Seeing Typeface Personality: Emotional Responses to Form as Tone

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Abstract – Various studies have correlated specific visual characteristics of typefaces with specific overall emotional effects: curvilinear forms and open letter shapes generally feel "friendly" but also "formal" or "informal," depending on other factors; large contrasts in stroke widths, cap height, and aspect ratio generally feel "interesting," but also "attractive" or "aggressive," depending on other factors; low-variety and low-contrast forms generally feel "professional" but also "reliable" or "boring." Although the current findings on typeface personality are useful, they have not indicated a systematic explanation for why specific physical typeface forms have the specific emotion effects that they do. This paper will report results of an empirical study in which 102 participants indicated their immediate emotional responses to each of 36 distinct typeface designs. Results support correlation between specific typeface features (variety vs. contrast vs. pattern) and specific emotional parameters (amusement vs. agitation vs. focus), explaining findings of previous studies, suggesting various classroom approaches to purpose-driven typeface selection.

Index Terms – Emotion, tone, typeface personality, visual text design.

INTRODUCTION

The primary visual effect of typeface choice is decorative in the technical sense that, like most color and form elements in visual design, typeface variation does not vary the propositional information expressed by text. However, typeface variation does strongly affect the emotional information or in other words the tone that accompanies the information. Any legible typeface would convey the same information, but some typefaces are more appropriate than others in specific contexts that call for one kind of emotional response more than another.

Distinctive letter shapes of any given typeface apparently affect the overall feel of a text, as described in Brumberger [1], [2]; Oyama [3]; Mackiewicz and Moeller [4]; and Mackiewicz [5], [6]. Brumberger notes that “[e]xperts on type and document design often attribute typeface persona to physical characteristics” [1, p. 208].

Oyama's study found that word forms with rounded typeface lines were associated with happiness, whereas sharp, angular lines tended to suggest anger. Mackiewicz's empirical studies correlated specific physical characteristics of typefaces with specific overall emotional effects: curvilinear forms and open letter shapes, such as script typefaces, generally feel "friendly" but also "formal" or "informal," depending on other factors; high-contrast forms, between lower case/upper case height, and/or large contrasts in stroke widths generally feel "interesting," but also "attractive" or "aggressive," depending on other factors; more consistently patterned forms, with consistent stroke widths and lower contrasts between upper/lower case, generally feel "professional" but also "reliable" or "boring."

Although the recent findings on typeface personality are useful, they have not indicated a systematic explanation for why specific physical typeface forms have the specific emotion effects that they do, the kind of explanation that would, for example, facilitate an organized classroom explanation of typeface design, precisely correlating form with emotional effect.

This paper will report results of an empirical study in which 102 participants indicated their immediate emotional responses to each of 36 distinct typeface designs. Results support correlation between specific typeface features (variety vs. contrast vs. pattern) and specific emotional parameters (amusement vs. agitation vs. focus). These results both explain the findings of previous typeface studies and suggest various classroom approaches to purpose-driven typeface selection.
I. Preliminary Work

A series of studies by Manning and Amare [7], [8] demonstrate that colors and abstract forms generate consistent emotion responses in both small and large groups across a range of ages and backgrounds. That is, the same configuration of form and color generated the same spectrum contour of emotion responses regardless of the size and makeup of the group surveyed, so long as emotion labels were kept separate from culture-driven concepts (purity, love, death, marriage, etc.) and from positive/negative evaluation (happy, sad, good, bad, etc).

In general, both yellow-range color and high-variety abstract forms evoke feelings in the range of amusement and freedom from restraint, both red-range color and high contrast forms evoke feelings in the range of agitation and challenge, and both blue-range color and high-pattern forms evoke feelings in the range of focus and organization. See Figure 1.

We conducted the study reported in this paper to determine whether the general form-emotion correlations shown in Figure 1 also hold specifically for typeface designs. Study participants were mostly U.S. students from a regional university, ages 19-55, presented in an online survey with a single set of semantically neutral words (as a realistic text fragment) displaying a range of significant typeface anatomy features, in 36 different typefaces. For each typeface, participants were asked to pick three emotion terms from the list in Figure 1.

Results indicate that general form parameters from Figure 1 (variety, contrast, and pattern) can be related (in terms of comparable emotion responses) to specific typeface anatomy features seen in Figure 2.

**Figure 1.**  Abstract forms and colors evoke consistent emotional responses if emotions are labeled in neutral terms.

**Figure 2.**  Range of emotional responses to typeface forms appears consistent with general model of form-emotion response (Figure 1).

**Variety** corresponds with the variable axes (vertical vs. slanted letters) and/or rounded stroke terminals of Marker Felt, Santa Fe, and Arial Round.

**Contrast** corresponds with the high aspect ratio (height vs. width) of letterforms (Santa Fe), and/or high thick/thin stroke ratio of Bordeaux Roman and Silom.

**Pattern** corresponds with more regular typeface features, lower aspect ratios, minimal thick/thin stroke differences, consistent axes and/or flat terminals of Arial. Some but not all of these regular features are shared by Silom (regular axis, flat terminals) and Arial Round (regular axis, lower aspect ratios).

In sum, we find a range of emotional responses to typeface designs, responses analogous to the range of emotional responses to abstract form and color as shown in previous studies (Fig. 1), driven by the parameters transparently related to general form parameters of variation, contrast, and pattern. Findings indicate that typeface form is indeed a visual design element of the same type, in terms of basic parameters and effects, as
color and shape. Typeface form is of course physically integrated with the letters and words that make up a text but this is merely one more indicator that the traditional rhetorical dichotomy between visuals and written text needs to be reconsidered [9].

The remainder of this article will revisit previous studies in light of our overall findings, discuss other interesting trends in the data from this study, suggest directions for further research, and review implications of this study for practical visual design and visual design teaching.

II. Previous Studies

According to Holst-Larkin, studying typefaces and their persona or the "mood and personality" of type is at best an "inexact science" but that users "consistently attribute personalities to fonts and agree on appropriate uses for them" [10, p. 417]. This study seeks to remedy or "exact" that science by measuring participants' responses to typefaces to determine not typeface personality or mood but rather participants' emotional responses to the forms of the typeface letters and words.

To date, professional communicators have cared about typeface predominantly as a document design issue or one of "formatting." Dragga echoes this belief in his survey of one thousand technical communicators' principles of document design. In relation to the topic of typography, Dragga found in his survey that "using special typography, color, or glossy photographs is ethical unless important information is obscured" [11, p. 257].

While we would agree that typefaces as decoratives should not detract from the information in a document, Brumberger [12] encourages us to move beyond typography as ornamentation and understand that typography has its own (visual) rhetoric, one that is intrinsically linked to the reading process. Summarizing Arnheim [13], Brumberger states "while verbal thinking and visual thinking are distinct, thinking and seeing cannot be separated" [12, p. 14]. In other words, users see the text at the same time they are reading it. Although Brumberger's [12] study of typography's effects on readers "revealed no significant difference in reading time" (p. 20); however, she did find that typeface persona did affect the readers' opinion of the passage's ethos. In our study, we aim to unpack this typeface "persona" by measuring and determining what shapes and forms correspond with specific emotional responses in readers.

METHOD

Using the services of qualtrics.com, we constructed an online survey as described below. Participants were invited via email that included a customized login code. The survey contained three sections.

Section one consisted of a participation-consent form in keeping with IRB protocol, IRB case number 11-024 at the second author's institution. Section two invited participants to provide simple demographic information,

age and nation where they grew up. Section three presented 36 typeface designs to participants, one at a time, as exemplified in Figure 3. These typefaces were selected from the standard Mac OSX font set (v. 10.5). They were presented in this order:


We presented each typeface with the same semantically neutral words in a text fragment, preferring this more realistic approach to use of nonsensical letter strings that might potentially create emotional disruption (e.g. bias toward agitation or diversion responses) due to lack of familiarity.

In this preliminary study, we elected to present typefaces in "display" mode (32-point size, allowing for some variation depending on participants' screen settings). We chose typefaces that sampled the range of form possibilities (variety vs. contrast vs. pattern) but also included some similar typefaces, script, serif, sans serif, small cap, etc. We wished to determine whether

FIGURE 3. SCREEN CAPTURE SHOWING SURVEY FORMAT.
• similar typeface designs would evoke similar patterns of emotion-term response,
• distinct typeface designs would evoke distinct response patterns, and also whether
• specific features of emotion response, for any given typeface, could be linked to a specific formal features.

To make this determination, participants were asked, for each typeface design, to make three choices from a menu of twelve possible emotional responses, in alphabetical order, as shown in Figure 3.

To create these twelve options, we used the primary shades of emotion postulated by Amare and Manning [7], [8], [9] and chose two near-synonym labels for each primary emotion (1, 2, or 3) and two near-synonym labels for each secondary, composite emotion (1+2, 1+3, and 2+3): amused or unrestrained (1), agitated or challenged (2), organized or focused (3), rested or calmed (1+3), stimulated or diverted (1+2), and determined or concerned (2+3).

The alphabetical order of the menu options served to scramble our postulated emotion spectrum and reduce the likelihood of order-of-mention bias. It also allowed participants to familiarize themselves quickly with the emotion options. Including twelve options and three choices among them allowed study participants to construct a paraphrase description of the emotion felt, if no single term suited them. The three-option responses also allowed us to detect subtle gradations in the emotion response to any given typeface, as we anticipated that emotion responses would move gradually between the six major emotional divisions as typeface form was gradually adjusted. Nuanced but significant results discussed below indicate that this approach was effective.

Technical communication students enrolled at a regional university were invited to participate in this survey. They received no instruction or information about form/emotion correspondences prior to the study. Participation was strictly voluntary.

RESULTS

A full examination of our data and results is beyond the scope of this preliminary report. However, the null hypotheses are likely ruled out by even the sample data shown in Figure 2. That is, given these results, it is statistically unlikely that similar typeface designs are not evoking similar patterns of emotion-term response, unlikely that distinct typeface designs are not evoking distinct response patterns, and also it is unlikely that specific features of emotion response, for any given typeface, are not correlated to specific formal features.

Put another way, we would expect very different response spectra than what is shown in Figure 2, if we did indeed have over 100 people associating emotion terms to typeface styles in a pure idiosyncratic fashion that had nothing at all to do with the formal qualities of the typefaces. Given that sample size, any variation in response greater than about 10 points (8 points between low response levels and 12 points between high response levels) has less than a one-in-twenty probability of being due to mere chance (p < .05 for the statistically minded). Thus, if responses were due to random personal aesthetics, we would expect all spectra in that case to be much flatter, with emotion responses distributed more evenly across the range of options (mostly within about ten points of each other), regardless of the typeface.

What we find instead are relatively distinct spectral curves, the properties of which can be connected to typeface form, as noted in the introduction, comparing Figures 1 and 2. Other major trends in the data are discussed below.

DATA TRENDS

Emotion effects are, by their essential nature, variable and resistant to exact classification on an individual level. Individuals can feel an emotion very strongly without always being able to exactly name that feeling. Even so, we do find distinct trends in emotion response even in small groups, trends that become more pronounced in larger groups. Larger groups are the typical consumers of our information designs, rather than specific individuals, and so these general trends of emotion response are worth knowing and anticipating in visual design generally and typeface choice particularly.

In this section we will discuss three distinct trends found in our data: 1) patterns of response in participants raised outside the US, 2) patterns of emotion spectra that distinguish script, serif, and sans serif type, and 3) patterns of emotion response that characterize two famously popular but annoying typefaces, Comic Sans and Papyrus.

I. Cross-cultural data

It was not our purpose in this study to focus on cross-cultural similarities and differences in emotion response to typefaces. Rather, we wished to determine if emotion response to typeface form mirrored emotion response to visual form and color as shown by prior studies with US university students. US student populations tend to include some students with non-US backgrounds however, and we have often been asked whether or not their results align with the student population as a whole, so we will begin with this frequently asked question.

Non-US-background responses in our current study are shown in Tables 1, 2, and 3, for three exemplary typefaces: Bordeaux Roman (Table 1), Marker Felt (Table 2) and Arial (Table 3). There was one participant each from Brazil, Nepal, Nigeria, and Pakistan, two participants from India and two from Saudi Arabia. Each gave three responses as directed.
These non-US responses are mainly instructive because they show how a distinct and consistent group response to these typefaces (shown in Figure 2) gradually emerges from individual-response data that is, at first glance, apparently indistinct and inconsistent.

Recall that letterforms of Bordeaux Roman have high aspect ratios (height/width) and there is likewise strong contrast between the thickest and thinnest strokes. These features ultimately translate into an emotion-response spectrum that peaks in the *agitated-challenged* range when all participant responses are compared. Participants raised outside the US show responses to these contrast features that trend in this same direction only somewhat weakly (r=.32).

**TABLE 1. NON-US-BACKGROUND RESPONSES TO BORDEAUX ROMAN (r=.32)**

<table>
<thead>
<tr>
<th>Raised Where?</th>
<th>Agitated</th>
<th>Stimulated</th>
<th>Diverted</th>
<th>Unrested</th>
<th>Amused</th>
<th>Rested</th>
<th>Calmed</th>
<th>Organized</th>
<th>Focused</th>
<th>Determined</th>
<th>Conceded</th>
<th>Challenged</th>
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<tbody>
<tr>
<td>Brazil</td>
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</table>

Recall that letterforms of Marker Felt have a variety of axes (vertical vs. slanted letters) and variable, rounded terminals. Both of these features ultimately translate into an emotion-response spectrum that peaks in the *diverted-amused-calm* range. Participants raised outside the US show responses to these variety features that trend in this same direction moderately (r=.47).

**TABLE 2. NON-US-BACKGROUND RESPONSES TO MARKER FELT (r=.47)**

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<thead>
<tr>
<th>Raised Where?</th>
<th>Agitated</th>
<th>Stimulated</th>
<th>Diverted</th>
<th>Unrested</th>
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Recall that letterforms of Arial have moderate aspect ratios (height more equal to width) and there is likewise little difference between the thickest and thinnest strokes. These features ultimately translate into an emotion-response spectrum that peaks in the *organized-focused* range when all participant responses are compared. Participants raised outside the US show responses to these pattern features that trend in this same direction quite strongly (r=.89).

**TABLE 3. NON-US-BACKGROUND RESPONSES TO ARIAL (r=.89)**

<table>
<thead>
<tr>
<th>Raised Where?</th>
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<th>Unrested</th>
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**FIGURE 4. SERIF TYPEFACES CONSISTENTLY DIFFER FROM SANS SERIF TYPEFACES IN THE RATIO OF CALMED/ORGANIZED EMOTION RESPONSE.**

Previous empirical studies of emotion response to form and color found no clear indicators of distinct difference in response between cultures [3], [7], [8]. This finding is of course contrary to the widely held view that form-meaning connections are essentially arbitrary and therefore entirely dependent on cultural background. Proponents of this view should present their own data, preferably with more than the usual anecdotal observation that black means purity in some cultures, death and evil in others, etc. As was noted earlier, these kinds of color
meaning are conceptual rather than emotional and probably do vary across cultures.

It seems to us plausible that there could be important differences in emotion response to typeface form across cultures if only because fads and fashions of typeface can vary. Therefore a reader from one culture could see a letterform, for example, as "regular and medium" and a reader from another culture could see that same letterform as a "high and thin." If true, this might account for weaker correlation between our non-US data for Bordeaux Roman and the more general US-student response pattern. In other words, all of our individual data, US and non-US alike, tends converge on agitated-challenged peaks more slowly, amused-calmed peaks more moderately, and organized-focused peaks most rapidly, and this overall trend is exactly what we find mirrored even in the small non-US data set. In that case, no cross-cultural difference is indicated at all, consistent with findings from previous empirical studies, contrary though that may be to common academic opinion.

We can't decide this question conclusively with our small data set from non-US study participants, but future studies employing our same methods with a large population of non-US participants probably could. We find that extra care should be taken to make sure non-native English speakers understand the emotion labels used in the survey. We notice in our data that non-US participants distinctly avoided the challenged option, possibly because it was not recognized as a possible near-synonym of agitated.

II. Emotion contours of sans serif, serif, and script

Textbook discussions of typeface nearly always mention the distinction between serif and sans serif letterforms. There is a small but distinct feature in the contour of emotion responses that differentiates sans serif typefaces in general from serif typefaces in general: consistently, the slope of the angle between the calmed response and the organized response is steeper in sans serif typefaces as shown in Figure 4. serif typeforms are, in effect, emotionally more organized and focused than they are calmed. Serif typefaces, in general, show a shallower angle slope between calmed and organized response, as shown in Figure 4.

These type forms are, in effect, emotionally more organized and focused than they are calmed. Serif typefaces, in general, show a shallower angle slope between calmed and organized response, as shown in Figure 4. Serif forms feel focused and organized but also relatively more calmed. There may be no real difference in the actual readability of serif vs. san serif typefaces as was once commonly thought [14]. However, when the calmed/organized ratio of all four serif typefaces in Fig. 4 are averaged and compared with the average calm/organized ratio of all sans serif typefaces in Fig. 4, we find a small but statistically significant difference (i.e. a 13% average difference in calm/organized slope) in the measured feel of these two typeface classes, which may account for the once-popular view that serif typefaces in general could seem more (calmly) readable in long stretches of text than sans serif typefaces in general.

In terms of emotion-response contours, serif typefaces are intermediate in their spectral pattern, between sans serif typefaces and script typefaces as shown in Figure 5. Script typefaces, like serif typefaces, have some kind of flourish at the end (terminal) of most or all letterform strokes. Serif terminals are of course more subdued flourishes than script terminals, but all of these evidently count as variety features, of the same order as the round
terminals of Arial Round (Figure 2). The net effect is that serif typefaces have a significant *calmed* response but script typefaces have a small but distinct *calmed* spike (highest or nearly highest response in the spectrum), typically accompanied by an *amused* spike, which we originally predicted would be the central emotional response to form variety of all kinds.

**III. Emotion contours of Comic Sans and Papyrus**

No discussion of typeface emotion would be complete without some mention of Comic Sans. Typeface elitists often express overt disdain for the design, yet it is obviously well loved in popular culture [15]. Papyrus evokes a similar if perhaps less intense hate/love response [16]. The emotion spectra of these two typefaces can give us some sense of the causes. See Figure 6.

![Comic Sans vs. Papyrus emotion spectra](image)

**FIGURE 6. TYPEFACES MAY PULL VIEWERS IN DISTINCTLY DIFFERENT EMOTIONAL DIRECTIONS AT ONCE.**

In brief, Comic Sans responses peak at distinct points across the whole emotional range. The highest peaks are in the range of agitated/diverted/amused, but distinct spikes of *calmed* and *concerned* are nearly as high. In other words, if it were really true that the basic form/emotion response of any typeface were due to purely random variation or purely personal aesthetics, then all typeface-emotion response would be approximately like the response to Comic Sans. On the contrary however, in the real world we find this typeface design especially singled out, in effect either much loved or much hated.

Essentially, the typeface sends viewers in all major emotional directions at once: we're both agitated and amused, but calmly concerned about it. This is a distasteful feeling for many but others enjoy it, much as some hate riding a roller coaster and some enjoy it: it's the same basic perceptual experience but people can and do evaluate it differently, negatively or positively.

In comparison to Comic Sans, Papyrus responses are much narrower, with distinct peaks at *stimulated* and *focused*, but note that these peaks are likewise in nearly opposite emotions: stimulation tends to disrupt focus and focus tends to suppress stimulation. Although there is essentially no mathematical correlation between the spectrum of Comic Sans and Papyrus ($r=-0.19$), we should note that they are similar inasmuch as they both send viewers in distinct directions emotionally, though Papyrus does this in a relatively more subdued and focused way, which accounts for the similar, but arguably less intense hate/love response.

Two other typefaces in our study sample generated somewhat similar "orange" pulling against "blue" emotion range responses, Princeton and Jazz, also shown in Figure 5. Neither of these typefaces creates emotional opposition quite as focused as Papyrus or as broad as Comic Sans. Note however how typefaces that don't look very much like each other can still add up to comparable emotional responses. Linear correlation between Jazz and Princeton is .69 (and stronger still, $r=.91$, if we set aside Princeton's outlier "challenged" response).

Again, it is Comic Sans that presents something of a puzzle here because the typeface creates nearly as much *agitation* response as Princeton or Jazz but for much less obvious reasons. That is, the stroke widths of Comic Sans are utterly regular and the aspect ratios of the letterforms are not especially high. By comparison, Jazz has very obvious thick/thin contrast in its letterforms and the outline-style letterforms of Princeton are simultaneously very thick because of the space inside the letters, but the actual strokes are thin: this creates formal contrast which accounts for the agitated/challenged response.

We can account for the agitation response to Comic Sans however, if we note that the spacing between the letterforms demonstrates a kind of inverse thick/thin contrast. Letterforms are (quite regularly) more widely spaced near the top and more narrowly spaced at the base, or just the opposite: narrowly spaced at the top and widely spaced at the base. Comic Sans more obviously evokes a strong "yellow" unrestrained/amused response because of extreme variation in letterform axes (vertical vs. slanted) but at the same time this axis variation creates the thick/thin contrast in the space between the letterforms. Because this thick/thin space contrast is regular, we end up with a "red" plus "blue" effect that adds up to the significant "purple" concerned response.

In sum, the strange but fascinating properties of Comic Sans can be plausibly accounted for in this unified model of color/form/emotion response. As a corollary to our analysis of Comic Sans as a problematic typeface, we can say that typefaces with a definite organized/focused spike (recalling Figure 4) appear as a group to be more widely acceptable as "text" typefaces (for long blocks of text in smaller point sizes), while typefaces with distinct spikes in the challenged-amused range are more acceptable as "display" typefaces (short blocks of text in larger point sizes), assuming always that the purpose of the text matches the emotional content of the typeface chosen, whether for text or display.
FUTURE STUDIES

Our preliminary findings suggest that much empirical work remains to be done, precisely because the unified model of color/form/emotion response has proven to be a powerful descriptive tool, supported by very promising empirical evidence.

As we noted earlier, it would be useful to clarify whether or not there are important differences in emotional responses to typefaces across cultures. Surveys similar to the one reported here should be conducted with a large set of people with non-US backgrounds.

This initial study was conducted with one brief text fragment in a relatively large point size, to ensure that relevant typeface forms were visible to study participants, but these findings should be compared with effects of these same typefaces in smaller point sizes and in longer blocks of text since this is how most people actually encounter most typefaces.

Any of the studies described above might also measure typeface anatomy features more closely and determine per-feature effect sizes statistically.

IMPLICATIONS FOR TEACHING AND PRACTICAL DESIGN ISSUES

What types of exercises could technical communication instructors use to inspire students to apply a more universal model of emotional responses to typeface form or tone? For one, teachers could ask students to read, compare, and then discuss a single informational document created in different typefaces, with discussion focusing on the distinct emotion effects created by the typefaces, especially in terms of their relative degree of variety, contrast, and pattern.

Students should also be able to note whether the emotional effect of the typeface is consistent with or clashes with the informational content of the passage. For example, a note telling an employee that they have been downsized would probably not be effectively set in a typeface with high formal variety (e.g. a script typeface such as Pil Gi, Savoye, Edwardian, or Zapfino), likely to evoke amusement and/or calm as shown in Fig. 5.

With a model in place that explains typeface forms as tone, we can improve upon a best-practices approach to visual design that so far is little more than a long list of do-s and don't-s—e.g., never use a script typeface when sending out a memo announcing that there will be no raises again for the fifth year in a row. Such best practice principles about typeface choices are, in general, only applicable in particular contexts.

Decorative elements have many legitimate uses in text design, as long as they affect in a controlled and ethical way the attentions and emotions of viewers, in a way that enhances and complements the propositional content of a text. Typeface tone can only be consistently controlled as design elements if text designers understand what the consistent relationships are, between form and emotional response.

Responsible text designers should always consider whether the emotional effects of visual form elements will match other information content and general audience expectations of a text. If the overall message is meant to be calming, for example, typeface should not be of the kind that are generally agitating, etc. Any mismatch can negatively affect the clarity or coherence of the overall message, which result is the exact opposite of what professional communicators want to accomplish. The more we know about our users' emotional responses to typeface forms as tone, the better equipped we are to create texts that are visually more effective.

REFERENCES


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