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Becoming clowns—how digital technologies contribute to young children's play

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Abstract

Research concerning play and technology is largely aimed at expanding the knowledge of what technological play may be and, to a lesser extent, examines what happens to children's play when it encounters digital tools. To explore some of the complexity in play, this article elaborates on how Latour's concepts of 'translation' and 'inscription' can make sense of a narrative from an early childhood setting. The article explores *how to challenge 'taken-for-granted knowledge' and create different understandings of children's play in technology-rich environments*. Through a flattened ontology, the article considers how humans, non-humans and transcendental ideas relate to one another as equal forces; this allows for an understanding of play as located within and emerging from various networks. The discussion sheds light on how activation of material agents can lead us to look for differences and new spaces regarding play. Play and learning are no longer orchestrated by what is already known; rather, they become co-constructed when both the children and the material world have a say in constructing the ambiguity of play. Lastly, the discussion points to how early years practitioners need tools to challenge their assumptions of what play might become in the digital age.

Introduction

Children are immersed in practices involving technology very early in their lives; thus, it is important to examine the significance of embodiment and materiality to meaning making when using digital technologies (Burnett and Merchants, 2017). At the same time, growing up in a digital society will affect how children relate to the world by going beyond *using* digital technologies. Several of the studies involving young children, play and technologies, both in

and out of early-year centres, focus on the amount of time children spend with digital items (Marsh, 2005). In addition, the nature of play seems to be changing in terms of the resources available for play and how those resources affect different types of play (Bird and Edwards, 2015; Marsh and Bishop, 2014). Research concerning play and technology is largely aimed at expanding the knowledge of what technological play may be (see for example Howard et al. 2012; Marsh and Bishop, 2014) and, to a lesser extent, examines what happens to children's play when inspired by digital tools.

This article explore how different understandings of children's play in technology-rich environments can be developed, when challenging 'taken-for-granted' knowledge and assumptions about how technology contribute in young children's lives. Preliminary the article provides an overview of research concerning children's play in a technology-rich society. This is followed by the methodology and a narrative from ethnographic fieldwork conducted in a Norwegian kindergarten. A discussion then highlights how what we already know tends to influence what we discover about a situation. Through actor-network-theory (ANT), the article elaborates on how the concepts 'translation' and 'inscription' (Latour, 2005) can make sense of the presented narrative in order to move focus from the underlying intentions in the technology, and rather examine technology as an active participant activating forces in young children's play and meaning making.

Technology-rich environments and children's play—a brief overview of the research

In the literature, the term 'play', both physical and digital, includes several aspects. Sutton-Smith, for example, differentiates between play as rational—understood as play in order to learn/process impulses from the world—and play as pre-rational—more complex, chaotic and, to some extent, more complicated (Sutton-Smith, 2001). In studies connecting play and technology, several studies establish play and exploration as key elements in children's learning in line with a rational understanding (Edwards 2013; Howard et al., 2012; Letnes, 2014). However, the studies bring nuances to the concept of digital play in diverse ways.

Howard et al. (2012) address, based on existing descriptions of what play is, how children's digital activities can be described as play. In an empirically driven study, they find that using a computer in play-based activities is effective for play-based learning. A similar approach is seeing technological play as a means of facilitating learning (Verenikina and Kervin, 2011). The approach, however, does not problematize how they build on the rational aspects of play,

nor does it question whether computer-games and other digital content can be a different experience than games with more traditional material.

A second approach involves studies that compare what traditional and technological toys add to play; these studies mainly undertake a social-constructivist or sociocultural approach. Toys are considered artefacts to be used by the participants, and the analytical focus is primarily on the interaction between the human actors involved (Bergen, 2015; Silvern, 2006). Although these approaches themselves do not imply normative measures, the studies tend to imply the dichotomies of the 'good' and 'bad' use of digital content. To analyse how new cultural devices—digital technologies—may lead to children's learning and their development, play is largely considered a motive that may change into a learning motive. A fruitful addition is how Fleer (2014) introduces the concept 'flickering' to describe how children move between abstract imagination and the concrete use of objects in their play, giving the toys a slightly different position as more than an artefact.

A third approach focuses on the context in which children's play takes place and addresses play as a response to the children's cultural situation (Edwards 2013; Stephen and Plowman, 2014). These studies are predominantly sociocultural in their understandings, implying context and cultural environment are important for the use of digital content. Children's upbringing and participation in a digital society are seen as the reasons for using digital content in kindergarten, thus emphasizing the importance of staff involvement in children's digital play. Adult behaviour becomes significant in children's learning constructions and their use of digital content (Howard et al., 2012; Letnes, 2014; Stephen and Plowman, 2008). Although the adults are considered significant, the studies do not sufficiently problematize how the adults themselves make sense of the cultural environment.

Ljung-Djärf (2004) draws attention to how research tends to boost the creative use of digital tools as 'better' practices than playing finished games, which has been confirmed by, among others, Letnes (2014) and Klerfelt (2007). Klerfelt explores the connection between children's media culture and early years settings, as well as the tension between commercialized content and 'the best interest of the child', as this appear in early childhood education. The analyses are done within a sociocultural framework and are closely linked to language and action in specific cultural contexts. Letnes (2014) explores how technology can be a tool to create multimodal narratives together with children. Room for reflection and meaning making arise in terms of shape, content, technique and technology. The analyses are mainly hermeneutical, and the overall focus of the study is digital play. However, technology is consistently referred

to as a tool. These studies are largely characterized by technology optimism, and problematic or challenging aspects of using technology are minimally dealt with.

Overall, the research presented is largely aimed at expanding the knowledge of what technological play may be, but, to a lesser extent, it examines how children's pre-rational play are affected in technology-rich societies. According to Sutton-Smith (2001), play is a phenomenon involving several interwoven contemporary elements that will appear differently as a whole than in isolation.

In the research presented in this short literature review, different educational environments' use of technology is investigated, but none of these studies position the technology itself as an actor. Discourses, contexts or cultures are considered significant for educators and children, but the technology itself is considered primarily as an artefact to be used. A question rising is whether research on play and technology needs to consider the complexity of play in order to further articulate digital plays ambiguity and ambivalence. An interesting question is what would happen if the focus was changed from seeing play as an instrument of learning to seeing play as 'something that occurs' between children and technology, children and children or children and adults? In the area between technology as an active participant and play as a way of living, new questions could emerge.

In the Nordic countries, there is a significant difference between play as to *leke* and play as to *spille*. You can play (*spille*) a computer game or you play football, and you can play (*leke*) certain themes inspired by your surroundings and pretend or make meaning in new ways. The latter concept makes play more difficult to interpret and categorize than learning outcomes and learning strategies from more lucid actions. To some extent the term *spille* has more rules and pre-defined actions involved than the term *leke*. Some researchers suggest there is a need for new concepts of children's play (Marsh et al., 2005; Yelland, 2011), maybe in order to nuance play in terms of digital play. Indeed, Edwards (2016) argues for a knowledge base that integrates technologies, digital media and popular culture (Edwards, 2016: 514). Drawing on 'web-mapping', Edwards understands children's traditional, technological, digital and popular-culture activities as co-constituted.

In this article, I follow the idea of co-construction further and make an ontological turn. Moving from a human-oriented paradigm—which leans heavily on the sociocultural perspectives that have influenced most of the earlier studies of technology and early childhood development (Bennett and Maton 2010; nn, xxxx)—I apply a flattened ontology to understand how humans, non-humans and transcendental ideas relate to one another as equal

forces. The discussion will address technology as an actor in play. Informed by earlier research, the discussion aims at problematizing taken-for-granted ideas, considering how the intentions of adults and apps may translate into 'something else' in young children's play. Important theoretical elements are further elaborated on as they feature in the discussion.

Location of the fieldwork

To observe how digital technology is becoming a part of childhood practices in kindergarten, I undertook fieldwork over a five-month period. The kindergartens in which the study took place were selected because they had been using digital devices in working with children before the fieldwork was conducted, and they all had well-integrated, established early childhood practitioners with several years of experience working in Norwegian kindergartens.

In Norway, children attend early years settings between the ages of twelve months and six years. On average, children spend around thirty-five hours per week in kindergarten. The children featured in the data were all between 1.5 and 2.5 years old; each had spent more than four months in kindergarten. Consequently, they were familiar with the habits and routines of the institution. The children had various socioeconomic and cultural backgrounds. In the analysis, I have deliberately chosen not to mention the children's gender or background based on an assumption that processes in a learning environment do not rely on the individual characteristics of the young participants. Instead, the analysis focuses on the actions performed, evoking forces in the actual network (Latour, 2005).

As a researcher, I used a range of methods in the fieldwork. Because of the assumption that digital elements must be present in digital play, I initially focused my ethnographic gaze on actions and conversations involving digital devices like computers, tablets and cameras. However, it soon became clear that the spheres where technology and traditional toys were present overlapped. In order not to reduce the complexities of children's lives, I had to become aware that the realities in which they perform do not exist in isolation from one another (Mol and Law, 2002). Therefore, my field notes from a range of situations from the early childhood settings include observations and notes from informal talks.

During my field work, I participated in several reflection meetings with a group of practitioners. In order to develop their knowledge about children and the early years setting, they bring pictures, a narrative from an event in the department and initial thoughts to each

hour-long, video-taped meeting. In this article I draw on notes and transcriptions from one of these meetings and my own field notes from observations in the early years setting.

Exploring an event—a methodological approach

Latour (1996) invites researchers to use a narrative touch when piecing together the descriptions made from hours of fieldwork. Such an approach implies grappling with singularities, and, at the same time, it allows for 'multiple ontologies and the relations among them, rather than explanations relying on multiple perspectives' (Fenwick and Edwards, 2010: 146). As such, knowledge becomes insight operating beyond all-too-certain limits. The forthcoming event provides insight into how the agency of digital technology nurtures the actions performed by the other human and non-human participants involved, without the technology necessarily being physically present in the situation but still interfering with it (Haraway, 1993). Elsewhere, there are similar or different aspects. However, the event urges the reader to look for connections that have not yet been recognized (Mol and Law, 2002). Narratives can secure knowledge that challenges the distorted clarity of science. Thus, myths, political structures, technologies, poetry, rites, materials and management tools can combine into one single narrative (Latour, 1996:16). The narrative that follows describes one moment in practice that seems to 'glow'.

> The 'glowing data' seemed to invoke something abstract or intangible that exceeded propositional meaning, but also maintained a decidedly embodied aspect. The passage thus invokes the double-sided, material-linguistic status of sense, which seems to be 'resonating in the body as well as the brain' (MacLure, 2013: 661).

'Glowing' materials affect us not only logically and intellectually but also emotionally; they allow us to make sense of an event in an abstract way. This narrative is not representative of something larger, even though it might connect beyond its specific site (MacLure, 2013). To make sense of the narrative and to consider how humans, non-humans and transcendental ideas relate to one another as equal forces, ANT functions as an ontological framework.

In this sense, play is not created or enabled by the predefined characteristics of every participant in the narrative; rather, each actor contributes to and potentially mobilizes the actions performed by the other participants (Latour, 2005). The analysis no longer looks for the pre-formulated properties of each actor; instead it searches for what develops and empowers agents by examining the open-ended and undefined relationships in which they are involved.

Some pre-formulated properties as a starting point

A large amount of the field notes thematize how the adults viewed digital tools as a part of early childhood and a consequence of the digital society:

> The day care centre has introduced tablets to the children. A group of 2-year-olds has played the game Lotto on one of the tablet apps over three weeks. They laugh and encourage each other through cheering and clapping. The preschool teacher has observed the children; she expresses how impressed she is with the children's ability to learn the strategies in the game: 'Even though we were sceptical upfront, it is interesting to observe the children. They do learn a lot from this game' (Field notes, February).

Based on earlier research on technology and early childhood, there are several aspects to be recognized in this story. The children interact with the tablet and with one another; they express signs of play. The preschool teacher is sceptical and ambivalent about the idea of children as consumers (Ljung-Djärf, 2014), but she also acknowledges that children participating in a digital society are entitled to access the digital tools (Edwards, 2013; Stephen and Plowman, 2008). She emphasizes how the children learn through playing with the tablet and underlines how the tool is efficient for play-based learning.

In one of our meetings, a teacher explained how she wanted to give the children a more varied experience of the game named 'Memory'. She organised for the children to translate their new-developed knowledge of pairing identical pieces, as on the tablet, and use other materials, like cardboard pieces with pictures on them which, in this learning-oriented play:

> She deliberately chose a selection of pictures matching the number of opportunities the children had on the tablet. Four children gather around the table and begin the game. They take turns selecting and overturning the cards. They each pick two pieces, look at them and put them back on the table regardless of whether they find a matching pair or not. This continues until one of the children picks a picture of a child dressed in a red hat and a yellow raincoat. 'Yeah', shouts the child, raising his hand with the card up in the air. 'Klong! Klong!' The other children clap their hands and cheer. Then, all the children get up and run around the room cheering. At last, they all fall down on the floor whilst laughing and rolling around. The preschool teacher shakes her head, 'Oh my! This has to be the least successful game of memory ever' she says
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> (Reflection meeting, early March).

Instead of pairing two similar pictures and expanding their knowledge through a new medium, as the teacher expected, the two-year-olds created something else. The teacher calls the event a failure; expressing how this was an unsuccessful game of memory. In light of the

research presented earlier, the preschool teacher can no longer identify visible learning outcomes from the game on the tablet.

The situation calls for a more complex and advanced understanding that makes creative and critical use of the digital tools and media possible (Erstad, 2010), in line with Buckingham's (2006) discussions about what lies beyond the technical and measurable components of terms like digital competence. In the use of digital content, cultural expressions are created, and digital arenas are used for the exchange of opinions as well as for identity building, play, communication, emotional expressions and constructing non-measurable competencies and content (Buckingham, 2006; Søndergaard, 1996). To investigate if this event can lead to an arena of creation and other exchange of opinions, I turn to a flattened ontology and 'follow the actors' (Callon, 1986).

ANT as ontology —a theoretical interlude exploring the concept of translation

The ANT ontology attempts to draw our attention to the spaces in-between, to the liquid areas and non-spaces that are part of the action (Latour, 2005). The ANT approach originates from a critique of the differences constructed between the micro and the macro and between individual units and structures in earlier scientific constructions of the world. Through ANT, Latour (2005) offers a redefinition of the 'social', emphasizing it as something in need of explanation rather than as something that can be applied, to explain other phenomena. As Latour further explains, 'There is no society, no social realm, and no social links, but there exist translations between mediators that may generate traceable associations' (Latour, 2005: 108).

Translation as a concept was utilised by Latour (1988, 2005) to describe the processes in which actors relate to one another. In terms of understanding action, Latour (2005) writes, 'What is acting at the same moment in any place is coming from many other places, many distant materials, and many far away actors' (200). The children, the room, the preschool teacher, the tablet and the cardboard pieces, together with the other materials, people, technologies and places involved, will bring stories and experiences from other places which are then activated in the event. This understanding means that it is not possible in advance to identify what will affect the action forces in a situation. Important actors can be physically outside of the situation themselves and still be brought in through one of the participants. At the same time, actors do not behave in the same manner in all situations; rather, they transform when moving between practices (Latour, 2005).

Networks, in turn, develop through these actors' interactions[1] and transformations. A network is a concrete composition of diverse elements. At the same time, a network 'does not designate a thing out there that would have roughly the shape of interconnected points, much like a telephone, a freeway, or a sewage "network"… It qualifies [rather] its objectivity, that is, the ability of each actor to **make** other actors **do** unexpected things' (Latour, 2005: 129). This statement implies that it is the forces making others act which matter in the network. To make sense of the narrative, the analysis poses this question: what forces can be identified that contribute to how the children act? This understanding offers researchers a position from which to work; it makes it possible to investigate different elements in the same apparatus, elements that would be incompatible according to other theories. Language and statements, gestures and expressions, written documents and guidelines, bodies and random combinations of materials—these things can all be a part of the same knowledge construction, keeping very heterogeneous elements together.

Consequentially, play emerges in relation to other objects, people and discourses, but not because of any particular qualities of the actors themselves. Instead, children's play emerges as an effect or force activated by other actors, human and non-human, participating in the given event. The performativity and relationships existing between human and non-human actors serve to construct the world through these ongoing processes of translation (Latour, 1988). An actor is an entity that 'performs' network relations with other 'actants'[2]: 'Entities achieve their form as a consequence of the relations in which they are located. However, this means that it also tells us that they are performed in, by, and through those relations' (Law, 2004: 4). This definition also implies that an actor does not need to display consciousness in order to hold agency. Things, such as technological items, considered artefacts according to other ontologies, become actors according to the ANT approach.

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[1] Interaction in Latour's thinking moves beyond interaction as something happening between humans and between things in the same order. It also moves beyond the idea of the human as the central actor calling the shots. Instead, he argues, nobody in the network is in a stable position, meaning there is always the possibility of new and unknown actions. The actors interacting are still independent, and there is action happening in between them.

[2] Latour (2005) used the semiotic term 'actant' to underline the fact that actors can be both human and non-human. Here, I largely use the term 'actor', although I am aware of the possible misunderstanding that may result due to the earlier use of the term 'actor' to refer to something human and intentional. In this sense, 'actor' has become a traveling concept.

Revisiting the narrative

Following Latour's argument, the tablet and the children's earlier experiences will participate in meaning-making, and the actors involved will translate meaning across arenas. Such an understanding helps raise new questions related to play and learning; it provides new contact points for interaction between those involved. Moving the contemporary relationships into a flattened ontology involving human and non-human actors that overlap and co-construct practices, demonstrates a need for several gazes and frames of understanding, to critically examine young children's play in a rapidly changing society.

Positioning the technology as an actor in practice enables discussions about how technology challenges existing practices. An ANT approach will provide the opportunity to see what is going on in practice when technology participates as an actor. The construction of meaning will not just be understood as the human participants' interpretations of the meaning of technology; technology itself will be a participant.

The experiences and action repertoire participants bring from other venues interweave with other possible initiatives. The narrative in this article tells a story about how learning outcomes can't always be predicted. When the preschool teacher facilitates a game of memory in order to strengthen the children's early mathematical learning and introduce new materials for exploring a game, the children themselves create something quite different from what the preschool teacher intended. Rather than demonstrating they know the rules and can play (*spille*) the game, they actually play (*leke*) the game. In the latter understanding of play, the concept implies children's creation and meaning-making, not necessarily compatible with the teachers intentions. The preschool teacher has provided the time, location and equipment, but the children and their interaction with the materials create the actions and the content.

In other words, the focus lies in the relationships and traces between the actors rather than in the object, the subject or the discourse's meaning in isolation. The narrative can investigate how the activity grows based on the initiatives and beginnings that spark actions in the network (Olsson, 2009). The movements between the children were initiated by the game, but in a different way than the adults had expected, and the preschool teacher could not make sense of the situation. Reflecting upon the situation, therefore, involves questioning the unknown.

Thinking and philosophy must, according to Deleuze and Guattari (1993), relate to something we do not know the answer to yet. The children transformed the use of the Lotto game to

something quite different from what was expected. This became a challenge for the teacher's further thinking about the incident. As Edwards points out, 'Early childhood education represents a cultural community of practice in which existing forms of knowledge about children's play are predominantly used to inform practice' (2016: 517). However, following Deleuze and Guattari, there are no higher values, understandings or expressions that can explain what is happening right here and now (Deleuze and Guattari, 1993). When events pass by at a rate that the brain cannot follow or explain, chaos arises in the sense that the incident cannot be directly linked to something already known and pronounced. For the teacher, chaos arises when the Lotto game results in physical play, running and jubilation. Her first statement related to the event was that it was an unsuccessful activity because she thought the game did not connect to the situation.

Looking for inscriptions

To clarify the relationships and differentiate them from the materials or things like artefacts, Latour (2005) talks about inscriptions. The inscriptions lie in the things and contribute to how others respond. The inscriptions may, but need not, be initiated by people; inscriptions create agency or perform specific actions in the network.

Initiatives and beginnings are not necessarily easy to observe. They are interwoven and can be traced across space and time. Following a trace back to the Lotto game on the tablet, the staff observed that when the children had solved the game, the reward appeared digitally: a clown appeared from the side with ten balloons in his hands. The clown let go of the balloons, and the sound that came from the tablet was a combination of cheers and applause. When the preschool teacher connected this response to how the children performed and shouted "klong", she discovered several aspects about both learning and play.

The app is based on a pedagogy of acquiring basic skills through rewards (Dwyer, 1996: 18). When the children have paired the correct pictures and the clown appears on the screen, the tablet initiates a certain action through activating the celebration. ANT suggests contemporary knowledge can take several forms. In a flat ontology, the possibilities for connections to other actor networks will exist in the situation. In this sense, the tablet appears as an actor in the physical Lotto game, even if it is not present in the event.

A game of finding two similar pictures, building on well-known strategies of learning, changes in relation to the children. Through previous experiences with tablets, the game becomes about bodily play and community that all the two-year-olds seem to understand. The

possible ties to events beyond what is happening here and now—in the chaos of the immanent plane—help to strengthen how the preschool teacher can think about the situation. Although the territory has no fixed externality, it is linked to the foregoing; the search for traces and contexts will lead to other thinking when the event connects to other networks (Fenwick and Edwards, 2010). The event could contribute to seeing new links between play and technology, such as those advocated by several researchers (Edwards, 2016; Nolan and McBride, 2013).

Socio-material thinking can function as resistance to finished categories and a movement towards seeing learning and knowledge as the effects of relationships and actions (Fenwick and Edwards, 2010). In this understanding, there is a shift from epistemology and representations to practical ontology and performativity (Nerland and Jensen, 2010), going beyond the idea of ordering the world in categories, levels and structures that can be uncovered. The world, instead, become as a place where both human and non-human agencies interact and create new knowledge. Knowledge production becomes a dynamic element that emerges as it expresses itself (Haraway, 1993; Latour, 1999). Children generate their play because they inhabit 'a set of elements (including, of course, a body) that stretches out into the network of materials, somatic and otherwise, that surround each body' (Barnacle and Mewburn, 2010: 435). When the subject is orientated in relation to the environment, the connections to other actor networks will initiate the translation processes materializing knowledge. These materializations can be both linguistic and bodily.

In this narrative, there were several bodily materializations. One was how the children picked up the cards rapidly. Their previous interaction with the tablet had created other rules for the game than those familiar to the preschool teacher. Instead of the goal of pairing, they seemed to agree on the goal of speed. Another materialization was visible when one of the children picked the card reminding them of a clown. Even though the shapes were different, the colours were compatible. This picture activated the raising of the hand and the shouting of 'Klong, klong'. At the end of the reflection meeting, the teacher explained, 'In retrospect it is easy to understand this as the clown. But I did not understand at all at that time'. Finally, materialization occurs when all the children wordlessly responded to the 'Klong' by jumping out of their chairs and running around the room.

By focusing on those who initiate action, ANT problematizes some of the frameworks and factors seen as significant in previous research; it emphasizes the complexities of digital practices through the connections linked to other events—both in human and non-human participants. Within Latour's (2005) symmetrical thinking, meaning-making is placed both in

humans and non-humans, and it is not necessarily linked to language. The emphasis is on what action repertoire a participant in the network initiates with other actors. In this case, the tablet brought forth an opinion and a voice that are not fixed.

Conclusion

In this article I have demonstrated how ANT, similar to a sensibility or an interruption, is a way to sense or draw nearer to a phenomenon (Fenwick and Edwards, 2010: ix), which in this case is how digital play may inspire or interfere with physical play. By following Latour (2005), the discussion explores *how to challenge 'taken-for-granted knowledge' and create a different understanding of children's play in technology-rich environments*. Through opening up and moving beyond what is expected from a phenomenon, the discussion suggests 'taken-for-granted' assumptions are impoverished because they disregard several important aspects in terms of play, learning and practice. Through re-visiting what is activated in an event, the discussion traces the children's meaning-making, activated by, but not repeating, the content in an app.

In addition, the article sheds light on how ontological movements can lead to other insights in reflection meetings and thereby contribute to re-thinking events in the field of early childhood practice. By utilizing several aspects of play and meaning-making, early years practitioners can perform in different spaces of knowledge construction. The ANT approach, via its system of network tracking, can shed light on how new actions and the activation of stakeholder agents lead to new spaces regarding early years settings pedagogies, wherein digital technology is an invaluable component. Play and learning are after the teachers examination and reflective talk, no longer orchestrated by a manuscript or by what is already known; rather, they participate in co-construction when both the children and the material world have a say in the ambiguity of play.

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