Delight by Motion: Investigating the Role of Animation in Microinteractions

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ABSTRACT   This paper focuses on the role of animation in making microinteractions delightful. We first draw on customer experience literature to propose that a microinteraction is delightful when it surprises, captivates, and communicates need fulfillment. Following this notion and drawing on social semiotics, we analyze a collection of examples of microinteractions posted on dribbble.com. Observations derived from this analysis show that animation contributes to a microinteraction's delightfulness by contextualizing, clarifying, metaphorizing, and creating a micro-narrative around its purpose, development, or outcome. A microinteraction's animation has the power to produce "aha! moments," in which the user notices something meaningful concerning her goals, actions, and expectations, and about the context of use. As microinteractions seriously influence the user experience, it becomes imperative to promote motion design literacy, including identifying strategies and tropes for user interface animation, among UI/UX designers.

Keywords: microinteraction, animation, delight, design semiotics, user experience, user interface

Introduction

A microinteraction refers to the brief moment when a user performs a single action through an interactive system's user interface so that the system executes one specific function. For example, when the user taps on the button that switches her smartphone to airplane mode. User interface (UI) and user experience (UX) designers include microinteractions in the interface design to keep the user focused, aid her in acknowledging an action's outcome, and facilitate the construction of a mental model of the system and its interface

in her mind (Kraft and Hurtienne; Saffer; Boyd and Bond). Providing clear and understandable feedback is an essential requirement of a microinteraction's design. To fulfill this requirement, UI/UX designers often use animation, which directly impacts the aesthetics and attractiveness of a user experience (Chevalier et al.).

In this paper, we investigate the role of animation in making a microinteraction delightful. Notwithstanding UI/UX designers recognize the importance of delightful user experiences (Walter), there is a lack of consensus about how to design for a delightful experience as well as a need for more knowledge about the influence of microinteractions in it (Sosa-Tzec, "User Experience Delight from the Designer's Perspective | Avances En Interacción Humano-Computadora"; Boyd and Bond; Kraft and Hurtienne). However, the extensive repertoire of microinteractions showcased on online design communities seems to reflect properties of delight as defined in the customer experience research (Alexander). By making use of semiotics, our investigation analyzes microinteraction examples found in one of such communities.

Literature Review
Microinteraction

A microinteraction is a contained product moment that revolves around a single use case: A tiny piece of functionality that only does one thing (Saffer, chap.1). While a macrointeraction involves several interface components and interaction points between the user and product, a microinteraction is simple, brief, and often effortless. Microinteractions are suitable for accomplishing a single task, connecting devices together, interacting with a single piece of data, controlling an ongoing process, adjusting a setting, viewing a small piece of content, or turning a feature on or off (chap.1). According to Saffer, a microinteraction comprises four components: (1) trigger, (2) rules, (3) feedback, and (4) loops and modes. A trigger is anything that initiates a microinteraction (chap.2). Rules define what the user can and cannot do and in what order (chap.3). Feedback helps the user understand how the rules work (chap.4). Loops are cycles that repeat a certain number of times, as long as a condition is met, or perhaps indefinitely until an error in the system shuts it down. A mode represents a bifurcation in the rules (chap.5). A trigger-feedback pair is another definition for a microinteraction. This definition regards the trigger as a user action or an alteration in the system's state. Feedback refers to a narrowly targeted response to the trigger that is communicated through small, highly contextual, usually visual, changes in the user interface. The trigger is the necessary condition for considering any change on the user interface as the outcome of a microinteraction (Joyce).

According to Joyce, the three main functions of a microinteraction are (1) to convey the system status, (2) to help the user prevent errors, and (3) to work as a vehicle for branding. By fulfilling these functions, microinteractions can transform a good interactive system into a great system and a disengaged user into an engaged one (Joyce). On the same line, Boy and Bond consider that a microinteraction's purpose is creating an engaging and welcoming moment— that is, to delight the user. They define six functions: (1) to communicate status and provide user feedback, (2) to enhance the sense of direct manipulation, (3) to help the user perceive the results or effect of her actions, (4) to highlight important elements, (5) to reduce cognitive burden in the user, and (6) to delight the user (Boyd and Bond 1). Boyd and Bond argue that a properly designed microinteraction can engender positive emotions about a brand and influence user's action, often without her being explicitly aware of this (2). Microinteractions might not have a significant impact on a system's perceived usability. However, they make a system appear better integrated, less cumbersome, easier to learn, and more interesting, likable, and pleasant (3).

Animation in User Interfaces

Animation in user interfaces helps the user create a proper mental model of an interactive system and make decisions when interacting with it (Gonzalez; Vanderdonckt; Kraft and Hurtienne). The illusion of continuity that animation creates in a user interface can favorably impact a system's usability (Huhtala et al.). In this sense, one basic role of user interface animation is to be functional (Avila-Munoz et al.): to keep users aware of the system's state, foster discovery and learning, and encode data presented interface through motion (Chevalier et al.). When performing this functional character, animation helps clarify the metaphorical relationships between components showing on the screen, especially in mobile interfaces where there is a strict limit to the amount of information that can exist on-screen from moment to moment (Liddle). Nevertheless, animation has an equally significant contribution to the aesthetic, affective perception of a user experience. Animation can captivate a user and keep her engaged (Chevalier et al.). It provides visual comfort and aesthetics, making the user interface enjoyable, engaging, and graceful (Thomas and Calder; Chang and Ungar; Wu et al.; Chevalier et al.). When a user interface's animation fulfills these characteristics, it can become more important than the interface's visual design (Hartmann et al.; Chevalier et al.).

Animation principles for user interfaces have their origin in cartoon animation (Chang and Ungar). Examples of such principles include solidity, exaggeration, reinforcement, attachment, reluctance, smoothness, and anticipation (Thomas and Calder; Chang and Ungar). Notwithstanding UI animation functions as a tool for storytelling (Chevalier et al.), such an animation has a characteristic that distinguishes it from cartoon animation: user control (Chang and Ungar;

Thomas and Calder). The interface must be responsive to the user's desires. Hence UI animation should never obstruct or distract the user. (Chang and Ungar 53). It should direct the user's attention to key activities and events in the user interface (Thomas and Calder 220), such as differences of context, value, status, and function. UI animation also functions to transmit urgency, importance, and salience. Depending on what is appropriate for the current circumstances, an animation will convey more than one of these qualities. In mobile interfaces, UI animations are considerably brief—sometimes lasting between 0.5 to 1 second. However, these animations can give rise to micro-narratives, which become instrumental for comprehending information on the screen (Dong et al.).

Customer Delight

Customer delight refers to the idea of going beyond customer satisfaction by exceeding expectations. A product or service delights a customer by including features that are unexpectedly or surprisingly pleasant, or add utility to the product beyond what is expected (Rust and Oliver 86). Arousal, surprise, and pleasure are three important ingredients to provoke delight during a customer experience (Oliver et al.). Interest and captivation are two other ingredients of customer delight (Kumar et al.; Dey et al.). Interest occurs when something appears novel or mysterious, and the amount of information it transmits increases quickly but not quickly enough to provoke fear or shock (Dey et al. 50). Captivation occurs when a product or service becomes irresistible to the customer, inciting her to yield control. The product or service ends up catching the customer's attention to the extent that she fully immerses in the experience (Dey et al. 50). Any product or service that captivates a customer and gets her attention could provoke delight in her, especially if its features make the customer feel joy as well (Kumar et al. 19).

Sometimes, customer delight is the outcome of combining surprise and joy (Kumar et al.). Joy can result from a sensation of fulfillment derived from a perception of familiarity or simplicity concerning the current circumstances (Dey et al. 49). A person experiences *magic joy* when she feels that the unexpected fulfillment of a wish or need will change her situation. However, there is the possibility that delight comes from experiencing *real joy*, the kind of joy resulting from an ongoing activity that brings the person into contact, physically, mentally, or both, with some aspect of the world around her (Kumar et al. 18). This distinction implies that surprise not necessarily needs to happen in order to delight a customer. A person attributes the presence of magic of joy to luck. Real joy, on the other hand, comes from centering on ongoing activity. When a person identifies experiences representing a stable source of joy, she is more likely to re-experience them (Kumar et al. 19). Moreover, a product or service can provoke delight if it helps the customer fulfill higher-order needs, such

as security, justice, and self-esteem (Schneider and Bowen). Particularly, exceeding expectations—and therefore introducing an element of surprise—and fulfilling esteem needs form a powerful combination to provoke delight in a customer (Torres and Ronzoni 60).

Analysis of microinteractions

Approach

We started our investigation by drawing a tentative definition of delight based on our literature review. We regarded a microinteraction as delightful if its appearance and behavior—especially when animation was shown—demonstrated a potential for surprise, captivation, and the communication of need fulfillment. We paid careful attention to how moving signifiers in a microinteraction's design introduced a surprising element, worked to catch one's attention, and helped in communicating the microinteraction's purpose and outcome. With this tentative definition, we turned to dribble.com. We chose this online design community because we have observed its growth since its early years and have become aware of the numerous and apparently delightful design examples. We searched for microinteractions, starting with examples of buttons—as we consider it an exemplary case—to eventually looking for microinteractions involving widgets of any kind. We selected examples that seemed to reflect aspects of our tentative definition and eventually formed a collection of 500 microinteractions on which we performed a deeper analysis using semiotics.

Our semiotic analysis drew on the three branches defined by Morris—syntax, semantics, and pragmatics—and the foundations of social semiotics (Jewitt 279; Kress and Van Leeuwen). We made use of the notions of syntax, semantics, and pragmatics to inspect each microinteraction concerning its composition, meaning, and usability, respectively. Nevertheless, our interpretation of signs and how they produce meaning centers on social semiotics, where a sign is a motivated—not arbitrary—conjunction of signifiers (forms) and signified (meanings) (Kress and Van Leeuwen 10). Intent and choice are two distinctive characteristics in this semiotic perspective. We regarded each microinteraction's design—constituted by inert and moving signifiers—as a result of the designer's current understanding and selection of resources that she considered the most appropriate for communicating her intent to a user in a certain context of use. We utilized this *social-semiotic notion of microinteraction design* to perform a close reading about how a designer's choices can potentially surprise, captivate, and communicate need fulfillment in a possible context of use.

[1] https://dribbble.com/shots/8424211-Smoke-Slider

[2] https://dribbble.com/shots/7515563-Balloon-Slider

[3] https://dribbble.com/shots/5181665-Swipe-to-Delete

[4] https://dribbble.com/shots/5889083-Simple-Like-microinteraction-Principle-freebie

Observations

The analysis of the microinteraction examples in the collection led us to a large number of observations. Due to space constraints, we have chosen to list a number of them that we have found especially interesting. We believe that, taken together, these observations create a broad understanding of some of the more important aspects of delightful microinteractions in the way we define them.

Delight by adding an animated component to an interface widget's structure
We observed microinteractions whose widgets included a noteworthy, animated component referring to a (physical) phenomenon in the real world, whose purpose is to metaphorize and contextualize the microinteraction's outcome. For example, in *Smoke Silder*[1] by Aaron Iker (Figure 1), the designer added an animation of smoke or steam coming out from the slider's thumb. The intensity of the smoke—the amount and velocity of the steam—is a function of the thumb's position. The same designer proposes the microinteraction *Balloon Slider*[2] (Figure 2), where the thumb shows a balloon instead of a column of smoke. The *delightful microinteraction pattern* is the same in both cases: adding an animated component to the widget's basic structure. Altering the "traditional" structure of a widget in this way causes surprise and captivation. The user still gets to recognize the widget, but at the same time, the animated component adds a layer of meaning about what the user's action could mean for the context of use. The animation makes it possible to link the characteristics of a phenomenon in the real world with something that may appear abstract—the operation of the widget or interface.
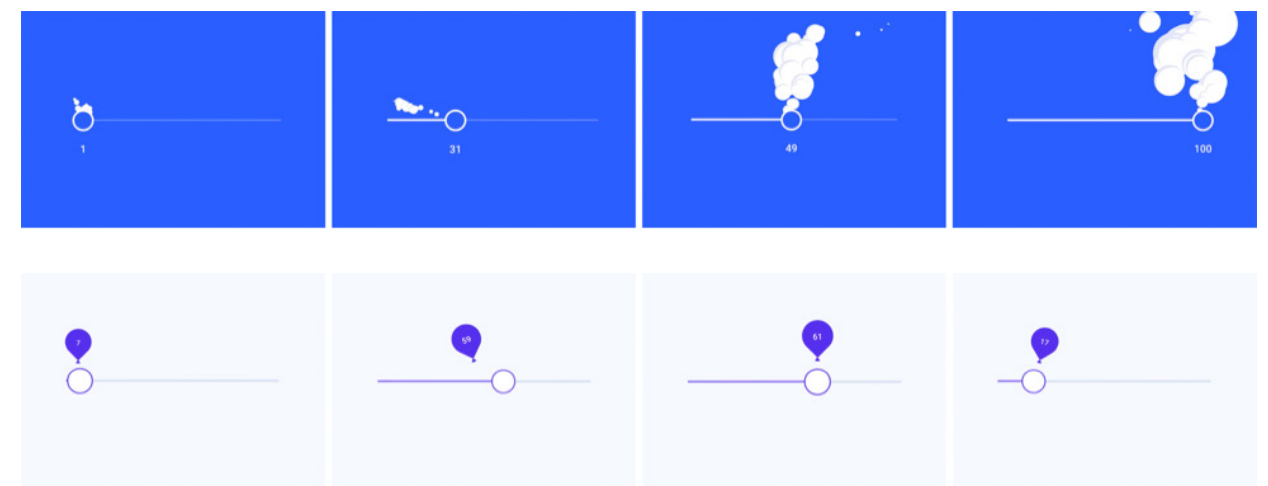

Figure 1 (above): Smoke Slider. Source: Iker, Smoke Slider, 2019
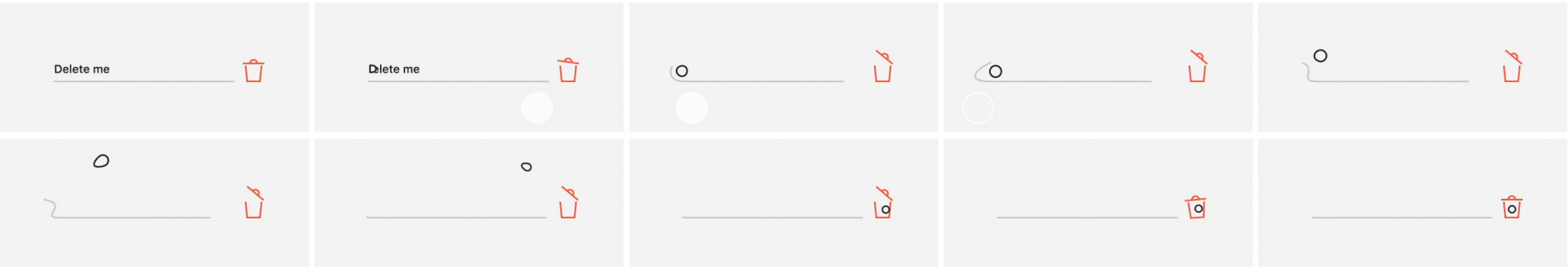**Figure 2 (below)**: Balloon Slider. Source: Iker, Balloon Slider, 2019

Delight by altering the materiality of an interface widget through animation
Many designers utilize animation to communicate materiality changes in order to metaphorize and contextualize the microinteraction's purpose or outcome. *Swipe to Delete*[3] by Hoang Nguyen exemplifies this observation. This microinteraction comprises an input field, represented by a thin gray line, accompanied by the icon of a trash can. It shows the text "Delete me" on top of this line.

When a short swipe left takes place, the line transforms from something rigid into something flexible. The text transforms into a ball. Together, they allude to lacrosse or Jai alai (Figure 3). This brief animation is powerful as it manages to change the user's mental model and expectations: from a form to a stick or cesta with a ball about to be thrown. This change produces a surprising and captivating effect. Through an animation-driven change of (perceived) materiality, the microinteraction communicates to the user what her action and its consequence mean. At the same time, it gently challenges her credulity about what she expects to see on the screen (Figure 4).
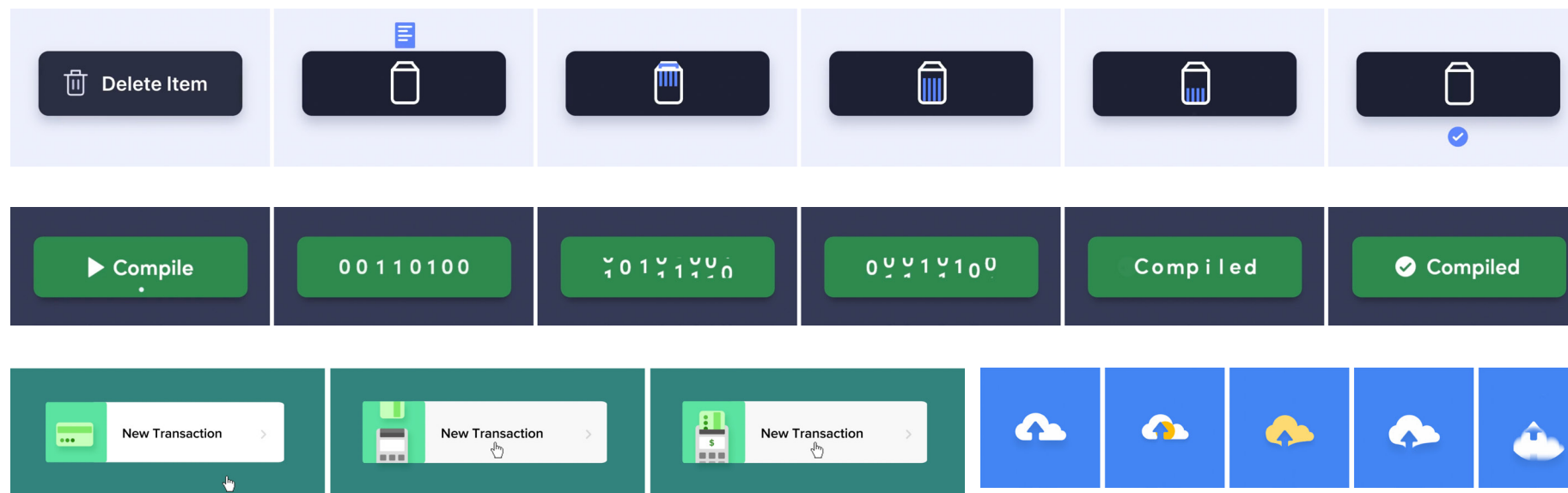
The idea of communicating properties found in objects in the real world can apply to a single-widget microinteraction. *Simple Like*[4] by Oleksandr Pronskyi exemplifies this animation case. This microinteraction involves only a heart-shaped widget. The animation conveys the idea that blood fills out this heart due to the microinteraction (Figure 5). Just when the heart is about to get full, the force of the blood pump gets to bloat the right extreme of the heart. In this moment, the materiality changes—from a solid container to a pliable one—nd the heart takes the form of a checkmark. Pumping blood causes the initial surprise and period of captivation. However, the delightfulness of this microinteraction reaches its climax when the heart becomes such a mark. The animation helps the microinteraction communicate closure—and that the user's action occurred as expected—when the checkmark becomes a red heart again.

Figure 3: Effect of short swipe left in Swipe to Delete. Source: Nguyen, 2018

Figure 4: Microinteraction about deleting the content of a text field through a long. Source: Nguyen, 2018

Figure 5: Simple Like. Source: Pronskyi, 2019

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Figure 6: Trash/Delete Button
Source: Iker, Trash/Delete Button, 2020

Figure 7: Compile Code Button. Source: Mehta, 2020

Figure 8: New Transaction Hover. Source: Bucardo, 2020

Figure 9: Upload Button Concept UI UX.
Source: Aquino, 2018

Delight by showing a process or event that clarifies the microinteraction
Some animations show a process or event that is integrated into the widget's composition momentarily, and by which the microinteraction clarifies its purpose or outcome, supporting thus the communication of need fulfillment. The key characteristic in these examples is that the animation of the process or event takes place on the widget's total or partial surface area, conveying the idea that it becomes a kind of stage, window, or peephole due to the microinteraction. The surprise in a microinteraction's user experience arises when the widget metaphorically (or conceptually) transforms, getting to catch the user's attention. For example, Aaron Iker implements this delightful microinteraction pattern in *Trash/Delete Button*[5] This microinteraction animates a sheet going through a paper shredder (Figure 6). Though the button's face initially shows a trash can icon and the label "Delete Item," none of these elements is part of the main animation. They disappear when such an animation begins. The animation transmits the microinteraction's outcome despite the simple look of the sheet and shredder. It also shows a blue checkmark at the end, indicating the completion of the deleting process and the correct functioning of the system after this event.

The event or process executed by the system may be too technical or abstract for a non-expert to understand. Animation sometimes leverages metaphor and other figures to represent something that would make more sense for the user. The pleasant surprise for the user occurs when she notices the concept being communicated through the animation and connects it with the event or process carried out as a result of the microinteraction. For example, *Compile Code Button*[6] by Kashish Mehta includes an animation that alludes to rotating cylinders of a slot or cipher machine in order to communicate the idea of compiling source code (Figure 7). Compile Code Button does not show any slot or cipher machine, but the user can still see one by looking at how the numerals appear and disappear from the button's face. This animation also utilizes a checkmark symbol to communicate closure and indicate that the compilation was successful.

In *New Transaction Hover* [7],Mauricio Bucardo only uses a portion of the button's face—its left side. The animation shows how the transaction would have happened in the real world—the user would give her card to be read in order to complete the process (Figure 8). The animation needs not to show the card and reader in their totality. The important communicative requirement is to show the parts involved in the execution and confirmation of the action—this microinteraction presents an *animated synecdoche* (Sosa-Tzec et al.). Such a requirement enables microinteractions whose widgets have an unusual appearance to become delightful. For example, the borderless button of *Upload Button Concept UI UX Microinteraction*[8] by Pedro Aquino an arrow propelled into the sky due to the microinteraction. The animation in this example represents the idea of uploading data to the cloud by showing the arrow traveling from a cloud to another situated upper in the sky (Figure 9). Moreover, it transmits the idea of a peephole due to the incomplete cloud shapes moving through the button's area.

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[5] https://dribbble.com/shots/10276145-Trash-Delete-Button

[6] https://dribbble.com/shots/14059892-Compile-Code-Button

[7] https://dribbble.com/shots/9990744-New-Transaction-Hover

[8] https://dribbble.com/shots/4761278-Upload-Button-Concept-UI-UX-Microinteraction

Delight by adding a biomorphic dimension to the microinteraction
Animation enables designers to convey the notion of life, which provokes surprise and captivation. Unsurprisingly, adding a biomorphic dimension to microinteractions appears as a common practice. The basic strategy is to anthropomorphize the widgets through motion, and sometimes by adding shapes that resemble a human face. Aaron Iker exemplifies this idea in *Stars Rating Animation*[9], where the star's face and movement communicate that higher scores are better (Figure 10). The star shows a happier expression as it moves to a higher score position. The star even sparks when it reaches the highest scores. However, including a face is not a requirement to convey the notion of life. An effective strategy is to utilize signifiers whose movement resembles a body part and communicates that such a part can perform an action that is expected from it. For example, in *Webcam Interaction*[10] by Ajith Chandran, a spherical web camera icon transforms into a one-eye creature that awakens or goes back to sleep when the user clicks on it. When awake, this one-eye creature follows the mouse cursor (Figure 11).

In both microinteractions, the elements of surprise and captivation are possible due to animation. The element of surprise may be stronger in *Webcam Interaction* because of the lack of a smiley or any evident reference to a human. The animation changes the initial recognition of a web camera icon. The animation encourages interactivity by showing how this creature follows the mouse cursor, making the microinteraction's UX playful, amusing, and captivating. Lifelike animation can push the unexpectedness in a microinteraction by introducing widget behaviors that challenge the user's understanding of how the widget should like and behave. *Caterpillar*[11] by Oleg Frolov exemplifies this idea. This microinteraction comprises a toggle switch button that mimics a caterpillar crawling on the screen (Figure 12). Conventionally, the track of such a button remains inert in the same position at all times. It is the toggle that switches position to indicate a change of state in the system. In *Caterpillar*, the background color, including its connotation, plays a crucial role as it compensates the destructive effect of the animation in the user's mental model about a widget of this kind and its associated microinteraction. The communication of need fulfillment only becomes clear when the animation stops, and the background indicates the user about the system's current state. Seeing something so unusual makes this microinteraction (animation) amusing to watch nonetheless.
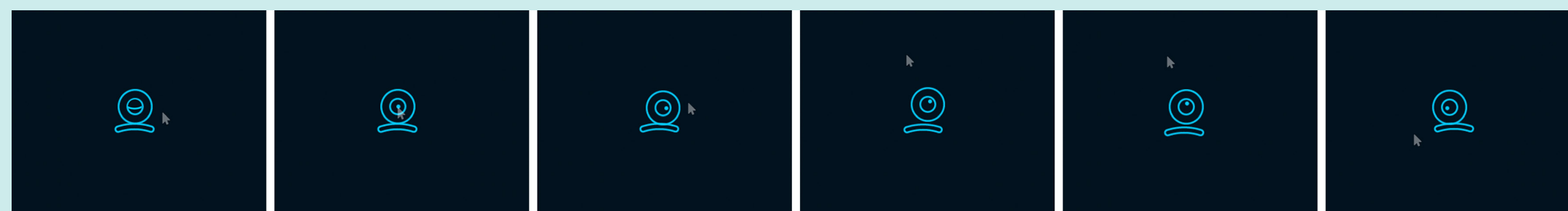
Delight by imbuing a microinteraction with vitality
Many microinteractions convey vitality without alluding to a human or animal. Often, vitality is a result of certain animation tropes applied to a microinteraction's components. For example, *explosion, bounce*, and *tremble*. The application of these tropes adds an energetic, dynamic, uplifting character to the microinteraction. Two archetypes of microinteraction where animation is purposefully applied to convey vitality are the *like* and *fav* microinteractions. For example, *Like Animation*[12] by Alex Bender (Figure 13) and *Heart Button*[13] by Alexis Alikhanyan (Figure 14). In this kind of microinteractions, surprise and captivation are intrinsically related to the effusive reaction and unexpected explosion of the widget or around it. The communication of fulfillment relates to when animation shows that a burst is over and energy has been spent. These microinteraction archetypes usually add animated pop-up components—such as counters—and visual cues. Notification microinteractions work similarly. *Notification Button*[14] by Khrystyna illustrates this case (Figure 15).

Animation conveying vitality is present in microinteractions distinct from favs, likes, or notifications. It also applies to single-widget microinteractions not making use of additional components. For example, *One More Switcher*[15] by Oleg Trubitsyn (Figure 16) and *Flipping Checkbox*[16] by Andreas Storm (Figure 17) use animation to energize the change of state of a toggle switch button and a checkbox, respectively. These microinteraction examples illustrate how animation conveying vitality connects with some of the observations above, including (perceived) materiality changes. In *One More Switcher*, the unusual look of the toggle switch button gives the widget a potential for surprise and captivation before the animation happens. This microinteraction's animation conveys that the switch is made of a viscous, slippery material—for example, mercury. The animation modifies the color of the unibody widget when the part corresponding to the toggle changes its position. The notion of vitality here connects intrinsically with the fluidity conveyed through motion. *Flipping Checkbox* utilizes animation for a similar effect. The animation creates an unexpected, pleasant effect of the microinteraction. *Flip* is the animation trope by which the microinteraction transmits the idea of applied force and disrupting the flatness and stillness of the screen and checkboxes.
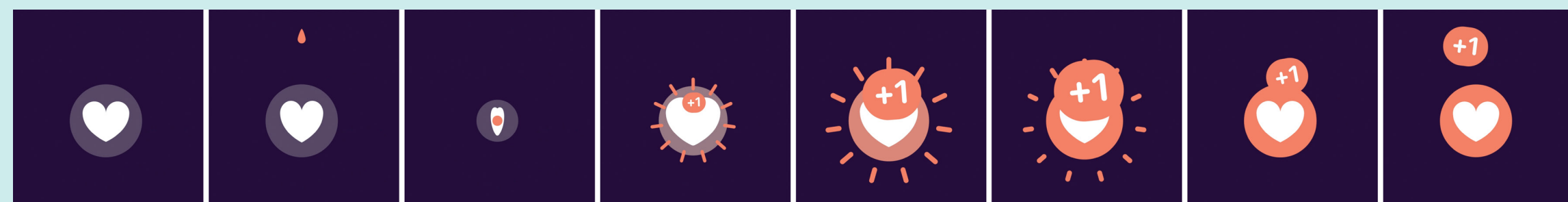
[9] https://dribbble.com/shots/7170398-Stars-rating-animation

[10] https://dribbble.com/shots/3908197-Webcam-Interaction

[11] https://dribbble.com/shots/4299720-Caterpillar

[12] https://dribbble.com/shots/13985942-Like-Animation

[13] https://dribbble.com/shots/5972951-Heart-button

[14] https://dribbble.com/shots/5972951-Heart-button

[15] https://dribbble.com/shots/8969237-One-more-switcher

[16] https://dribbble.com/shots/6009731-Flipping-checkbox

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Figure 10: Stars Rating. Source: Iker, *Stars Rating Animation*, 2019

Figure 11: Webcam Interaction. Source: Chandran, 2017

Figure 12: Caterpillar. Source: Frolov, 2018

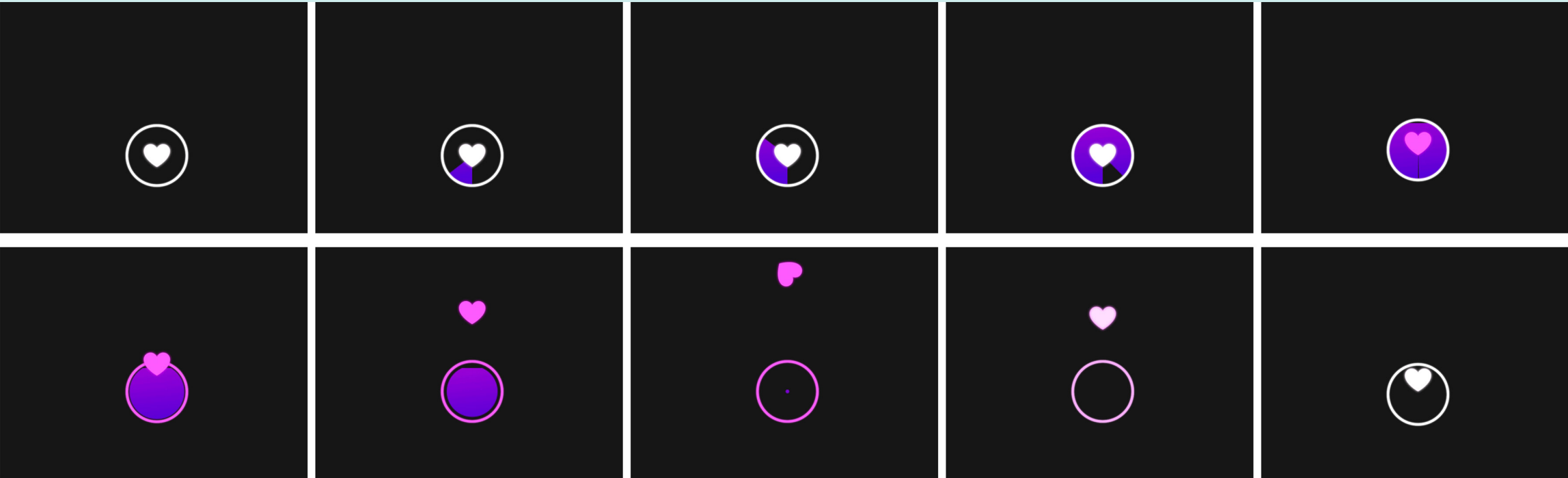**Figure 13**: Like Animation. Source: Bender, 2020

Figure 14: Heart Button. Source: Alikhanyan, 2019

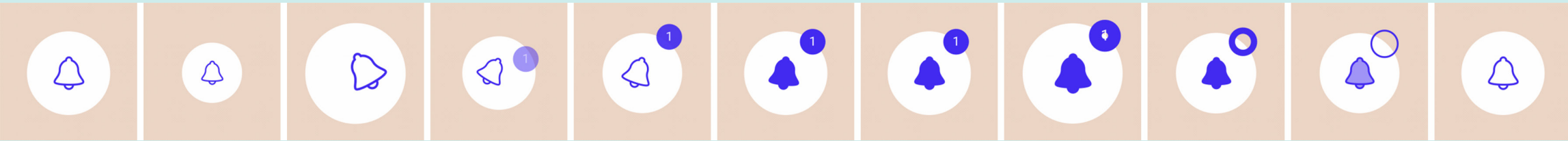**Figure 15**: Notification Button. Source: Khrystina, 2018

Figure 16: One More Switcher. Source: Trubitsyn, 2019

Figure 17: Flipping Checkbox. Source: Storm, 2019
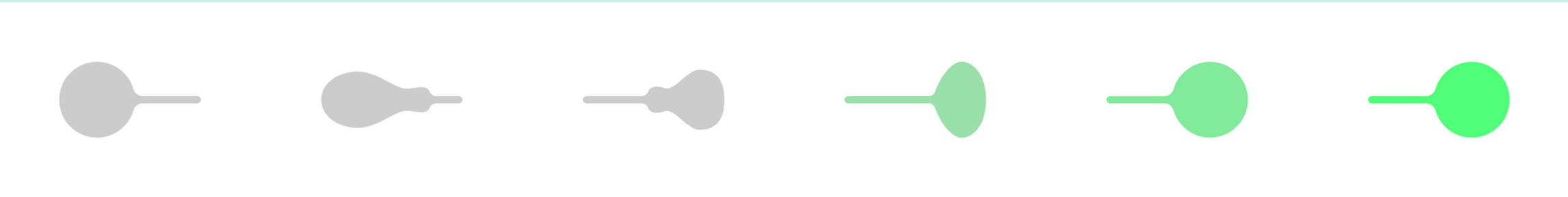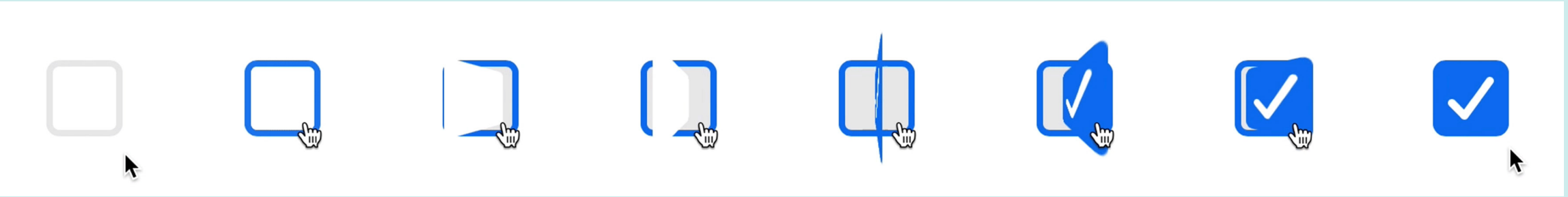
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Discussion and Conclusions

Based on the observations above, we discuss characteristics of delightful microinteractions and how animation contributes to attaining this effect. The design of a microinteraction needs to communicate visual affordances as much as possible before any animation takes place. The designer can propose an unusual appearance for a widget as long as the user can recognize it enough to know how to proceed (Sosa-Tzec, "Design Tensions"). The animation plays a crucial role because it clarifies what the widget is and what the microinteraction is about. To assess if the appearance and behavior of a microinteraction clashes with a potential user's mental models of interfaces and interactive systems, the designer could review interface guidelines that have been present for decades (Galitz) and combine them with an industry-led contemporary one. In the end, a microinteraction's animation should support learnability, memorability, and pleasantness—that is, the system's usability (Nielsen; Hassenzahl). Though there is room for visual and motion innovation, the designer should be careful not to let animation hurt the user experience of a microinteraction. A microinteraction's design, including its animation, is a matter of choice and having an understanding of the signifiers that would make sense for the user of a certain context of use. Microinteraction design is a field that illustrates how social semiotics work and why UI/UX designers should take the notion of signifiers, semiotic resources, and meaning-making seriously.

A microinteraction appears delightful when its appearance and behavior surprise, captivate, and communicate need fulfillment. Animation can help attain this objective by contextualizing, clarifying, metaphorizing, and creating a micro-narrative around the microinteraction's purpose, development, or outcome. The power of a delightful microinteraction's animation relies on how it facilitates the transfer of meaning or induces interpretation—referred to in social semiotics as *transduction* (Jewitt 102). The window for delight opens when the user recognizes the animation's communicative functions and why they make sense for the microinteraction and her goal. Animation makes the user experience an *aha!* moment when she notices something meaningful about the action she performed through the interface—that is, the microinteraction—in relation to her goal and expectations and concerning the context of use. It is in this *aha!* moment when the elements of surprise and captivation become present, and the user ends up feeling reassured about choosing and using the interactive system—even if it is for a brief moment. Animation can become essential to attaining a delightful *microinteraction's gestalt and aesthetics*—referring not to the appearance of the composition but to the degree of cohesion and expressiveness that emerges from interaction (Lim et al.; Petersen et al.).

Some UI animation strategies that a designer could apply to make a microinteraction appear delightful include (1) to (1) add an animated component to a widget's basic structure, (2) to convey materiality changes, (3) to conceptually transform the place of a microinteraction into a stage, window, or peephole, (4) to instantiate biomorphism and anthropomorphism, and (5) to transmit vitality. None of these strategies are mutually exclusive. Each represents an initial direction for conceptualizing an animation, a semiotic resource (Jewitt; Kress and Van Leeuwen) that a designer can use to identify suitable *motion and transition tropes* for the intended context of use and producing an *aha!* moment. Examples of such tropes are burst, wiggle, tremble, bounce, push, bend, curl, reveal, and conceal. These tropes are useful because they let a designer convey perceptual qualities through their application—for example, resistance, pliability, and cuteness. Choosing a strategy and its related tropes can enable a designer to give form to an animation that fulfills the communicative functions described above, including metaphorizing the microinteraction's purpose, development, or outcome. To advance *motion design literacy* in UI/UX designers, it is important to identify and organize animation strategies and tropes, as they are applicable for analytical and productive purposes. The critical analysis of professional work available online is one approach to advancing this field.

Developing motion design literacy is necessary but not sufficient for UI/UX designers. In customer experiences, delight influences the creation of memories, purchase decisions, and recommendations of products and services (Oliver et al.). Designers need to keep in mind that provoking delight or any emotion during the user experience is one way to modify the user's behavior, belief, or attitude (Sosa-Tzec et al.). Therefore, delightful microinteractions perform a persuasive role during the user experience, impacting how the user perceives and feels such an experience. For UI/UX designers, developing motion design literacy should go hand in hand with understanding its semiotics, rhetoric, and ethics. They need to know about what strategies and tropes for motion and animation in interfaces would produce the intended meaning (the semiotics design), how this meaning would affect the user and create discourse (the rhetoric design), and whether this intended meaning and effect are proper (the ethics design). UI/UX designers need to recognize how their attempt to design for delight—starting at the level of microinteractions—has consequences for the user and her daily life. Therefore, these designers ought to develop also a sense of ethics and accountability as part of their profession besides motion design literacy.

WORKS CITED

Alexander, M. Wayne. "Customer Delight: A Review." *Academy of Marketing Studies Journal; Arden*, vol. 14, no. 1, 2010, pp. 39–53.

Alikhanyan, Alexis. *Heart Button*. 2019. *dribbble.com*, https://cdn.dribbble.com/users/1763813/screenshots/5972951/swipe_up_07_2-2.gif.

Aquino, Pedro. *Upload Button Concept UI UX Microinteraction*. 2018. dribbble.com, https://cdn.dribbble.com/users/801336/screenshots/4761278/upload_button_microinteraction_ui_ux_gif.gif.

Avila-Munoz, Raquel, et al. "Communicative Functions in Human-Computer Interface Design: A Taxonomy of Functional Animation." *Review of Communication Research*, vol. 9, Mar. 2021. rcommunicationr.org, https://rcommunicationr.org/index.php/rcr/article/view/99.

Bender, Alex. *Like Animation*. 2020. *dribbble.com*, https://dribbble.com/shots/13985942-Like-Animation.

Boyd, Kyle, and R. R. Bond. "Can Micro Interactions in User Interfaces Affect Their Perceived Usability?" *Can Micro Interactions in User Interfaces Affect Their Perceived Usability?*, 2021, pp. 1–6. pure.ulster.ac.uk, https://pure.ulster.ac.uk/en/publications/can-micro-interactions-in-user-interfaces-affect-their-perceived-.

Bucardo, Mauricio. *New Transaction Hover*. 2020. dribbble.com, https://dribbble.com/shots/9990744-New-Transaction-Hover.

Chandran, Ajith. *Webcam Interaction*. 2017. *dribbble.com*, https://cdn.dribbble.com/users/380263/screenshots/3908197/cam.gif.

Chang, Bay-Wei, and David Ungar. "Animation: From Cartoons to the User Interface." *Proceedings of the 6th Annual ACM Symposium on User Interface Software and Technology*, ACM, 1993, pp. 45–55. *ACM Digital Library*, doi:10.1145/168642.168647.

Chevalier, Fanny, et al. "Animations 25 Years Later: New Roles and Opportunities." *Proceedings of the International Working Conference on Advanced Visual Interfaces*, ACM, 2016, pp. 280–87. *ACM Digital Library*, doi:10.1145/2909132.2909255.

Dey, Soma, et al. "A Study on the Antecedents and Consequences of Customer Delight." *Total Quality Management & Business Excellence*, vol. 28, no. 1–2, Jan. 2017, pp. 47–61. *Taylor and Francis+NEJM*, doi:10.1080/14783363.2015.1049146.

Dong, Yutong, et al. "A Study on Narrative Timing Sequence of Animation in Mobile Interfaces." *Human-Computer Interaction. Perspectives on Design*, edited by Masaaki Kurosu, Springer International Publishing, 2019, pp. 514–26. Springer Link, doi:10.1007/978-3-030-22646-6_38.

Frolov, Oleg. *Caterpillar*. 2019. dribbble.com, https://cdn.dribbble.com/users/108183/screenshots/4299720/caterpillar_by_volorf.gif.

Galitz, Wilbert O. *The Essential Guide to User Interface Design: An Introduction to GUI Design* Principles and Techniques. 3rd ed, Wiley Pub, 2007.

Gonzalez, Cleotilde. "Does Animation in User Interfaces Improve Decision Making?" *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, Association for Computing Machinery, 1996, pp. 27–34. ACM Digital Library, doi:10.1145/238386.238396.

Hartmann, Jan, et al. "Towards a Theory of User Judgment of Aesthetics and User Interface Quality." *ACM Trans. Comput.-Hum. Interact.*, vol. 15, no. 4, Dec. 2008, p. 15:1-15:30. *ACM Digital Library*, doi:10.1145/1460355.1460357.

Hassenzahl, Marc. "The Interplay of Beauty, Goodness, and Usability in Interactive Products." *Human–Computer Interaction*, vol. 19, no. 4, 2004, pp. 319–49. ACM Digital Library, doi:10.1207/s15327051hci1904_2.

Huhtala, Jussi, et al. "Animated UI Transitions and Perception of Time: A User Study on Animated Effects on a Mobile Screen." *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, Association for Computing Machinery, 2010, pp. 1339–42. *ACM Digital Library*, doi:10.1145/1753326.1753527.

Iker, Aaron. *Balloon Slider*. 2019. *dribbble.com*, https://dribbble.com/shots/7515563-Balloon-Slider.

---. *Smoke Slider*. 2019. *dribbble.com*, https://dribbble.com/shots/8424211-Smoke-Slider.

---. S*tars Rating Animation*. 2019. *dribbble.com*, https://dribbble.com/shots/7170398-Stars-rating-animation.

---. *Trash/Delete Button*. 2020. *dribbble.com*, https://dribbble.com/shots/10276145-Trash-Delete-Button.

Jewitt, Carey, editor. *The Routledge Handbook of Multimodal Analysis*. Second edition, First published in paperback, Routledge, Taylor & Francis Group, 2017.

Joyce, Alita. "Microinteractions in User Experience." *Nielsen Norman Group*, https://www.nngroup.com/articles/microinteractions/. Accessed 13 Apr. 2021.

Khrystina. *Notification Button*. 2018. *dribbble.com*, https://cdn.dribbble.com/users/1788187/screenshots/5345557/5.gif.

Kraft, Jonas F., and Jörn Hurtienne. "Transition Animations Support Orientation in Mobile Interfaces without Increased User Effort." *Proceedings of the 19th International Conference on Human-Computer Interaction with Mobile Devices and Services*, Association for Computing Machinery, 2017, pp. 1–6. *ACM Digital Library*, doi:10.1145/3098279.3098566.

Kress, Gunther R., and Theo Van Leeuwen. *Reading Images: The Grammar of Visual Design*. Third edition, Routledge, 2020.

Kumar, Anand, et al. "Exploring Alternative Antecedents of Customer Delight." *Journal of Consumer Satisfaction, Dissatisfaction and Complaining Behavior*, vol. 14, 2001, pp. 14–26.

Liddle, Daniel. "Emerging Guidelines for Communicating with Animation in Mobile User Interfaces." *Proceedings of the 34th ACM International Conference on the Design of Communication*, ACM, 2016, p. 16:1–16:9. ACM Digital Library, doi:10.1145/2987592.2987614.

Lim, Youn-kyung, et al. "Interaction Gestalt and the Design of Aesthetic Interactions." *Proceedings of the 2007 Conference on Designing Pleasurable Products and Interfaces*, ACM, 2007, pp. 239–54. ACM Digital Library, doi:10.1145/1314161.1314183.

Mehta, Kashish. *Compile Code Button*. 2020. *dribbble.com*, https://dribbble.com/shots/14059892-Compile-Code-Button.

Nguyen, Hoang. *Swipe to Delete*. 2018. *dribbble.com*, https://cdn.dribbble.com/users/379146/screenshots/5181665/1234.gif.

Nielsen, Jakob. "Usability 101: Introduction to Usability." *Nielsen Norman Group*, 1 Mar. 2012, https://www.nngroup.com/articles/usability-101-introduction-to-usability/.

Oliver, Richard L., et al. "Customer Delight: Foundations, Findings, and Managerial Insight." *Journal of Retailing*, vol. 73, no. 3, Sept. 1997, pp. 311–36. *ScienceDirect*, doi:10.1016/S0022-4359(97)90021-X.

Petersen, Marianne Graves, et al., editors. "Introduction to Special Issue on the Aesthetics of Interaction." ACM Trans. Comput.-Hum. Interact., vol. 15, no. 3, Dec. 2008, p. 10:1-10:5. ACM Digital Library, doi:10.1145/1453152.1453153.

Pronskyi, Oleksandr. Simple Like Microinteraction Principle Freebie. 2019. dribbble.com, https://cdn.dribbble.com/users/115601/screenshots/5889083/like-freebie.gif.

Rust, Roland T., and Richard L. Oliver. "Should We Delight the Customer?" *Journal of the Academy of Marketing Science*, vol. 28, no. 1, 2000, p. 86. link.springer.com, doi:10.1177/0092070300281008.

Saffer, Dan. *Microinteractions: Designing with Details*. 1. ed, O'Reilly, 2014.

Schneider, Benjamin, and David E. Bowen. "Understanding Customer Delight and Outrage." *Sloan Management Review; Cambridge*, vol. 41, no. 1, Fall 1999, pp. 35–45.

Sosa-Tzec, Omar. "Design Tensions: Interaction Criticism on Instagram's Mobile Interface." *Proceedings of the 37th ACM International Conference on the Design of Communication*, Association for Computing Machinery, 2019, pp. 1–10. ACM Digital Library, doi:10.1145/3328020.3353944.

---. "Exploration of Rhetorical Appeals, Operations and Figures in UI/UX Design." *Proceedings of the 3rd International Conference for Design Education Researchers*, 2015, p. 1432, http://www.researchgate.net/profile/Erik_Bohemia/publication/279182494_Proceedings_of_the_3rd_International_Conference_for_Design_Education_Researchers_(volume_4)/links/558ceb7708ae1f30aa-80c1a0.pdf#page=110.

---. "User Experience Delight from the Designer's Perspective | Avances En Interacción Humano-Computadora." *Avances En Interacción Humano-Computadora*, vol. 3, no. 1, Oct. 2018, pp. 22–25.

Storm, Andreas. *Flipping Checkbox*. 2019. *dribbble.com*, https://cdn.dribbble.com/users/153131/screenshots/6009731/check.gif.

Thomas, Bruce H., and Paul Calder. "Applying Cartoon Animation Techniques to Graphical User Interfaces." *ACM Transactions on Computer-Human Interaction*, vol. 8, no. 3, Sept. 2001, pp. 198–222. September 2001, doi:10.1145/502907.502909.

Torres, Edwin N., and Giulio Ronzoni. "The Evolution of the Customer Delight Construct: Prior Research, Current Measurement, and Directions for Future Research." I*nternational Journal of Contemporary Hospitality Management*, vol. 30, no. 1, Jan. 2018, pp. 57–75. DOI.org (Crossref), doi:10.1108/IJCHM-09-2016-0528.

Trubitsyn, Oleg. *One More Switcher*. 2019. dribbble.com, https://cdn.dribbble.com/users/694122/screenshots/8969237/switcher2.gif.

Vanderdonckt, J. "Animated Transitions for Empowering Interactive Information Systems." *2012 Sixth International Conference on Research Challenges in Information Science (RCIS)*, 2012, pp. 1–12. IEEE Xplore, doi:10.1109/RCIS.2012.6240413.

Walter, Aaron. *Designing for emotion*. A Book Apart, 2011.

Wu, Ziming, et al. "Predicting and Diagnosing User Engagement with Mobile UI Animation via a Data-Driven Approach." Proceedings of the 2020 CHI Conference on Human Factors in Computing Systems, Association for Computing Machinery, 2020, pp. 1–13. ACM Digital Library, doi:10.1145/3313831.3376324.

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