UNDERSTANDING VYGOTSKY'S ZONE OF PROXIMAL DEVELOPMENT FOR LEARNING

Rentauli Mariah Silalahi
Institut Teknologi Del, Laguboti, SUMUT
rentaulisilalahi@gmail.com

Abstract

Vygotsky is the father of the Zone of Proximal Development (ZPD) theory who claims that a leaner can do what he can almost do alone with the presence of assistance. This literature study aims at investigating what factors need to be present for developing someone's potential. From the literature study, it was found that there are six factors that need to be present, including assistance, mediation, cooperation, imitation, target and crises. With the presence of assistance from the more capable other and keeping attention to the six important factors, a learner will be able to do what he/she can almost do alone.

Keywords: Vygotsky, Zone of Proximal Development (ZPD), assistance/scaffolding, language, mediation, imitation

Abstrak

Vygotsky adalah penemu konsep Zona Perkembangan Proksimal yang menyatakan bahwa seseorang yang belajar akan mampu melakukan apa yang hampir dapat dilakannya secara mandiri dengan tersedianya bantuan. Studi kepustakaan ini bertujuan untuk meneliti unsur apa saja yang penting untuk membantu perkembangan potensi seorang pelajar. Dari studi kepustakaan ditemukan bahwa ada enam unsur yang penting yakni bantuan, mediasi, kerjasama, kemampuan untuk meniru, sasaran dan masa sulit atau keluar dari zona nyaman. Dengan adanya bantuan dari orang yang lebih mampu dan kehadiran dari enam unsur tersebut, seorang pelajar akan mampu melakukan apa yang hampir dapat dilakukannya sendiri.

Kata Kunci: Vygotsky, Zona Perkembangan Proksimal (ZPD), bantuan, bahasa, mediasi, masa sulit/keluar dari zona nyaman

Introduction

The early definition of learning goes to the Behaviourism doctrine that 'explains learning as a system of behavioural responses to physical stimuli' (Fosnot, 2005, p. 8) and considers learners as 'passive, in need of external motivation, and affected by reinforcement' (Skinner, 1953, cited in Fosnot, 2005, p. 9). Learning is then understood as the process of acquiring skills that ends up in the mastery of particular skill while acquiring the skill becomes the desired outcome of learning (Bloom, 1976, cited in Fosnot, 2005). Later, learning is seen from the theory of maturation in which learning is considered to be highly related to the learner's mental age in which 'learners are viewed as active meaning-makers, interpreting experience with cognitive structures that are the result of maturation' (p. 9). Learning is further understood differently with the arrival of Piaget's theory who looks at children or learners as independent adventurers or little scientists as 'the child actively trying to make sense of the world, just as any organism must try to adapt to its environment' (Meadows, 2018, p. 91) and who claims that learning is not influenced by 'education or culture' or other people's intervention in social interaction (p. 91).

However, a new understanding of learning appears with the arrival of Vygotsky's books entitle Thought and Language (1986) and Mind in Society (1978) in which Vygotsky believed that children learn the most and contribute to their development through the assistance of the more capable others. Among Vygotsky's critics towards Piaget's theories was that learning is not happening by self-discovery when the learner is ready but through the assistance of others who are more knowledgeable than the learner him/herself that eventually helps the learner develops to his/her maximum development within the learner's potential development. This is known as the Zone of Proximal Development (ZPD).

As a sociocultural theorist, Vygotsky believed that 'development was a social process: social interactions were a necessary aspect of cognitive development' (Keenan, Evans, & Crowley, 2016, p. 45). For Vygotsky, children first learn to do something from collaboration with others before they can do it themselves. In the collaboration, children learn by involving themselves in the interaction by using language and ability to imitate.

Following the years where Vygotsky's thoughts being released widely, many researchers were interested in understanding the learning process and the development that children could achieve in the presence of interaction between children and more capable others. Researchers did research studies on adult-child interaction or called dyad and came up with interesting findings, but all came to quite similar findings that children of younger ages usually needed more directive assistance compared to the older ones (Pacifici & Bearison, 1991; Rogoff, Ellis, & Gardner, 1984; Wertsch, 1980; Zuckerman, 2007) and that the ways the adult gave assistance to the children might vary depending on what the adult believed to be the best ways for assisting their children in which might be influenced by their educational background (Tudge, 1992) and cultural beliefs (Rogoff, 1992). Those studies and many others that might be carried out in different parts of this world indicated that children's learning supported by more capable others might result in better development in the children themselves. This is an important basis for the continuous demand for learning, especially in this era where technology becomes increasingly used as part of the learning process.

The ways children learn nowadays have changed a lot with the invention and presence of sophisticated technologies that come in handy and are easy to access that prompted researchers like Eagle (Eagle, 2012) to call it time to think about using the technologies to support children's learning and development. That condition makes 'schools no longer have control over information and the information sources that people encounter and find relevant' (Säljö, 2010) as children have extensive access to technologies outside schools. Saljo even suggested that learning would mean 'to be able to convert information stored in the expanding external symbolic storages of our social memory into something new, interesting and consequential for a practice or an issue' (p. 62).

Indeed, there will be consequences from the use of technologies in children's learning yet, adult's intervention might minimize the risk. Therefore, Vygotsky's thought on learning towards developing children's ZPD can be used as the basis for the continuous demand of children learning which may be more varied than what is happening now with the presence of technologies. Following this thought, this study is conducted as a literature study towards Vygotsky's theory of ZPD to find out the necessary factors to be present so that the learner's ZPD can be developed. Among the works of literature that are mainly used as references are Vygotsky's, Wertsch's, Rogoff's, Chaiklin's, Minick's, and Daniel's. The discussion will start with an introduction to the sociocultural theory; pioneered by Vygotsky and continued with Vygotsky's theory of Zone of Proximal Development as the main discussion.

Findings

Vygotsky's Sociocultural Theory

Lev Semyonovich Vygotsky was a famous controversial Soviet psychologist and social constructivist who through his thought and research proposed different ways of understanding learning which was different from the previous theory introduced by Piaget (Mooney, 2013). For Vygotsky, social environment is 'an extremely important force' in children development (Keenan,Evans, & Crowley, 2016, p. 45) as Vygotsky believed that children 'learn through social interaction' (Papalia , Gross, & Feldman, 2003, p. 39) which is why Vygotsky has different a view from Piaget in understanding children development in which:

> Unlike Piaget, who viewed children essentially as solitary figures involved in the construction of knowledge, Vygotsky believed that the child's social environment was an active force in their development, working to mould children's growing knowledge in ways that were adaptive to the wider culture in which they grew up. Vygotsky's perspective on development is often referred to as a sociocultural theory because of his emphasis on the child's culture and the social environment as forces which shape development. (Keenan, Evans, & Crowley, 2016, p. 138)

The culture and social environment become the most significant factors that influence someone's development, which means the presence of others such as parents, peers, and teachers are mandatory in sociocultural theory. Sociocultural theorists see humans as 'creatures who have a unique capacity for communication and whose lives are normally led within groups, communities and societies based on shared ways of using language, ways of thinking, social practices and tools for getting things done' (Mercer & Littleton, 2007, p. 4). Sociocultural is also referred to as 'the "sociohistorical" or "cultural-historical" approach to the study of mind' (Smirnov, 1975 & Luria, 1971 cited in Wertsch, 1985).

Vygotsky's sociocultural studies mostly take children as subjects of observations, yet it does not mean that the sociocultural studies are only applicable to children but to all humans as humans have the ability to use and develop tools; technical and psychological tools, in collaboration with others (Wertsch, 1993; Wertsch & Tulviste, 1992) as Vygotsky believed that tools developed by and in the society have important roles in sociocultural studies. Vygotsky believed that:

> Personal and social experience cannot be separated. The world children inhabit is shaped by their families, communities, socioeconomic status, education, and culture. Their understanding of this world comes, in part, from the values and beliefs of the adults and other children in their lives. Children learn from each other every day. They develop language skills and grasp skills and grasp new concepts as they speak to and listen to each other.(Mooney, 2013, pp. 100-101)

From a sociocultural perspective, Vygotsky believed that there is a complex relationship between learning and development. Vygotsky did not accept the views saying that 'processes of child development are independent of learning' (Vygotsky, 1978, p. 79) and 'that learning is development' (p. 80) instead Vygotsky believed that 'the only "good learning" is that which is in advance of development' (Vygotsky, 1978, p. 89) which means 'learning and development are a dialectical unity in which learning does not follow but leads development' (Vygotsky, 1978 cited in Holzman, 2017, p. 26).

Vygotsky considered that people around children's lives are very influential in shaping the development of the children as those people will most probably be the persons that assist the children to learn.

However, in order to be able to assist children to learn collaboratively in order to achieve development, Vygotsky required the people to be more capable or more expert than children or learners. This contention leads to Vygotsky's well-known theory of Zone of Proximal Development or also known as zoped or ZPD.

Vygotsky's Zone of Proximal Development

The theory of Zone of Proximal Development (ZPD) is the basis for the development of communicative learning strategies in a formal educational setting. Vygotsky defined ZPD as:

> The distance between the actual developmental level as determined by independent problem solving and the level of potential development as determined through problem solving under adult guidance or in collaboration with more capable peers. (Vygotsky, 1978, p. 86)

ZPD is all about learning and development, and the learning should be targeted at learners' potential development and not at the actual development or at learning things that the learners have been able to do independently as 'the functions … have matured' (Vygotsky, 1978, p. 86). This definition of learning should be well addressed in every learning process especially in schools so that learners can develop their potentiality as Vygotsky proposed:

> An essential feature of learning is that it creates the zone of proximal development; that is, learning awakens a variety of internal developmental processes that are able to operate only when the child is interacting with people in his environment and in cooperation with his peers. (Vygotsky, 1978, p. 90)

Vygotsky focused his ZPD study on children, yet it does not mean that ZPD applies to children only but to all humans as humans have the ability to use and develop tools; technical and psychological tools, in collaboration with others (Wertsch, 1993; Wertsch & Tulviste, 1992) as Mahn and John-Steiner said 'this appropriation in the ZPD plays a crucial role in transformative experiences of all types and is not limited to children and other novice learners' (Mahn & John-Steiner, 2002, p. 51). One example of children development that can be observed for their zone of proximal development is through their cognitive development

that is related to 'children's ability to think and learn through interacting with their senses and experiences' (Hobart & Frankel, 1994, p .9).

Vygotsky 'regarded cognitive development as reflecting the child's social, historical and cultural background' (Garton, 2004, p. 18); therefore, cognitive development is inseparable from other aspects of development. Vygotsky strongly believed that 'cognitive development involves the internalization, transformation and use of routines, ideas and skills which are learned *socially*, from more competent partners' (Meadows, 2018, p. 106). One example of internalization is:

> In children's self-talk while problem solving. Children take the kinds of dialogues that they engage in with parents or teachers (e.g. *'take your time'* or *'be careful')* while solving problems and talk to themselves while working on problems alone. Eventually, this self-task is internalized and the child no longer needs to talk out loud. (Keenan, Evans, & Crowley, 2016, p. 45).

Six factors that are important to be present to develop someone's ZPD

Eventually, the essential target of developing ZPD is to assist children to develop their potentiality as the interest is on 'how a child can become "what he not yet is" can be traced' (Wertsch, 1985, p. 67). However, ZPD is 'a complex whole, a system of systems in which the interrelated and interdependent elements include the participants, artefacts and environment/context, and the participants' experience of their interactions within it' (Mahn & John-Steiner, 2002, p. 49). Therefore, there are six important factors that need to be well understood in order to assist children to develop their potentiality. They are regarding the assistance given to the child, the use of mediation, the importance of cooperation, the ability to imitate, the importance of the target, and the role of crises. Those six characteristics are discussed below.

a.   *The importance of assistance*
ZPD requires appropriate assistance as not all kinds of assistance are related to the development of ZPD. The assistance in ZPD is also named scaffolding, which was firstly introduced in 1976 by Wood, Bruner, & Ross (1976) in their study entitles 'The role of tutoring in problem solving.' Wood et al. defined scaffolding as:

> Process that enables a child or novice to solve a problem, carry out a task or achieve a goal which would be beyond his unassisted

efforts. This scaffolding consists essentially of the adult "controlling" those elements of the task that are initially beyond the learner capacity, thus permitting him to concentrate upon and complete only those elements that are within his range of competence. (p. 90)

The definition clearly explains that scaffolding is not ZPD but the assistance given in the process of helping children develop their ZPD. Wood et al. (1976) recommended that the more capable other who gives scaffolding should be responsive in order to manage or amend the assistance she/he gives to the child who is in collaboration with the more capable other to do a problem solving, yet 'it is not the competence per se of the more knowledgeable person that is important; rather, it is to understand the meaning of that assistance in relation to a child's learning and development' (Chaiklin, 2003, p. 43). Therefore, it is important to know the child/learner's actual development before deciding the kinds of assistance to give in the learning process. For example, Wertsch, McNamee, Mclane,& Budwig (1980) found that the more capable others who give assistance in forms of gaze to children ages 2.5, 3.5, and 4.5 have to vary their assistance to different ages for the purpose of completing similar task because 'different age groups did not have the same understanding' (1980, p. 1221) towards similar forms of assistance in which in the study it was found that younger children were more incapable of taking meaning of the assistance.

Eventually, ZPD should always be seen as the development a child can achieve in collaboration with a more capable other because if a child can do a task by him/herself alone, the development a child accomplishes is within his/her actual development; the ability to do something alone without assistance.

b.   *The importance of mediation*
What is important in that cultural development process is the availability of mediation such as language or speech as one of the psychological tools or signs (Daniels, Cole, & Wertsch, 2007) as 'psychological tools can be used to direct the mind and behavior' (Daniels, 2001, p. 15) and the language is available firstly by interaction with other people. The other people can also be treated as mediation as Vygotsky said 'It is through the mediation of others, through the mediation of the adult that the child undertakes activities' (Ivan, 1989

cited in Daniels, 2001, p. 18) which is represented in the Vygotsky's basic triangular representation of mediation as follows.
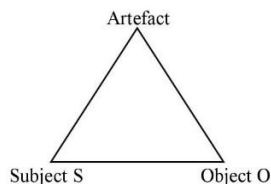

Figure 1 The basic triangular representation of mediation (Daniels, 2001, p. 14)

The figure clearly illustrates the triangle relationship between the learner (Subject), the Artefacts which comprise the more capable other who provides assistance and language as a tool used as mediation for collaboration between the learner and the other person, and the purpose (Object) which is targeted to be completed by the learner with the presence of the assistance. It is important to understand that cognitive mental functioning and human action, in general, are mediated by tools (or "technical tools") and signs (or "psychological tools") (Wertsch, 1993, p. 28).

Language is crucial in the learning process that leads to the development of a child's ZPD as it is the tool used for communication between the child and the more capable other. Moreover, it is the existence of language or speech in human race and the meaning of the interaction that enable humans to develop their higher mental functions as Vygotsky stated that 'speech is the mechanism common to both social behavior and the psychological processes that are unique to human beings' (Minick, 1987, p. 36). As a communication tool, language helps children internalize the meaning of the interaction as Wertsch put it 'it is because humans internalize forms of mediation provided by cultural, historical, and institutional forces that their mental functioning sociohistorically situated' (Daniels et al., 2007, p. 178) as 'any higher mental function was external because it was social at some point before becoming an internal, truly mental functioning' (Meadows, 2018, p. 106). Vygotsky also 'proposed that children's intellectual development is shaped by the acquisition of language, because the language makes dialogue possible between children and other members of their community' (Mercer & Littleton, 2007, p. 5).

Language is the property of humans and no animal will gain this property as humans do. Remember the three sequential movies

aboutapes[1] whose main character, Caesar as one experimental ape could speak human language, 'grew more upright and used sign language' (Alexander, 2017) and finally taught other apes to speak human language. Those movies were initially produced for entertainment and the talking apes were not real, yet it is a good example showing the opposite reality that 'the close correspondence between thought and speech characteristic of man is absent in anthropoids' (Vygotsky, 1986, p. 80), that 'tool use in apes as a necessary, but not sufficient, condition for the emergence of higher mental functioning' (Wertsch, 1993, p. 21) and that despite animals like chimpanzees have vocal apparatus which 'is as well developed and functions as well as man's. What is missing is the tendency to imitate sounds' (Vygotsky, 1986, p. 74).

c.   The importance of mutual cooperation

Participation is the key to cooperation in which the child and the more capable other need to work together to reach the target, which is aiming for developing the child's ZPD. For example, 'Learning awakens a variety of internal developmental processes that can operate only when the child is interacting with people in his environment and cooperation with his peers (Vygotsky, 1978 cited in Holzman, 2017, p. 28). Although 'the skills required of the child are observation and imitation, and of generalisation and decontextualization; but even these fundamental skills develop under the fostering support of social interaction' (Meadows, 2018, p. 107).

Vygotsky emphasized that 'each function in the child's cultural development appears twice: first, on the social level, and later, on the individual level; first between people (interpsychological), and then inside the child (intrapsychological) (Daniels et al., 2007). Therefore 'mind, cognition, memory, and so forth are understood not as attributes or properties of the individual, but as functions that may be carried out intermentally and intramentally' (Wertsch & Tulviste, 1992, p. 549) and mediation such as language or speech as one of the psychological tools or signs is really important in that cultural development process (Wertsch, 1993, 2007). It means that interaction and collaboration are important factors in children's development for children to develop understanding, become more able persons and interested in developing

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[1] The three movies are: Rise of the Planet of the Apes (2011), Down of the Planet of the Apes (2014), War of the Planet of the Apes (2017).

their actual development and the language as a communication tool helps them internalize the meaning of the interaction as Wertsch said 'it is because humans internalize forms of mediation provided by cultural, historical, and institutional forces that their mental functioning sociohistorically situated' (Daniels et al., 2007, p. 178).

However, interaction is the bridge that can connect the meaning of the assistance between the more capable other and the child/learner which means the quality of the interaction becomes a necessary concern. As suggested by Hoogsteder, Maier, & Elbers (1996), a didactic kind of interaction worked best in a joint-problem solving to develop a child/learner's ZPD as they stated that the didactic interaction's aim is:

> To transform the non-competent participant (the child) – as far as his or her knowledge on a specific point is concerned – into a competent one and thus to transform the relationship between the participants. Errors are not prevented but seized as learning or teaching opportunities. (p. 349)

There are many kinds of cooperation that may be carried out between a more capable other and a child but what Hoogsteder, Maier, & Elbers (1996) suggested seems to be the most appealing kind of interaction as the more capable other seems to always firstly make assessment on the actual development of a child and make observation during the collaboration by giving the child chances to do trial and error following the child's own intuitive and therefore can decide to give appropriate assistance.

d.   The importance of imitation

For Vygotsky, 'imitation was an active creative and fundamentally social process that was essential to creating the ZPD. Unlike animals, humans are special creatures who have the ability to imitate almost anything within their zone of proximal development and Vygotsky stated that imitation was only possible when '(a) maturing psychological functions are still insufficient to support independent performance but (b) have developed sufficiently so that (c) a person can understand how to use the collaborative actions (e.g. leading questions, demonstrations) of another' (Chaiklin, 2003, p. 53). However, children do not imitate anything and everything as a parrot does, but instead what is 'beyond them in their environment/ relationships' (Holzman, 2017, p. 30) in which Vygotsky emphasized that:

To imitate, it is necessary to possess the means of stepping from something one knows to something new. With assistance, every child can do more than he can by himself – though only within the limits set by the state of his development. If imitative ability had no limits, any child would be able to solve any problem with an adult's assistance. But this is not the case. The child is most successful in solving problems that are closer to those solved independently; then the difficulties grow until, at a certain level of complexity, the child fails, whatever assistance is provided. (Vygotsky, 1986, p. 187)

In an interaction, the more capable others may always amend the kinds of assistance given to a child as the more capable other 'needs to take less and less responsibility for the successful performance of the activity as the increasingly competent learner takes it on' (Meadows, 2018, p. 111) as long as the required skill is still within a child's zone of proximal development.

However, as Vygotsky said, a child cannot imitate everything in his/her environment; only when the ability is within the child's zone of proximal development does a child can imitate. Naturally, children ask many questions in their young age or as soon as they can talk. That is why it is essential for parents or caregivers to assist the children's golden ages of wondering about the world around them. That is the beginning where children start to learn and be part of their social and cultural environment.

e.   The importance of target

ZPD 'is not considered with the development of skill of any particular task, but must be related to development' (Chaiklin, 2003, p. 43) as 'the focus of change within the ZPD should be on the creation, development and communication of meaning through the collaborative use of mediational means rather than on the transfer of skills from the more to less capable partner'. (Moll, 1990 cited in Daniels, 2001, p. 60).

The target of developing a child's ZPD always rests on the child's potentiality because 'there is little point in teaching aimed below the bottom of the ZPD because the child's functioning here is already mature, or in teaching aimed above the top of ZPD, because the difference from the child's actual present functioning may be too great'

(Meadows, 2018, p. 110) as Holzman (2017, p. 27) paraphrased what Vygotsky said:

> Psychologist must not limit his analysis to functions that have matured. He must consider those that are in the process of maturing. If he is to fully evaluate the state of the child's development, the psychologist must consider not only the actual level of development but *the zone of proximal development.*

Therefore, in order to know the target clearly which is related to the potentiality of a child, it is very important to know the actual development of the child as by knowing the actual development only that the collaborative learning can be planned well to achieve the target. Kurniasari & Santoso (2016) emphasized the important role of the learners such as their work and or gifted / talented students in order for teachers plan activities and assessment to support their communication skills.

f.   The importance of crises

Having a crisis in life is a natural phenomenon as a human's life is dynamic and human interacts one to another in social life and with his/her environment. Moreover, in learning that is targeting the learner's potentiality, having a crisis is the main indication that development is taking place as Vygotsky:

> Never assumed that learning related to the zone of proximal development is always enjoyable' and 'the potential is not a property of the child-as these formulations are sometimes interpreted – but simply an indication of the presence of certain maturing functions, which can be a target for meaningful, interventive action. (Chaiklin, 2003, p. 43)

Daniel Elkonin (1989, cited in Hedegaard, 2012, p. 17) suggested that 'crises and changes in the child's motive orientation can be initiated by the child entering a new practice or acquiring a new competence', and the new competencies are usually more sophisticated than the child's actual skill so the child 'cannot usually manage them easily and well' (Meadows, 2018, p. 109). The moment the child experiences crisis is the moment when the development is taking place, and the presence and assistance of the more capable other is highly required in order to give support, encouragement, and direction so that the child will not

give up because the skill required is actually still within the child's zone of proximal development. For most cases in collaboration with children, a crisis is as simple as the child gets distracted and does other things instead of continuing the task of a problem-solving activity the child has been doing with a more capable other like doing a puzzle or building a model using Lego.

However, when the child for instance can overcome his/her boredom and tiredness, he/she moves to a new competence and with more exercises, time and exposure to various social environment, he/she will still be developing her ability hence his/her size of ZPD will still be expanding as it is not 'a fix property of a child that remains constant across age periods' (Chaiklin, 2003, p. 55). In the end, the size of a child's zone 'refers to the extent to which a child can take advantage of collaboration to realize performance beyond what is specified by independent performance and relative to age norms' (Chaiklin, 2003, p. 55). That is why children with the same ages may have different ZPD as children have different exposure to the social life, culture and environment they live and take meaning from those chances and facilities. That is why nowadays, many children are ahead of their mental age compared to what they should have been able to do if they are seen only from their mental age. For example, as a seven-year-old child and if considered for his mental age only, Ryan should only have been able to do simple math at elementary school. However, Ryan's ZPD is way ahead of his mental age as he has made $22 million a year on YouTube reviewing toys on his very young age (Lynch & Clark, 2018). Ryan's ZPD will still be developing as he grows in age, as the more capable others around him provide him various assistance, and as Ryan develops his understanding of meaning-making of what is presented in his life.

Conclusion

What it takes to develop the zone of proximal development of a child is a learning process that involves a more capable other that gives appropriate assistance by always taking into account the child's actual development as the foundation for deciding the kind of assistance given as it means targeting the 'prospective rather than retrospective characterization of cognitive development' (Goswami, 2008, p. 392). Yet, in order for the collaboration to be successful, both parties need to engage cooperatively in the joint-meaning making collaboration. Having

that in mind and understanding that 'a child can always do more with the help of more competent persons than she or he can do alone' (Hedegaard, 2012, p. 128), in the end, any learning process will contribute to developing someone's ZPD with the presence of assistance, mediation, cooperation, imitation, target and crises.

However, for further study, the findings can be used to do an empirical study in order to look at the efficiency and effectiveness of the factors in developing a learner's ZPD. It will even be more interesting when the study can be done to see the difference of a leaner's development using Vygotsky's theory of ZPD and Piaget's theory in which the difference of both is the presence of assistance (Vygotsky's) and the absence of assistance (Piaget's).

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