# Transitions Research for Experience Design

Designing Interactive Products and Services for Role and Environmental Transitions

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Abstract: People live with transitions rooted in both nature and culture that embody the 'changing' and 'unc hanging' t raits of role s and e nvironments. P eople h armonize these traits with t heir 'character', which provi des them the c ontinuity and the v alues of t heir li ves. In c ontemporary culture, changing and unchanging character traits become a problem due to advancing technology that radically affects the material and social dimensions of our relationships. Interactive products and services play an important role in these transitions as they provide a tangible grip for people to hold on to during their struggle. However, because people have fewer unchanging than changing qualities, t hey la ck grounds t o de fine or s hape "character" whic h woul d he lp t hem to be tter facilitate their transitions. To design interactive products w ith "character," I propos e a transitions research a pproach t o be u tilized by t he a nalysis of t ransitions wit h he uristics, a nd a dra matist synthesis through the modes of transitions framework using principles of the social aesthetics. This work id entifies a n eed to ex plicitly r eframe ex periences f rom th e p erspective o f transitions an d contributes to the theories of experience design.

*Key words: Design methods, interaction and service design, experience, transitions.*

## 1. Introduction

Design communities have been engaged in an ongoing transition from usability to *experience* with an urge to develop a ho listic and yet detailed understanding of people. Traditionally, experience is defined as the form of one's interaction with the environment. This interaction is characterized as one's "doing" and the environment's "undergoing" [18]. Such a re lationship be tween one self a nd the environment c an be interpreted as a c onstant struggle be tween the 'changing' a nd 'unchanging' c haracter traits o f the s elf, the e nvironment, or bo th. For example, people are constantly wrestling with their past and present selves, with familiarity and strangeness of new environments, with the stability and mobility of order in their lives. In these variations, one can derive the conclusion that human experience is composed of transitions.

The main argument of this article is that understanding transitions would he lp de sign communities to de sign better interactive products and services. A transition is defined as the change from one state to another [41]. In the context of people and experience, this transition happens through roles and environments. Imagine a working couple that recently had a baby and moved to a new city. Everyday they experience a variety of challenges: role transitions such as becoming a new parent or changing a career path from a stay-at-home parent to an employee

in a workplace, and environmental transitions such as moving to a new city or traveling between the home and office settings. In between the changing and unchanging traits, stress occurs by challenging people's routines and rituals, and thereby transitions often result in decline of people's well being.

Transitions for one's well being has three layers: "felt-life" qualities [40], sense of place [31], and life orders [38]. Felt-life qualities in transitions can be defined in the spectrum of anxiety versus calmness, sadness versus happiness. The sense of place is one's ongoing challenge with transitions in making sense of the ever-changing states of experiences. Order, which encompasses the self and environment, is the overarching challenge for people who are in transitions. Once defined as the layers and reflections of principles arranging the relationships between parts of an entity [38], order often times is challenged through the changing dynamics of relationships. Referring back to our imaginary couple, such new dynamics can be having a baby or inhabiting a new city. Transitioning through time and toward well-being, people foster social aesthetics [8] that are situational and include multiple roles and environments together with its own qualities of mutuality, multiplicity and engagement.

Interactive products play an important role in these transitions by providing people with a tangible grip to hold on to during the transitions. Mobile communication products and services are good examples as being support for transitions. However, transitions have not been considered explicitly among the experience design community. Moreover, the fact that people have changing and unchanging character traits is underestimated. Ironically, interactive products, which are dynamic by nature, have been designed according to the static character traits of people or the environment. There is a need to reconsider experiences from the perspective of transitions and changing and unchanging character traits with the intention to pursue social aesthetics in design.

In this article I address the development of a transitions perspective to design better interactive products and services. I propose a conceptual framework to support design researchers to develop methods for transitions, and designers to better address the transitions phenomena. In the following section I will introduce transitions phenomena from the dimensions of people, products, and designers. The third section will talk about the themes that will prepare the design space for new ways or methods of designing interactive products and services. Section four will inter-relate those themes to make the framework applicable to others, and the paper will conclude with possible future directions.

## 2. Transitions

## 2.1. People in Transitions

Transitions shape people's lives at the micro and macro levels. At the micro level, people experience spatial and social role transitions; at the macro level, people experience life-stage and environmental transitions such as migration. "A role transition is an event or nonevent resulting in changes in individual psychosocial assumptions concerning oneself or one's organizational environment, social environment or one's relation to one's environment"[49]. On the other hand, environmental transitions can be defined as one's entire move from one place to another. Spatial transitions trigger issues of mobility, whereas social role transitions trigger issues of adaptation, and life-stage transitions point out issues of habituation, whereas environmental transitions point out issues of adoption. Whether at the micro or macro level, these transitions share the 'changing' and 'unchanging'

traits that result in the growth or decline of well-being. I will describe the types of transitions in the following (Fig 1.)

1.  *Spatial transitions* include moving from one physical environment to another on a daily basis. By giving people mobility, modern times created separate domains such as home, work and leisure. These distinctions between home and work started to appear during the period of Industrialization. It so extensively separated work from interest and leisure, and created compartments that set boundaries for people so that people often don't have the kind of complete, satisfying, or meaningful experience that fosters human-to-human engagement [19].

2.  *Social role transitions:* Social role transitions include moving from one specific role to another on a daily basis. Its historical unfolding has changed due to the technological advances in computation and electronics. People are experiencing a new phenomenon where different contexts such as work, home, and leisure are intertwined. Providing the capability of being 'present' in many roles at any time, people begin to "multi-context" while they simultaneously flatten their contexts. [17] Moreover, as Meyrowitz puts deliberately, "Electronic media combined previously distinct social settings, moved the dividing line between private and public behavior toward the private, and weakened the relationship between social situations and physical places" [42]. From a dramaturgical perspective, front and back stages of our daily interactions merged in an unbalanced manner [27]. This causes 'role blurring', which can result in anxiety, and even embarrassment in the case of a simultaneous performance of roles [30]. This high instability and lack of structure in transitioning between roles can cause 'interruptions' without prior information [4]. Interruptions cut through different roles, threaten one specific role identity, and cause an undesirable shift.

3.  *Life-stage transitions:* It is a macro level transition happening over time, when people move from one type of social role to another, such as becoming a new parent, entering college, etc. It has been studied intensively in the fields of psychology and sociology. Bengston and Allen focused on the existing life-stage perspectives as well as extract time, context, process, and meaning of human development and family life as the dimensions of life-stage transitions [6]. They unfold the element of time into ontogenetic, generative, and historical time, and mention that people live through consecutive processes on top of these multi-temporalities. This complexity and heterogeneity regarding time and 'social location' points out stress as a significant issue that affects people's physical and mental health [26]. These stress in return influence their life-style and wellbeing.

4.  *Environmental transition:* Another macro level transition, the environmental transition is a change both in the self and in the environment. Moving into a new city or country, which is also called a migration, is a typical environmental transition: "Immigrant adjustment includes changes in individual behavior, such as cultural patterns, social and economic achievements, job skills, family status, health and social well-being, cultural and political values, and participation in social and political organizations" [21]. Such an adjustment is not easy, and most of the time people experience culture shock, which is a crisis of emotional reaction rooted in the loss of the prior culture and misunderstanding of the new environment.

| Transitions | Micro/Part | Macro/Whole |
|---|---|---|
| Environment | Spatial | Migration |
| Role | Social-role | Life-stage |

Figure 1. Types of transitions

## 2.2. Products in transitions

Products pla y a n important rol e i n these transitions be cause t hey s erve a s i nterventions a nd s trategies. One example of this is the intervention of a bike to a solo driver's commuting routine. In transitioning from the role of a solo driver to the role of an ecologically conscious bicyclist, the bike gives a tangible means to hold on to. They provi de concrete or abstract (ye t s tructured) pla ces for pe ople to gr ip on to in the re al worl d. As Csikszentmihalyi states, "objects provide continuity of the self through time, by providing foci of involvement in the present, mementos and souvenirs of the past, and signposts to future goals" [16].

Consumer behavior r esearch moreover gi ves clues of t heir relationship w ith product attachment theory, which becomes clear in Belk's statement that "possessions (products) are part of people's extended self":

> "Persons-object re lationships m ay be described a s m oving from be ing one w ith the e nvironment t o having objects that aid the transition to a world where self is distinct from the environment. Then the next changes m ay be characterized a s m oving from t ransition objects t o doing t hings with or t o the environment." [5]

In doing things to the environment, interaction products surpass the traditional products with their motion and interaction qua lities. Interactive products s tems from computational and electronic technology, which r adically changed the poetical dimensions of products, such as their material and form. Products have become immaterial with the emergence of Int ernet and s oftware technologies. Moreover, s ensor t echnologies quickly propa gated computational c apabilities t o phys ical produc ts, re sulting in i nteractive produc ts w ith m otion a nd interaction qualities. Embedded with sensors, products were designed not only with the static physical form, but also with the consideration of input-output relations, making products action-centered.

Communication products such as mobile phones are good examples of interactive products that help people with their *immediate* interactions. On one ha nd, t hese produc ts help p eople t o a dvance t heir te mporal and s patial arrangements. On the ot her ha nd, they trigger issues re lated to *multi-contexting*, or *flattening of contexts* [33]. *Service products* are a nother k ind of interactive produc t that h elps pe ople wit h transitions: "A s ervice is an activity or series of activities of more or less intangible nature that normally but not ne cessarily take place in interactions between the customer and service employees and/or physical resources or good a nd/or systems of the s ervice provi der, wh ich are provi ded a s s olutions to customer probl ems" [29]. In the c ase of im mediate interactions people mostly interact with products, but in the case of long-term interactions, people interact with services and pol icies that are d esigned for t hem. Campaigns that he lp pe ople quit smoking; s ervices that h elp people prepare for marriage; therapy sessions that address diagnosis of a serious illness or loss of a closed one; and s ervices t hat e ncourage pe ople to r ideshare a re such examples of produc ts for h abituation and adoption.

Interventions of artifacts either double the issues of transitions, as in the case of mobile products, or they do not consider them explicitly. This negligence and misunderstanding of the nature of the problem result in inefficient resolutions or ineffective solutions that cause the problem to create new problems.

## 3. Character facilitating transitions

### 3.1. Transitioning with character

Issues around transitions are related to the changing and unchanging traits as well as its own variations, such as new and old, strange and familiar, or unconventional and conventional. In these traits, the fact that people are both changing and unchanging points out a paradox: How can people possess both changing and unchanging traits? To overcome such a paradox, people make transitions with "character," virtues that harmonizes the changing and unchanging dimensions in one's life [28]. With character one can deal with transitions, and pursue continuity and values during and after transitions. Think of a freshmen student who has just entered college. In order to adapt to new circumstances, he uses an unchanging character trait such as stamina to handle the classes; however, he also experiments with one of his changing qualities such as self-control, helping him live independently.

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Looking at the nature of people in a comprehensive manner, one can see that people have both changing and unchanging character traits within them. Unchanging character traits are rooted in their instincts and then later developed as the *unconscious* and *conscious* portions of the *ego* [24]. Keirsey follows this psychoanalytical reading with the notion of a temperament model. Instincts are sensual or perceptional qualities that form the temperament types. These are inborn unchanging traits that are actualized through use. [36]. Goffman situates human character in role performances and claims that one changes all the time in between role enactments for the sake of presentation. He insists on the changing traits of human character [27]. There might be a strong objection to such a perspective from Aristotle, who insists on three conditions for the formation of virtues in the self, of which the most important is proceeding of actions from a firm and unchangeable character [4]. Unchanging traits define virtues and virtues define character. From an ontological interpretation, unchanging traits are in relation to the changing traits in a social and cosmic setting. " The changing character of the world reveals metaphysically the permanent reality that transcends it. To realize the relativity of things is to know, by an extension of the same knowledge, of the unchanging or the permanent." [44]. To summarize, human character can be interpreted with four distinct themes: temperament, persona, habit, and social values.

### 3.2. Interactive products with character

How do we inquire into the character of products? As design is an art rooted in making, designers traditionally approach character from the perspectives of poetics and rhetoric. In poetics, one can reach the character traits of a product by analyzing subject matter as a unified whole and composition of form, matter, function, and manner, synthesizing these elements by using experimentation and grammar of design [11]. To give an example, a wooden chair's character is manifested through the material quality of a rose tree, form and function of an outdoor chair, and details of hand-made craftsmanship. Some of these elements depict unchanging qualities such as the material or formal quality of a wooden chair. However, it is hard to talk about the character elements of

interactive products because technology is changing rapidly. With these kinds of products we can observe the phenomenon of following shifts:

*Material shift:* Technology has transformed the materiality of products. Products were designed with immaterial materiality [20] of products, where motion and action served as material. Wi-fi networks, software products, and sensor networks are good examples of such immateriality.

*Form shift:* Products changed their form from physicality to experience and service. Designers, in the emergence of mobile communication, for instance, began with designing cell phones; however, in the past decade we have witnessed a shift from designing fragmented physical embodiments to designing whole experiences in which the physical phone becomes only a small portion of the whole communication service.

*Function shift:* The functionality of a product becomes interactive between people and the environment. In describing actions, there are several approaches. The diffusion of interaction can be traced back to the interpretations of action across state-of-the-art design approaches. The activity theory defines actions as operations and materials of activities [43], whereas the situated action theory defines actions as generative mechanisms and manners of contingencies [50]. From a distributed cognition perspective, actions are functions between two cognitive machines, the human and the computer [43].

*Manner shift:* Technology transformed the social mores and fabric of relationships by the flattening of contexts, multi-contexting [17], and the emergence of new social mores. Consider the social custom of the greeting ritual. In our face-to-face interactions, not paying attention to someone or walking away from someone in the midst of a conversation can be regarded as incredibly rude behavior. However, on instant messenger, it can always be compensated or perceived as normal behavior.

Keeping these in mind for interactive products, the material and formal grounds can be seen in a flux, and it is hard to talk about unchanging qualities or conventions. If there are no unchanging qualities or fewer of them, it is hard to talk about the character traits of such products. Simply put, we do not have the grounds to define or shape character for interactive products and services. Think of a web browser that is designed for multiple platforms. One can talk about the character of such a product mostly in terms of its visual appearance, such as typography or color. Moreover, think of a service such as Starbucks. Once you begin to think of the designed roles of barista and customer it becomes inadequate to characterize the service with the physical character elements. To acquire character traits in these products, there is a need to rediscover the manifestations of character in action. In rhetoric, one can talk about character of design in the voice of the designer, the product, and the audience. Once stated clearly by Buchanan, "There is a deep reflexive relation between human character and the character of the human-made: character influences the formation of product and products influence the formation of character in individuals, institutions, and society."[12]. Regarding the technology's intervention, we see such reflexive relation in an obvious way, with the merge of the designer, product, and the audience. The emergence of social media and the fact that content is created by the audience through online sharing websites such as YouTube, Flickr, and Wikipedia, one can observe the character of products and people constantly affecting each other. With interactive products and services, character is a construct of people and products. With such a move in defining character within interactive products and services, I merged the character dimensions of

people and products to reach the character constructs for interactive products. Just as human character is built upon temperament, persona, habit, and social values, experience too takes shape around these themes. Aristotle unfolds the material, formal, efficient and end causes in *Poetics* to explain the relationships between them and how such a relationship results in a unified whole [51]. Thinking of an experience as a means of the formal, material, efficient and end causes and merging them with the dimensions of human character, one can discover the four character constructs, including *routine*, *performance*, *narrative*, and *ritual*. These constructs are the *modes of transitions* that define experience (Figure 2).

*Routine as materiality*: A routine is a mechanical performance of an established procedure. Prior research shows us that routines are automated actions that people unconsciously perform; they are unremarkable in character, the glue of everyday life [52]; they also take shape with creativity [53] and unexpectedly can become social and predictable. Analogically, a routine resembles the temperament of human character. A routine's relationship with other qualities is a crucial one; without routine any experience lacks foundation, as the routine itself defines the material qualities of the experience.

*Performance as manner:* Performance by definition means the execution of an action. For human experience, it is the self's role in enacting in various contexts. Suchman's interpretation on situation and action claims that actions are highly contingent, and founded on local interactions with our environment and based on the improvisations of the person [33] [50]. For Kapferer, "performance constitutes a unity of text (representation) and enactment, neither being reducible to the other" [35]. Performance as a quality situates itself as a facilitator between routine and rituals and helps narratives construct their dramatic qualities.

*Narrative as functionalities:* A narrative simply means the narration of a story. In literature, it refers to the analysis and/or synthesis of a particular story; in psychology, it is an interpretation in which humans make sense of the world; and in drama, it is the performance of stories in front of an audience. In cultural studies, it is the manifestation or embodiment of a cultural structure or thought [39]. With this richness of variety, narratives point out functional qualities of an experience, from interpretation to representation and from performance to embodiment.

*Ritual as forms:* A ritual is defined as a mechanism of mutually focused emotion and attention producing a momentarily shared reality, which thereby generates solidarity and symbols of group membership [13]. A ritual is the ultimate form of an experience, and it possesses routine, performance, and narrative qualities. Rituals refer to expressive and symbolic activities composed of several sets of performances, which happen in a repetitive manner [47]. Levy classifies rituals into spiritual, cultural, group, individual, and biological types [37]. Rituals differ from routines in their meaning-making aspects. Family rituals, for instance, encourage engaging in family activities and enhancing personal identity [7]. Fiese et. al. found that the meaningful aspect of family rituals is related to adolescent identity [22] and marital satisfaction during early parenthood [23], whereas the routine practice alone is not related to the identity and marital satisfaction directly.
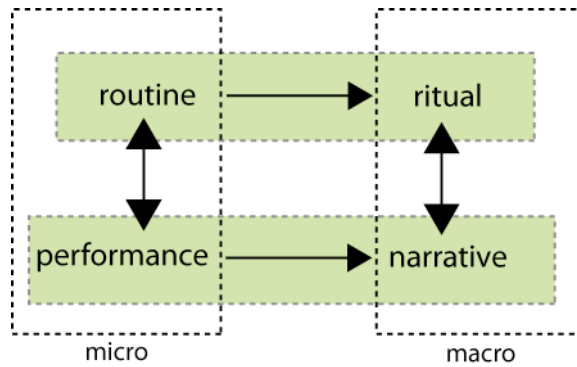
Figure 2. Modes of Transitions Framework: character constructs in transitions.

## 4. Modes of Transitions in Design

How can designers use the *modes of transitions* in their design activity? In approaching modes of transitions, one can talk about principles and methods. As a means of principles, there are two perspectives on the changing and unchanging traits. In terms of changing and unchanging principles, Alexander [1] and Jones [34] pursue the unchanging traits in shaping their principles whereas Archer [2] and Rittel [46] perceive the changing traits in human character. Rittel and Jones focus on processes and perceptions of designer's mentality, while Archer and Alexander focus on designer's actions. However, the fact that these design thinkers focused on only one aspect does not mean that they have not interrelated the changing and unchanging traits or inside and outside the designers mind in their inquiries. An inquiry by nature can cover the principles of changing and unchanging traits or the methods of designer's mentality (inside) and designer's actions (outside). For instance, Rittel explores his inquiry by shifting it from the internalized argumentation to the externalized competition between arguments. Donald Schön picks up the idea of argumentation and merges the designer's mind with the activity of design in the situation by suggesting the formulation, experimentation, and reformulation of the design problem. Donald Schön makes his perspective clear in the following statement:

> When someone reflects-in-action, he becomes a researcher in the practice context. He is not dependent on the categories of established theory and technique, but constructs a new theory of the unique case. His inquiry is not limited to a deliberation about means, which depends on a prior agreement about ends. He does not keep means and ends separate, but defines them interactively as he frames a problematic situation. He does not separate thinking from doing, ratiocinating his way to a decision, which he must later convert to action. Because his experimenting is a kind of action, implementation is built into his inquiry. Thus reflection-in-action can proceed, even in situations of uncertainty or uniqueness, because it is not bound by the dichotomies of technical rationality. [48]

The idea of defining means and ends in the designing activity also characterizes the ongoing process of doing and undergoing between changing and unchanging traits. Similarly, a design activity focusing on transitions has the same dynamic interactivity between means and ends of design, changing and unchanging traits, inside and outside of designers. Thinking in terms of routine materiality and rituals from Alexander and Jones' approach point out the dimensions of an ontological plane where human beings foster to find unchanging grounds for stability (Jones) and patterns (Alexander). Performative manners and narrative functions reverberate with the

changing traits and the dimensions of a phenomenal plane where human beings work for the changing states of negotiation (Rittel's notion of argumentation) and creativity (Archer's notion of the creative leap). Looking back to both dimensions, designers' principles face an interesting paradox of changing and unchanging traits, where designer needs to make sense of both.

In order to pursue principles of and for transitions, designers can work on character constructs and types of transitions interactively. Since there are no rigid boundaries between them, designers can work on them keeping *inside and outside of designer, micro and macro transitions,* and *changing and unchanging traits* in mind. In particular, designers have two pairs to work with, routines and rituals addressing the environment, and performances and narratives addressing the roles. Since designers need concrete utterances to work with, they pick the micro or immediate interactions of roles and environments, essentially *routine and performance constructs*; however, they can also sketch out possible *narrative and ritual constructs* for long-term interactions. In a project called *Reverse alarm clock* [45] that I was involved in, I designed an interactive system considering both the immediate level interactions of keeping young children in bed and long-term interactions of situating a product into nighttime rituals. Based on the findings of a field study conducted with the interactive system, I realized that the product itself crossed both the micro and macro transitions, integrating the immediate-level character constructs of routines (waking up) and performances (parental role), and the long-term character constructs of narratives and rituals (nighttime).

When we look at methods, and in particular, user-centered design, we can identify several design methods in the design of interactive products such as *contextual inquiry* [9], *persona* [10], and *participatory design* [14]. Designers employ these methods at different phases of the design process based on their needs. Among these methods, even though they might address some of the issues stemming from transitions implicitly, transitions are not explicitly considered during this process. Such methods most often focus on immediate interactions, particularly of people or the environment, but not both of them at the same time. Contextual inquiry and participatory design methods are task and efficiency oriented, which address the issues around office environment. Contextual inquiry focuses on one particular context, however, as stated before, people are multi-contextual, and by using contextual inquiry methods, understanding people's parallel performing roles is not an easy task. Participatory design differs from contextual inquiry with its focus on designing of tools. Moreover, participatory design is more community centered, and does not deal with the experiencing self. Persona and scenario-driven design consider the transitions occurring at the immediate level, focusing on the user at a specific point without considering the long-term interactions.

To develop methods for transitions, one can consider people's changing and unchanging traits together. For instance, I was a researcher working on *Digital-self* [57], a project researching freshmen students' transitions from high school to college, and during the process, I identified paradoxes of changing and unchanging traits and the challenges of how to address them. These students had to meet many new people in order to find the ones that would inevitably be good friends, but at the same time they had to limit their own access to new people so that they can invest and grow the friendships they have made. To design a service for these conflicts, current tools such as a persona has certain drawbacks as it leads the designers to the elastic user. The problem with the

elastic user is it is really hard to set goals for people who are in the midst of a transition. They are often times lost in flux, and cannot set clear goals for themselves. Another drawback of a persona is its underestimation of unchanging qualities such as patterns of activities and personality types [36]. In order to address these issues, I was involved in developing the *transition persona* [57] method, which helps design researchers better capture the transformation of freshmen by identifying key transition phases during each transition. In the future, similar methods can be developed that consider the changing traits in the transitions explicitly.

## 5. Conclusion and future directions

In this paper, I propose a conceptual framework for designing interactive products and services for transitions based on the theoretical traditions of drama, rhetoric, and design. This framework brings a fresh perspective to the experience by focusing on transitions in parts and wholes. Analysis of transitions heuristically leads to the discovery of issues and opportunities around transitions, and the synthesis through which the modes of transitions framework leads to the invention of character constructs. The promise of character constructs is that the facilitation of transitions can happen through strategies and interventions. Designing strategies requires consideration of narratives and rituals, whereas designing interventions requires comprehension of routines and performances. With strategies and interventions, interactive products can help people compose socially aesthetic experiences. Social aesthetics differ from the traditional notion of aesthetics with its comprehension for multiple selves and environments, addressing the challenge of felt-life qualities, the sense of place, and the order in transitions.

Transitions research can evolve into two directions. One would be designing for transitions rooted in nature such as aging and life cycles. Another would be designing for transitions rooted in culture such as marriage, graduation, and quitting or acquiring a habit. Both transitions challenge designers in different ways since people are often either unaware of transitions or are unwilling to change their habits. Acquiring ridesharing habits or quitting smoking can be good examples to the latter kind of challenge. Expanding toward these directions, the design community needs to invent new products and services or rediscover the current products and services from the perspective of dynamic transitions.

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