

Hybridisation of Education – leaving the Echo room

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Abstract

This paper presents a new systems theoretical model about how we adequately can describe education on the level of the classroom after the introduction of digital media and wireless networks. For centuries school-classes has worked as walled educational interaction-systems, but now under influence of the digital revolution, they are populated with – and invaded by - cyborgs who can interrupt, contribute to, or initiate interaction systems that transcends the room's four walls, making the educational situation more fragile, vulnerable and complex than ever. The paper discusses the phenomena with departure in the action research project Socio Media Education. We argue that the new cyborg-reality – i.e. complex of digital technology and human beings - turns education into a social hybrid. The main feature of this hybrid is a new nexus of the community (the social system), social networks (the social environment) and mediating technology (the social media). Further we argue that while the old classroom function essentially as an echo room, the new one function as a room of dissonance. The pedagogical consequences of all this is only vague at this point, but one thing seems clear: The farewell to the echo room will have huge educational impact.

Keywords: the classroom, the echo room, the room of transformation, systems theory, communication, teaching, learning, education, social media, cyborgs, hybrids, community, networks, interaction, social heritage and society.

Education in a systems theoretical view

In this section we try to explain as short as possible the three types of social systems, which are relevant for understanding the systems theoretical view of education following Luhmann. Also the distinction between the psychic level of system formation and the social level of system formation will be defined and described in regard to education.

The societal level

Following Luhmann (2006) the educational system is an out-differentiated function system in line with other functional systems like the political system, the economic system and the legal system. The system has its own symbolically generalised communication media, which Luhmann (1993) defined as the *child*, which often is what teachers talk about when discussing teaching. Later Luhmann (2006) changed the definition of the medium to *life story* to capture life long learning. Yet another perhaps more promising definition would be *learning* as the symbolic generalised communication media of education (Qvortrup and Paulsen 2007). After all learning – in its broadest sense - is what education, teaching and instruction is all about.

The binary communication code of the system of education Luhmann defines as *teach-able /not teach-able*, which is what the teachers are concentrated about while they plan, initiate and evaluate teaching. Luhmann (2006) describes the contingency formula of the education system as *Bildung*, which can provide grounds for what it is, the student shall be formed to, via the student's education, in modern society, which does not offer a definitive formula for a finally wanted outcome of the education.¹ The student must be formed to form herself through the teaching of the education system. The knowledge focused on in the system of education is not the same as communicated in the science system, which possible untruth can be tested, but a form of knowledge that creates opportunities for the learner, which over time can participate “more and more” and “better and better” in the society.

¹ In English the term “Literacy” respectively “media literacy” or even now “digital literacy” is used instead of “Bildung” which like the Danish term “Dannelse” also includes more cultural aspects.

The system of education also has a reflection theory consisting of pedagogy, respectively didactics that helps pedagogues and teachers to reflect on how the communicative selections in the classroom interaction system can increase the chances of successful teaching and learning. In addition to the primary coding *teachable / not teach-able*, the system also has a secondary coding namely: *better result / poorer result* that helps society to choose between candidates.

The organizational level

The *schools* are the organizational level of education. Organizations are decision systems deciding how the code is interpreted and realized. Different schools have different programs for how to organize teaching. For instance, how many students should be in a classroom, which didactics and pedagogies should we use, which types of teachers shall we hire and how many meetings should the teachers have and in what groups should the teachers engage in. The school as an organization system makes decisions that work as decision premises for the teachers teaching in the classes. However, the schools as organization systems do not only make educational decisions, but also economic decisions, mass media decisions, political decisions and so one. They thereby reduce societal complexity “around” teaching and make *structural couplings* between the education system and other functional systems of the society.

The interaction level

Teaching can be understood as a social interaction between teachers and students *aiming at* educating the students. The *classroom* is the historically developed institutionalization of this. Teaching cannot be implemented as a causal shaped course of means and ends with rules saying, that if the pupils react so and so, the teacher must select this or that strategy, or such and such means. The students are not causal systems (or what Heinz von Foerster calls *trivial machines*) where a particular input leads to a specific output. Teaching must take the form of interaction systems that are maintained and developed through the participants' mutual observations, giving them the necessary complexity of proficiency (Luhmann 2006, 185).

An important distinction is between teaching and learning. If the teacher has the necessary surplus and competence, she can lead the educational interaction in a way that promotes opportunities for students' conscious learning, but just not directly lead learning.²

The teacher must make use of teaching methods, conceived as techniques or social techniques (since technology as a concept refers to the science of causal relationships, see Tække 2014), which on one hand is absolutely necessary, since it is not possible to teach without operating with goals and means. On the other hand, teachers must use situation relative causal plans and be orientated by variable factors due to the complexity of teaching interaction.

The level of the psychic system

It is important to distinguish between the conscious level of system formation that is operationally closed by only operating through consciousness, and the social level of system formation that is closed by only operating through communication. What structurally couples the two levels of system formation, following Luhmann, goes under the concept of educational technology, such as curricula, special didactic methods and media. In Luhmann's theory, one can distinguish clearly between *psychic* learning on the one hand and *social* education/teaching on the other. The teacher can facilitate, stimulate, orchestrate, organize and lead educational interaction (that is dominate the social interaction), but never carry out the psychic learning operation itself, because this operation is a cognitive operation within the psychic system of the student. One can try to convey something to the students by speaking with them, drawing for them, etc., but the teacher can only contribute to the class' educational interaction. It is up to the students themselves individually, to make inferences, think about them, remember them and put them in context and thereby learn.

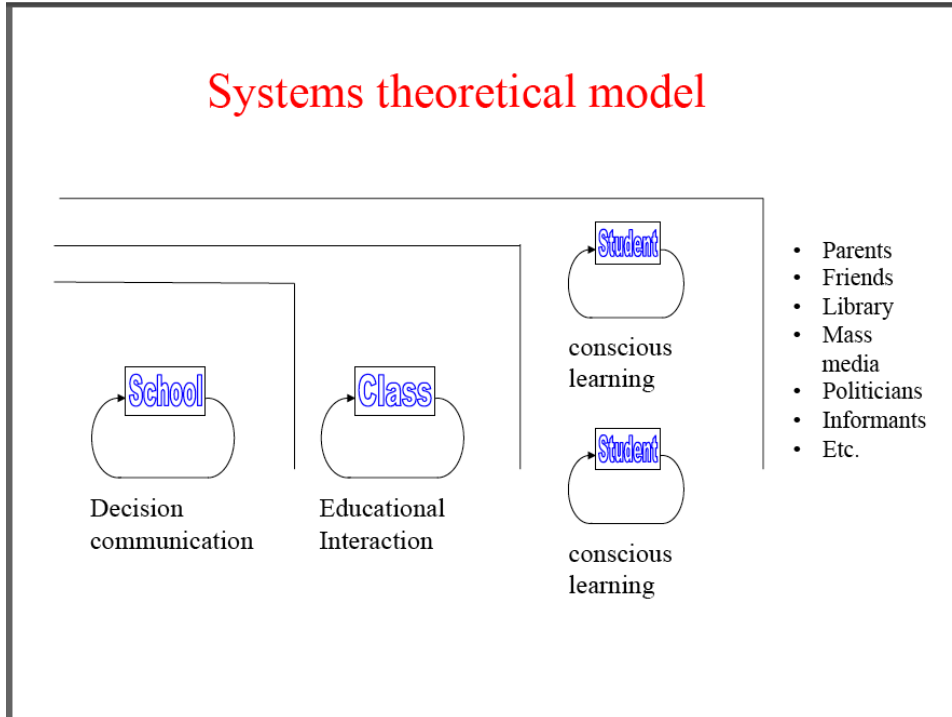
² The structural coupling between psychic and social systems is the medium of language (see Luhmann 1998 and Tække 2011) and in educational interaction also other media and learning technics (see Tække 2014).

The echo room

Since the foundation of the educational system the interaction between students and teachers has taken place within a closed classroom fenced by four walls. The teacher was placed in front of the students observing and monitoring them, trying to discipline them. The teacher's point of view was protected by the walls against other observer's potentially differing meanings about his ways of seeing things (Luhmann 2006, 71). Also the walls protected against distraction from the outside world, like interference from people joining or leaving and made it possible for the educational interaction to decide its own theme, when to begin, change, or drop a theme (ibid., 131). This closed classroom system was structured around the principle of one teacher, one book, one subject, one curriculum, one class (based on students around the same age) – and all the communication within the school-class made up a self-referential structure from lesson to lesson, only allowing students and their teacher to participate. The students could think about their relations outside the class, but had no access to them and in this way the teacher became not only the one supplied with the power as the educational leader, but also the one who decided what was the truth about anything.

It has been argued that a lot of communication on the Internet takes the form of closed *echo rooms*, in which people with the same knowledge and the same values repeat and confirm each other. Yet we would argue that the old classroom *before the Internet* where nothing else than such an echo room. Basically all interaction in the old school classroom took the form of *sequences of echoes*. At the *beginning* of each new sequence in the classroom something was pointed out by the teacher to be the content to be learned (call this X) - and all the following activities - textbook-reading, homework, dialogue, instruction, writing on the blackboard, writing notes, group works, presentations, exercises and repetitions – aimed at making the students able to produce an *echo* of this X to the final exam, marking the *end* of the sequence. Thus our argument is that the *echo room* has been the main institutional form of the educational interaction called classroom teaching for the last two or three

last centuries. The foundational infrastructure of this form has been the four walls, the blackboard, the teachers' authority and mass media especially the printed book.



Model 1. Here we see the systems theoretical model of the walled classroom – the echo room.

New media and new situations

When a new technical medium of communication (like the print technology) comes into being, meaning that social systems begin to communicate through it, we see new social formations (Tække 2006). Such a medium provides society with new possibilities for sending, storing, retrieving, and e.g. sharing information (Tække 2006). In the meantime it is up to the social system's self-referential processes which possibilities that is actualized and when. Important constrains in relation to the actualization of new social possibilities are social norms and structures of power. The social norms, which was developed in the old medium milieu, does not handle the complexities of the new and more complex medium environment, and

positions with power tries to survive, struggling against the empowerment of new groups and positions (Meyrowitz 1985).

Let us draw forward some important new situations that are possible because of the digital media and wireless networks that are not compatible with the described systems theoretically educational model.

Hybridization of the classroom

The digital media and wireless networks open up the classroom so the physical walls do not any longer isolate interactions within the classroom. Also interactions within the classroom in the new situation can be multiplied to many parallel interactions besides the educational interaction conditioned by the teacher. In the meantime the educational interaction also now can use digital interaction media like Twitter, giving new and improved and/or supplementing ways of teaching, e.g. asking the students questions that they answer using Twitter enabling multiple answers in a short time (Tække & Paulsen 2013a). Crossing the walls of the classroom, the class and the teacher can interact about homework while the students are at home (or other places), and for instance, see a documentary in television at night interacting about the content using Twitter (ibid.). Also the class during school time can draw in resources in the educational interaction. At the second year of the Socio Media Education experiment (a three-year long action research project) we observed some examples showing this new form of educational interaction.³ One example is where the class used Twitter to interact with an author about his poems; another example is where the class had interactions with another class on another school about an educational topic. Also the use of WIKIs to organize, categorize, store, retrieve and share their educational topics is an example of one of the new possibilities. Making media lines, for instance, ideas from a brainstorm on Twitter to the digital board discussing the ideas and storing the best ones on their wiki, is another example. Other important perspectives on the hybridized classroom is that the students can make blogs to try

³ Socio Media Education (SME) is an action research project about how upper secondary schools can improve their media culture (see Tække & Paulsen 2013a, b, c).

to get feedback and reactions on their work from the outside world, searching the internet for information and doing source criticism, following politicians on Twitter and Facebook. The classroom now works like a boat sailing the sea of the Internet, or an atomiser spreading and gathering the educational interaction and the attention of its members – if, and only if, the students and teachers tries to actualize the new possibilities. We think that there are two good reasons for doing that. The first one is that teaching can be improved and the second is that the teaching, at the same time let the students learn to behave and navigate in the new media environment, picking digital literacy up (a form of Bildung adequate to the new medium environment).

The hybrid student

With equipment like tablets, smartphones and laptops the students now have become cyborgs – hybrids of human and machine. They can when ever they want excess all information, resources, networks, groups, personal relations, libraries, mass media etc. accessible through the Internet. The student can ask his brother or mother, or other from her network that is specialists in the actual topic of the educational interaction in the class, or search the web, or ask on Twitter or in a Facebook-group. Before the student had to wait until after school and then for instance go to the library, or ask her mother for supplying or contradictory knowledge in comparison to what the teacher said. Also the students can have parallel interactions about the educational interaction either about the educational topic, the teacher or about anything else. Such dialogs can also be peer to peer, or in small groups with no transparency for other of the class members or the teacher. We call these interactions for *network interactions*, while the interactions that are transparent for the whole class and restricted to the class we call for *community interactions*.

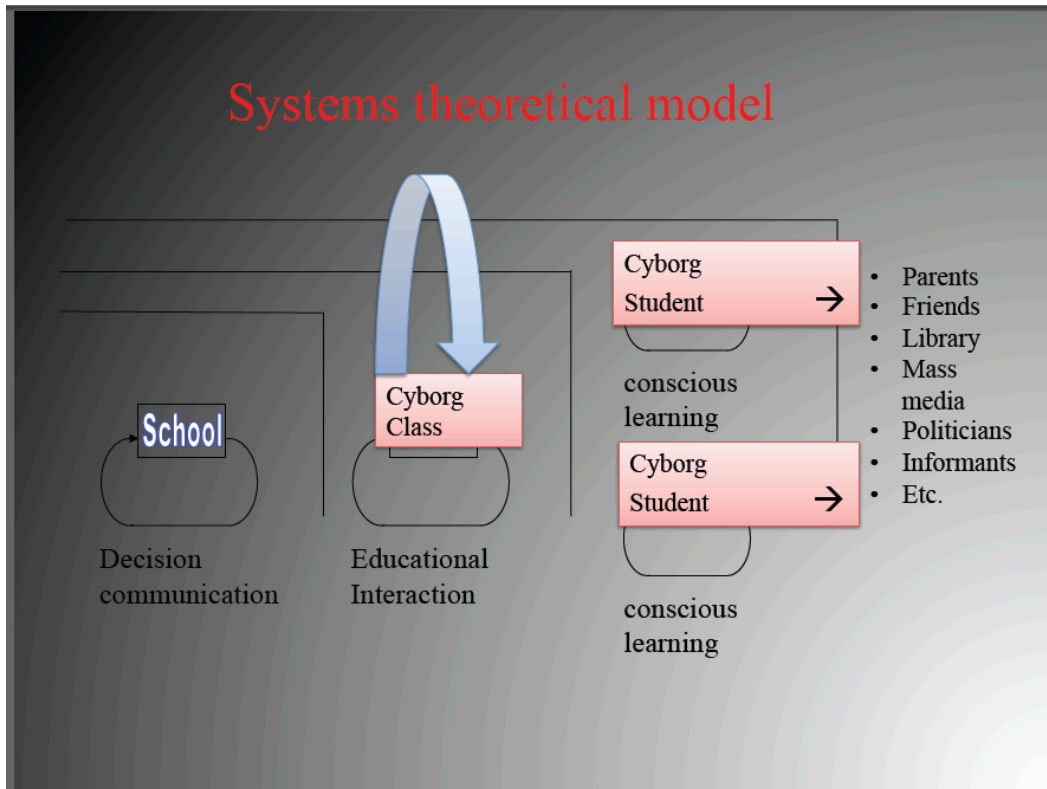
Students can use their new possibilities for non-educational proposes. Of course a cyborg-student will always attend to topics and relations considered as important, but we have observed students who almost do not participate in the educational activities, because they are playing computer games, or are chatting on Facebook.

This can be seen as a lack of norms suited for the new hybridized situation and/or a lack of self-reflexivity (see Tække & Paulsen 2013a, b, c).

The hybrid teacher

The teacher now also has become a cyborg – a hybrid of human and machine. It is the teacher who really has the big responsibility when it comes to grasping the new possibilities for improving the teaching, making it adequate with the new medium environment. On the one hand the teacher must lead the students helping them, showing them how to use and not use the new media in meaningful ways. On the other hand the teacher must find himself a new attitude as a teacher, new technics of teaching and a new form of authority. Now the teacher can monitor the work of the students in new ways while some of the old ways has disappeared. The teacher cannot see all of what the students are doing, what they communicate about him, but now he has access to much more of the work and social interactions from the class. The teacher must find a new attitude and authority now where it is possible in real time to get information from the best sources and experts in the world. There is a new and very important role for the teacher in helping the students to search information, doing source critics, handling different kind of software, and data base systems, behaving in different social situations, using different genres while being on the web and inviting people from the outside into the educational interaction. This means that the teacher must leave the old power situation, which we saw in relation to teaching in the echo room. In short: the teacher must find a new identity as a cyborg. If the teacher does not change attitude, the students are not going to get the advantages of the new possibilities but only the risks (much time spend on private interaction and computer gaming during the school time).⁴

⁴ Another possibility is prohibition but that is not a better solution than ignorance (see Tække & Paulsen 2013a, b, c).



Model 2. Here we see the new situation where the students can stay in contact with the outside world during school time and where the class as an interaction system can open up and draw in resources from the external world.

Networks and Communities

A significant phenomenon we have observed and documented is the hybridization of the class community and the networks of the participants in the class.⁵ We define *community* as communication shared among all the class members and also the teacher, that is communication with full transparency to all utterances. *Network* is defined as communications between smaller groups or individuals, where some of the class members and/or the teacher are excluded from the interaction.⁶ When it

⁵ Obviously there are also many networks between the class members and people from outside the class.

⁶ This distinction between community and network is only heuristic and even problematic. It is not (only) the *size* of a group that matters and determinate whether a social formation is a community or a network. A group of five people can be a community as much as a group of thirty. And the same goes for networks. A person can be part of a very small network or a very big network. A more promising distinction would perhaps be to say that in *communities* all the members have access to the *same* communication and participate in the same interaction system; on the other hand *networks* distribute communication through several *different* interactions with *different* participants. If for

comes to network communication it is nontransparent for the excluded classmates.⁷ There have always been networks within (and without) classes; the difference between before and now is a result of the hybridization of the classroom. We have always had networks, which is the most primitive form of social organization. Different epochs have been struggling with networks, trying to get rid of the tyrant and his clan. After the invention of the printing press and especially after the analogue electronic media radio and television, we have seen a tremendous move towards community with a high amount of transparency. Everybody had the same curriculum, the same textbook the same X – everybody saw the same programs in television and shared a sense of community. But if we take a closer look maybe it was mostly just a sense, because when we left the institutions and went out in society there were lots of networks living in the hidden. There were zones of community and zones of networks with very little overlap. But overall we saw a strong belief in the community and a little attention to the networks. Now with the digital media and especially with the social media, we think we see a drift towards networks, but at the same time they are not so secret and hidden anymore, because the digital media actually have a great potential for transparency integrated in them. But still the old situation with the walled community of the class based on oral interaction (an a little of throwing paper notes around – and networking in the breaks and spare time) left very little space for networking during the school time. Now we see a network colonization of the community within the school-classes, so the educational interaction system must live a parallel life, together with the different on-going network interactions. We have found many examples of learning

instance A writes to B, and B writes to C and C writes to D and C also writes to A, but each communication between A and B, B and C and so on, is only transparent to two persons, the communicative structure between A, B, C and D can be called a network. A network is thus a more open structure (in the social dimension) than a community. Both consist of interactions, but operate in different ways: the community in a unison way, the network in a distributed way. Another way of putting this is to say that there are no substantial difference between communities and networks; the difference depends on the observer. If for instance a student in a class ask for help in *another* community, one could argue that this community is part of the students network or at last is part of a network communication, *if* the student brings information back from the forum to the class community.

⁷ For a discussion of the concepts of community and network in relation to Luhmann with Facebook as the case study see Tække (2010).

networks, cheating networks, computer game networks, reading news networks, looking at and buying things, especially cloth networks and for instance gambling networks. If we take the cheating networks we talk of sharing homework, shift working during lessons like one student in the network writing notes while the others members are playing computer games.⁸ In other cases the students make shift working so that some in the network are paying attention to the educational interaction system and the teacher, while the others are chatting or playing computer games.

X and the new medium environment

If we take the learning networks we have an interesting finding where the distinction between cheating and learning and/or plagiarism and a kind of imitation/learning/cooperation. The case is that students who actually are working together, trying to help each other and therefore have identical, or almost identical parts of their assignments has been accused for cheating by the teachers! At the same time the students in the cheating networks are so trained in doing plagiarism, that they know how to write assignments over so no sentences are identifiable in a computer search, so they are not revealed. This tells us that the hybridization of the classroom and the educational interaction pushes the borders and our understanding of what it actually is to learn. Was the 'learning' in the echo room, writing X down in the notebook looking at X on the blackboard, not a form of plagiarism? When is the students' work with other student's assignments learning and when is it not learning? Is the concept of plagiarism only used for legal reasons and not in relation to learning? Is it possible to learn anything when you get help? Do we learn more or less when doing plagiarism rewriting other students' assignments? And last but not least: What kind of learning, work habits, methods etc. do we need in the new media environment?

We are going to work on these questions but must leave them here, and take a look at what the teachers can do if they try to understand the possible transparency of the digital media. If they for instance, use a medium like Google.doc where they can

⁸ Student interviews, confidential.

follow the student's working process and continually discuss and reflect, together with the students, about what is corporation and plagiarism and especially focus on what the students actually learn by. Also such a medium makes it possible to provide process feedback and not only comment on assignments that are finished. This would be a re-colonization of the networks by the community.

On the other hand: As long as the teachers carry out prohibition against any form of plagiarism, they deny that the students themselves carry out their own form of defining what X is, in relation to make an autonomous assignment as an answer to the teachers assignment-question. Maybe it is a reminiscence from the echo room that plagiarizing the teacher, reproducing X is okay, while it is defined as a problem when the students in corporation come up with an Y. We think that we must go through a period of uncovering learning processes in the new medium environment, finding a language to discuss and reflect about how to cultivate networks to become learning-networks. The teacher must become a coach helping the students to learn, and unlearn their old role as the definer of X.

When we use digital media for interaction we always leave traces and the teacher must use this opportunity in an intelligent way being an adviser and helper for the students' independent schoolwork. The art is not to monitor the students like in the echo room forcing them to learn X imitating the teacher, but to facilitate, stimulate, orchestrate, organize and lead educational interaction so the students are empowered and have the best possibilities for learning by themselves.

The room of dissonance

Finally we would suggest, that leaving the old echo room implies entering a new room. What are the main features and social coordinates of this room? It is a room *not* closed by four walls or a school clock. It is as room that not only students and teachers can enter. And it is a room in which several themes can be communicated about simultaneously. It is therefore a room in which *dissent rather than consent is most likely to be produced*. More voices become accessible. Not only do teachers and students become cyborgs, the same goes for everybody else, making everybody else able – in principle and often also an actuality – to observe or even participate in the

communication of the new class room. The value and possibility of producing a unison echo decrease, while the value and possibility of transforming and expanding communication and knowledge increase. It becomes possible for the new cyborg teacher to participate both in the community of the class and facilitate and initiate supporting learning networks for the students.

In the old school the only role of the teacher was to secure the echo in the classroom. The consequence was, that there were two major social determination of learning: (1) the echo room of the school *and* (2) the supporting network, the family home and friends of each student. The teacher and the school did only *control* the social determination of the classroom community, but not the networks. The result was “the negative social heritage” – meaning that students with academic parents or other strong networks were more likely to have success in the school than children without such network possibilities. BUT, as we have argued in this paper, all that changed with the Internet and the new digital medium environment. It now becomes possible for the teachers and the schools to help students and classes with building up strong learning networks. The teacher task then becomes hybridized. On the one hand the teacher must pay attention to the communication *within* the class. On the other hand the teacher must help students with building networks. These two operations can only become one and the same, and thus become possible both, *if* the teacher transforms herself into a cyborg. If this happen, a totally new educational reality will appear.

Conclusion

Leaving the echo room and entering the new hybridized “room of transformation”, the teacher need to find a new role, not anymore being in charge in the same way as before. The cyborg-teacher must find her-self and use her new possibilities for teaching, by guiding the cyborg-students to form their own knowledge encouraging them to learn navigating the new media environment. The student must be (in)formed to form himself through the teaching of their networks. To make this possible we need a societal reflection on, and revision of how we should

accommodate our education system, to fit the needs of contemporary society. The system's reflection theories, which works as the school's programs for handling the primary code (*teach-able /not teach-able*), must be modified, so they are fit to the new medium environment and its possibilities and risks. We are talking about large investments in the education of teachers (and them who teaches them) and about upgrading qualifications of they who already are teachers, but are educated to the echo room.

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