other modality are insufficient. Criteria for decision-making must be part of a public, interpersonal accounting system. Writers working in groups must have a way of publicly discussing the more general linguistic categories and images to which their words are accountable. Designers working in groups must have a shared system of linguistic categories and visual experiences with which to discuss and validate the adequacy of their designs.

Another way of saying that accountings in groups must be "public" and "interpersonal" is to say that they must be rooted in agreements. Let us use the word "material" to indicate any artifact in a writer's or designer's environment that can be drawn upon for the work. Materials for a writer or designer include tools like pens, paper, word processors, cutting tools, sharp edges, and so on. But they also include more conceptual entities like the writer's or designer's background and knowledge about plans for proceeding and knowledge about formal elements such as color and typography. Let us use the word "resources" to indicate any materials in the environment that have been mobilized for use. More simply put, materials are potential resources and resources are materials that have been actualized in the work. In individual work, writers and designers easily and effortlessly transform materials into resources. They merely have to agree within themselves that certain materials can be mobilized in certain ways.

But in democratic teams, the transformation of materials into resources is typically a very costly process. It is easy for members of a design or writing team to agree on their materials—their utensils for sketching, cutting, and mounting as well as their layout and formatting software. It is much harder for them to agree on what their resources are and how these materials should be organized for the actual work. And in the demanding process of transforming materials into resources, team members often experience, in a much more personally intrusive way, the difficulties of the visual-verbal interface manifested by having to give public accounts that cross modalities of description. As a lone writer, one doesn't have to make a public visual
argument in order to justify why a certain person under discussion is more accurately described as "leisurely" than "lair", as a lone designer, one doesn't have to justify one's favorite font in words. But in the context of collaboration, such public cross-modal arguments are commonplace and absolutely essential if consensus-seeking collaboration is to succeed.

We have so far suggested how crossing the visual-verbal interface is a necessary, though often tacit, aspect of all writing and designing. But now we are further suggesting that the challenges of crossing the visual-verbal interface become particularly intrusive in collaborative work that literally mixes verbal and visual elements. In these contexts, resources for group action must be earned through public and cross-modal argument and accounting.

Exploring the Framework with Teams of Graphic Designers

The framework with which we have been working suggests that collaboration among writers or designers requires public accounting in order to earn resources for joint action and that this accounting is made all the more difficult when it crosses verbal-visual modalities. Further, exploring this framework requires close empirical observation of collaborative teams that frequently juggle verbal and visual elements in their design deliberations and actions. We thought it would be a good idea both to observe groups from the perspective of this framework (the roles taken by co-authors Fleming, Sinatraeker, Weeks, Werner) and to try to teach collaborative language and argument practices to these groups (co-author Kaurer). One reason for mixing teaching and observation was to monitor whether the instruction was tangibly changing the review practices of the groups.

In the spring of 1992, we observed students enrolled in the "senior design studio," the capstone course for graphic and industrial design majors. Students in the course were assigned to one of three groups. Each group worked on a semester-long project for a real-world client. One group, consisting of seven graphic designers, worked on a document standards system for a local community center. A second group, also containing seven graphic designers, worked on a signage system for the Amtrak railroad company. A third group consisted of 14 students working on a family of product and interface designs for Apple Computer, Inc. This group consisted of a chemistry major and an industrial management major, five industrial (3-D) designers, a professional writing major, and six graphic designers. Each group was supervised by one faculty member in graphic design, except for the Apple group, which worked with three faculty members in graphic design and one in industrial design. All the groups remained intact for 14 weeks. Each group met, as a whole group, at least once a week.

Individual members often met informally many more times per week. The first author circulated across all the groups, offering formal and informal instruction in language and argument practices in groups. Each of the final 3 authors functioned as "observers" of the groups throughout the 14 weeks. With the permission of students, each observer attended every formal meeting of the group and many informal ones. Observers took field notes of all meetings and participated in weekly unstructured interviews with the students and instructors in each group. Observers audio-taped most interviews and video-taped all the formal critiques of instructors and all the formal presentations made by the group to an instructor or client. Many informal interactions were also video-taped.

The seniors in graphic design had worked together in the same intense graphic design curriculum since their freshman year. This meant that, as designers, they shared a wealth of common materials for doing design. But prior to the capstone experience, they had had relatively little experience in collaborative work or designing for real clients. This meant that, as designers, they had little or no practice giving public arguments to transform the common materials they shared as designers into common resources for group action. Our observations were, therefore, focused on ways in which members of a team, with a relatively homogeneous set of common materials, managed (or failed to manage) to transform common materials into common group resources. Similarly, our instruction to each team was focused on ways in which members might better manage, through public argument and accounting, this transformation when it worked sub-optimally.

Three Preliminary Results

The data for this project are still being transcribed and archived, and it is too early to offer any definitive results. The early results, however, suggest that the skills of public accounting for the student groups we observed are not high, nor is the knowledge we have about how to teach this kind of cross-modal accounting. The most striking result we have is how brittle collaborative groups become when they find themselves unable to transform materials into common group resources. At the first indication of conflict or resistance (i.e., the need to justify one's decisions to the group), various members on each of the three groups decided to break into smaller teams or simply go it alone.

A second result is the enormous complexity involved in offering cross-modal justifications that are persuasive. To be sure, some design decisions can be argued on clear criteria. For example, optometrist Stanley Palko has explained that low-vision persons read bold type at greater distances than plain type. In addition, people discriminate
black on yellow faster than any other color background (Favrre and November). In both cases, decisions about language and images can be clearly justified because they are connected to more operationalized and tractable variables like distance and reaction time.

But consider a graphic design student, Jane, who wanted to persuade her team that a squiggly yellow line border is appropriate for a children’s pamphlet because such a line is “silly.” How would one test, much less argue with, Jane’s decision? By searching for a yellow squiggly line with a “serious” look? We actually do find evidence of designers exploring visual space in order to produce visual counter-examples of prior generalizations. But the existence of that evidence is a long way from understanding the relationship between verbal argumentation and argumentation spanning verbal-visual modalities. To see the gap, we first need to recognize that the backing we offer for most verbal concepts relies, routinely, on other verbal generalizations.

To defend the claim that “John is silly,” we often say “John giggled” and point out that “giggle” is a term whose application is consistent with the application of the judgment “silly.” We are much less at home trying to give backing that crosses modalities of information. Suppose we presume that children like silly things, and we then try to infer that they will like yellow, squiggly lines. The hidden inference that makes this argument work is that yellow, squiggly lines are silly. The truth of this hidden inference is problematic, for the logical association between linguistic categories (silly) and visual ones (yellow, squiggly lines) is not nearly so clear as that between linguistic categories of different types (e.g., things that are silly and things that make one giggle). How yellow squiggly lines function in a graphic seems to depend on the spatial relationships between these lines and the space surrounding them as much as on the discrete lines themselves and the space they occupy.

The relational and largely nondiscrete quality of spatial communication makes trying to capture its communicative “effect” in the discreteness of language elusive. Yet such communicative “capture” remains necessary for the graphic designer needing to argue, in words, why a particular design works as it does. Since Aristotle, the standard criteria for argument has been developed in a highly logocentric world. These criteria often break down in accounting that cross the continuity of the verbal-visual interface. A third and final result is that two practical interventions do seem promising. One encouraging intervention was to videotape a team during the act of decision-making about an artifact and to show them that their verbal collaboration usually did not capture the complexity of their visual exploration. By learning that the work they had done was usually more “forgiving” than the words they used to describe it, team members also appeared to learn that overly closed language categories could stop a design discussion before it had a chance to get going. For example, on the Amtrak team, Mark had originally rejected a destination schedule drawn by Sue on the grounds that it was “vertically-oriented” (i.e., moved the eye bottom to top) rather than “horizontally-oriented” (i.e., moved the eye left to right). Vertical and horizontal orientations are not visual categories per se, but rather linguistic categories that speakers pull out from visual images in order to name, categorize, and assign function to them (Arneheim). At the linguistic level, it appeared that Mark and Sue were at a standoff since these linguistic categories are contrary, mutually incompatible. But when encouraged to further explore the visual scenes they had created, Mark and Sue were also encouraged to search for other ways of categorizing their previous visual work in ways that made it more accommodating to the other.

For example, Mark realized that his support of “horizontal orientation” was tied to the additional category “shows the whole schedule at a glance and so facilitates reading.” Sue realized that her support of “vertical orientation” was tied to the additional linguistic category “is easy to fold into a commuter’s pocket.” By enlarging the categories of classification, Mark and Sue realized that they could see themselves working toward a unified document system, one that could accommodate both “readability” and “portability” by incorporating (in different documents of a unified system) both horizontal and vertical alignment. By keeping their joint linguistic categorization as flexible as their independent visual exploration, Mark and Sue learned that they could turn a zero-sum game into a cooperative strategy of parallel design. Such strategies, admittedly, are difficult; we did not find them in abundance in the student designers we studied. (As a basis of comparison, we are currently in the process of collecting data on professional graphic designers as they negotiate designs among themselves.) At the same time, we have found that, by indicating to students up front the difficulty of making arguments spanning visual-verbal modalities and by encouraging them to represent such argument-making as a low-risk activity, students can sometimes become more willing to make such arguments and more willing to lend their assistance to peers as they listen to peers make them.

A second intervention, one used to diminish the risk of cross-modal argumentation, was to teach students a vocabulary for highlighting what are often the suppressed contingent and negotiable aspects that underlie visual decision-making. More concretely, we found it useful to teach students how to conditionalize in language, the conclusions drawn from their visual explorations in ways that would leave room for the conclusions of others. Many of the students we observed harbored the mistaken notion that they could account for their visual decisions retrospectively, as part of a manual written after the design was completed. As is now well-known, retrospection is a very unreliable process, and designers looking back on a design tended to forget all the contingency that had made their system a living system rather than a rigid caricature. In order to encourage students to
offer linguistic accounts concurrently with their visual decision-making, we found it useful to offer the students a distinction between what we came to call rigid rules, preferences, and facts. The distinction was meant as a heuristic to help designers linguistically discriminate for themselves and one another the degree of contingency in their visual exploration—with rigid rules indicating visual conclusions that seemed least negotiable and preferences and facts indicating a higher degree of contingency in the visual design. What follows are more elaborate descriptions of each type of decision.

Rigid Rules. These are decisions that have no conditions or contingency associated with them. They are forced choices in a visual system; any designer who is to use or reproduce the system must commit to these choices. In a graphical design system, rigid rules are best communicated in a manual through concrete, enumerable examples. Rigid rules cannot be modified, only followed.

Preferences. These are decisions that have conditions and contingencies, though with a strong consensus within the design team about which set of conditions and contingencies are most likely to be in effect for the local context (and client) in which the design is used. Suppose, for example, that Mark and Sue had both agreed in the tradeoffs that, at times, favored horizontal alignment and, at times, favored vertical. Suppose, nonetheless, they had managed a consensus that, for the passenger schedules required for Amtrak, readability is typically a more important factor than portability. Mark and Sue would indicate this consensus in a manual by describing horizontal alignment as a "preferred" alignment for a passenger schedule. Not being a rigid rule, horizontal alignment would not be mandated, but it would be expressed as a design preference, a preference only suspended in those very crowded terminals and trains where limited seating and arm space make portability a must. In a manual, when horizontal alignment is communicated as a preference, not a rule, Mark and Sue have the obligation to indicate the exceptional contexts that defeat this preference. This expression requires verbal language in the manual, not imagistic examples.

Facts. These are decisions that have conditions and contingencies with few or no significant weighting criteria to prefer one decision over another. Suppose that Mark and Sue had agreed to the tradeoffs between horizontal and vertical alignment as above. But now suppose that neither could agree upon one orientation being clearly superior to the other, either for Amtrak or anyone else. To be sure, Mark might prefer horizontal; Sue, vertical. But since they cannot agree on a preference across most contexts, they cannot render, for their collaborative system, a clear preference. In this case, Mark and Sue would need to use manual space to discuss horizontal and vertical alignment as a visual decision involving many (factual) tradeoffs that must be carefully considered when implementing their system. Like the discussion of preferences in a standards manual, the discussion of

Conclusion

Collaborative design requires flexible skills of argument that span the visual-verbal interface. We have tried to make a prima facie case that, without monitored and reflective linguistic and argumentative practices, the best laid plans of group design can be undermined. To keep collaborative design a living system within which multiple individuals can participate, individuals need to learn to manage, through verbal means, the complexity that their eyes tell them is there. Such management strategies are necessary whether the individuals are primarily trained in the visual or verbal modality. Viewed from either the vantage of the writer or graphic designer, then, what seems to hold group design together is the ability to argue by accounting for what one is doing and listening to others account for themselves.

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Works Cited


