

Change laboratory: a method for understating the crisis between public university and society

Laboratório de mudança: método para compreensão da crise entre universidade pública e sociedade

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Abstract

The purpose of this article is to analyze if a method of developmental intervention helps the professionals of the activities in interinstitutional crises to form a historical understanding of the problems faced and to create solutions for them. We present a method called Change Laboratory (CL), inspired by the Theory of Historical-Cultural Activity (THCA). It is illustrated with an empirical case of intervention where the historical genesis and the contradictions that led to the crisis in the collaborative relationship between a public university and an educational health center were identified, between 2013 and 2015. Data obtained from records made during the intervention as well as interviews and comments from the participants were used for the study. As a result, the participants analyzed their activities historically and designed the future collaboration activity aimed at a solution to the crisis, within the scope of possible academic-pedagogical relations linked to the Brazilian National Health System (SUS). The analysis suggests contradictions in the objects of health care and education activities that may be at the heart of the problematic relationship among institutions that need to develop activities collaboratively. The CL as a methodology of developmental intervention integrates diagnosis, learning, the participants' protagonism and the creation of solutions as part of the same process.

Keywords: Methodology; Learning; Worker's Health; Community-Institution Relations; University Extension.

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Resumo

O objetivo deste artigo é analisar se um método de intervenção formativa contribui para que os profissionais de atividades colaborativas formem uma compreensão histórica dos problemas enfrentados em crises interinstitucionais e criem soluções para essas situações. Apresentamos o método Laboratório de Mudança (LM), inspirado na Teoria da Atividade Histórico-Cultural (TAHC). Ele é ilustrado com um caso empírico de intervenção na qual foi identificada a gênese histórica e as contradições que levaram à crise entre uma universidade pública e um centro de saúde escola. Para o estudo foram utilizados dados obtidos a partir de registros efetuados ao longo da intervenção, entre 2013 e 2015, assim como entrevistas e comentários dos participantes. Como resultado, eles analisaram historicamente suas atividades e desenharam novos cenários de colaboração futura, visando uma solução para a crise, no âmbito de possíveis relações acadêmico-pedagógicas vinculadas ao Sistema Único de Saúde (SUS). A análise sugere a existência de contradições nos objetos das atividades de assistência à saúde e educação que podem estar no cerne da relação problemática entre outras instituições semelhantes que precisam desenvolver atividades colaborativamente. O LM, enquanto metodologia de intervenção formativa, integra diagnóstico, aprendizagem, protagonismo dos participantes e criação de soluções como parte de um mesmo processo.

Palavras-chave: Metodologia; Aprendizagem; Saúde do Trabalhador; Relações Comunidade-Instituição; Extensão Universitária.

Introduction

Public universities in Brazil live together with what we can name “crises of contradiction.” We refer to those as hegemony, legitimacy, and institutional crisis (Santos, 2011). The hegemony crisis concerns the loss of exclusivity of the university in the field of higher education and research. It is the result of contradictions between the traditional roles for the formation of an elite and the demand for creating skilled workforce to the capitalist development. The legitimacy crisis refers to the notion that knowledge should not be homogeneous, originated in the contradiction between maintaining a hierarchy of specialized knowledge and the need for addressing popular classes that have different knowledge. The more evident crisis, however, is the institutional. It is strictly related to the financial dependence of the university on the State and on its movement towards changing its commitment to education, gradually delegating this task to private entities.

The contradiction that forms the institutional crisis lies between the university’s autonomy for defining its values and objectives and the criteria of effectiveness and productivity of business or social responsibility quality imposed on it (Santos, 2011). From the point of view of the theory of cultural mediation of human activity, contradictions may be manifested as opposing forces that are historically developed in an institution and that can result in “crises,” but these contradictions are also the driving forces towards transformations and the development of institutions (Engeström, 2001). The identified crises have been requiring both transformations in the current model and the promotion of new alternatives for organizing elements that are the pillars of the public university: research, teaching, and extension (Santos, 2011).

Research, teaching, and extension activities organically managed are deemed essential to approach universities, healthcare services, and the community (Ellerry; Bosi; Loiola, 2013; Flores et al., 2015; Santos et al., 2000; Vasconcelos; Stedefeldt; Frutuoso, 2016). These practices are corroborated by Law no. 8,080/1990 providing for the role of

the Brazilian National Health System (SUS) for education in health (Brasil, 1990), and by the Law of Education Guidelines and Bases concerning the profile of healthcare professionals educated by the universities (Brasil, 1996).

The relationship between these pillars may promote a contextualized education for the students, permanent education of healthcare professionals, and improve in the comprehensive health care provided to patients (Ellery; Bosi; Loiola, 2013). In Brazil, the experiences of programs in this field are generally university initiatives and, although they comprise successful accomplishments, analyses also point to the detachment of the academic production from the practice and to the difficulty in properly incorporating the research focus into extension (Ellery; Bosi; Loiola, 2013; Flores et al., 2015; Santos et al., 2000; Vasconcelos; Stedefeldt; Frutuoso, 2016). Transformations and new ways of organizing these pillars require that subjects involved with these issues create innovative ways for developing the university (Santos, 2011).

But how can we produce these innovative ways within the crisis context? Who should create them and how to ensure that changes lead to a sustainable development? Considering resources available in the very institutions, analyzing their stories allows explaining their failures, which encourages the creation of alternatives to emerge from the crisis.

Our article presents a formative intervention methodology called Change Laboratory (CL), which is based on the theoretical-methodological approach of the Theory of Historical-Cultural Activity (THCA). The CL, when applied, allows, among other benefits, a collective and participatory analysis on historical contradictions in activity systems. These are understood as systemic origins and enable participants to broaden the understanding of the problem and to become protagonists with potential to undertake the transformation of their activities.

The method was applied to understand the origin of the crisis and contribute to broadening collaborative academic activities between Faculdade de Saúde Pública of Universidade de São Paulo (FSP/USP) and the Centro de Saúde Geraldo Paula Souza (CSGPS). The intervention took place

in 2015 and initially emerged from the researchers' need for conducting a pilot intervention with the methodology in the Brazilian context. This need, in addition to the demands of the two institutions, constituted a breeding ground for applying the method (Pereira-Querol; Jackson Filho; Cassandre, 2011). FSP demand was related to the separation between the institution and the healthcare center concerning its academic activities. CSGPS featured issues related to the health of workers, which were manifested as conflicts between these and users in the reception service of this unit.

Our objectives are: to analyze (1) if the method can contribute to the historical understanding of the issues in the collaborative relationship between the two institutions and (2) if the method allows the participants to perceive possibilities to solve the faced problems and the development of activity systems. To do so, we identified the historical origin and the contradictions that led to the crisis.

We begin the article presenting the THCA theoretical reference. Then, we present the CL methodology, the empirical environment with details about the institutions involved in the crisis, and the methodological process used to explain how we conducted the historical analysis. In the results section, we show how the crisis of collaboration in academic activities emerged and evolved and what kind of possibilities were addressed to solve it. We discuss the results considering contradictions in the collaborative relationship between CSGPS and FSP, which is expressed in the dialogue between the university and the society in a neoliberal context. Finally, we reflect on the potential of the CL methodology.

Theoretical references to study the crisis

The human activity system

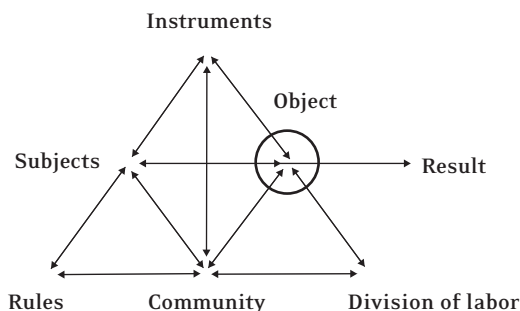
According to the THCA and the CL, the basic unit of analysis is an activity system (AS) that is part of a network of activity systems. In this approach, the concept of cultural mediation of human action, developed by Vygotsky, is paramount and indicates that human activity is characterized by the

interaction between subjects and the environment in which they live. This interaction is directed by the *object*, something that drives subjects to act or that directs their action in pursuit of satisfying their needs (Engeström, 1987; Pereira-Querol; Jackson Filho; Cassandre, 2011).

Leontiev (1978, 1981) expanded Vygotsky's concepts of mediation towards the collective activity, since the author still focused on the role of mediations for subjects' behavior and development. Thus, Leontiev broadened the role of mediations when clarifying that the cultural mediation is always related to the division of labor between people, and such influences the work activities collaboratively carried out, thus demonstrating the collective quality of the human work (Cassandre; Pereira-Querol, 2014; Vilela, Pereira-Querol, Lopes, 2014).

Engeström (1987) developed the previous ideas with the proposition of the AS and graphically represented it in a triangular shape (Figure 1). This system demonstrates the basic relationship of cultural mediation of human activity with elements that had not been considered previously such as rules, community, and division of labor. Subjects (individual or collective), motivated by an object, use cultural artifacts (mediators) that will constitute a human activity system. Tools or instruments may be conceptual or material; rules comprise the external, internal, explicit or not standards, deadlines etc.; division of labor represents the division of tasks and hierarchy; and finally, the community represents the set of those involved with the object such as social partners, customers etc.

Figure 1 – Triangular model of the human activity system



Source: Engeström, 1987, p. 78

Historicity and contradictions in the activity system

In the THCA, the movement and the evolution of an AS is explained through contradictions within the internal affairs of this system, i.e., within and between the elements of the AS. According to Marx (1983), in the capitalist production system there is a basic, *primary contradiction* between use value and exchange value which, to Engeström (1987, 2016), is characteristic of all elements of the triangular structure of an AS (Figure 1). This contradiction refers to a unity of opposites, opposite forces or trends within a system whose elements move and evolve historically (Wilde, 1989 apud Engeström; Sanino, 2011, p. 370).

Changes in AS elements, which cause incompatibility between them, are called *secondary contradictions*. These emerge in the system from historical events that introduce changes in one or more of its elements, which lead to a state of "crisis." They can be understood by an analysis of the historical development of the system, and are manifested in riots, disturbances, conflicts, and dilemmas (Engeström, 1987, 2016). An example of the emergence of a secondary contradiction in the AS is the change of the learning needs of the student, while the tools and concepts used in the learning process remain old.

Change Laboratory as formative intervention

CL is a method that enables participants to understand issues that affect their activity and to create an AS model balance, partially or broadly, contradictions identified by themselves. In practice, this means expanding a human activity system, in particular its object, a phenomenon called by Engeström (1987, 2016) as "expansive learning." It is based on a social process, developed by individuals, which involves the definition of the intervention object, intermediated by communication, negotiation, and collaboration as central strategies in changing projects. Its main merit is to reconcile, in a single process, the diagnosis, the creation, the test, and the implementation of solutions supported by the protagonism of the participants.

As a methodological approach, CL uses a set of tools that implement THCA principles, namely: (1) having an AS as the unit of analysis and development; (2) recognizing the multiple voices and the heterogeneity of an AS and ensuring it in the intervention; (3) having a historical understanding of the AS; (4) understanding contradictions as the origin of problems and source of development; and (5) promoting learning by creating a new concept and purpose of the activity (Engeström et al., 1996; Virkkunen; Newnham, 2015). Principles and instruments involved in the CL enables participants to, individually and collectively, go through a cycle of expansive learning of collective and systemic quality, in which the subjects are encouraged to learn about and to develop their work activity. This learning cycle starts with the individual and collective recognition of disturbances in the current activity (questioning); analysis of the historical and systemic origins of such disturbances; perception of the contradictions that explain such disorders and the possible solutions that may balance them; implementation, testing, and consolidation of solutions, and reflection on the process (Engeström, 2016; Virkkunen; Newnham, 2015).

Intervention is developed by regular meetings (sessions) carefully planned with the participants/actors of the process. These phases are a consequence of the stage of negotiation and establishment of the contract for the intervention. Then, there must be an investment in an ethnographic study by individual or collective interviews, observing the work on an actual situation, analysis of documents etc., which guide researchers to develop hypotheses about the development of the system and their historical and current contradictions. These data are analyzed and selected in advance to be taken as a timetable to the sessions, in order to promote learning among participants.

Our focus lies on the sessions of the stage of analysis of the problems that resulted in the crisis of collaboration between the AS. In this stage, participants can respond how they worked in the past and show how the contradictions, which comprised the origin of the current issues, emerged. After the analysis, actors started visualizing a new

model able to balance some contradictions between the two involved systems, i.e., they created a more structured image of the AS (Miettinen, 1999).

The empirical environment: Faculdade de Saúde Pública and Centro de Saúde Geraldo Paula Souza of Universidade de São Paulo

FSP-USP offers undergraduate programs in Public Health and nutrition as well as graduate programs (specialization courses or Master's and PhD). In 2015 it accounted for 543 undergraduate students, being 408 in nutrition and 135 in Public Health programs. As for graduate studies, there were 510 students, in addition to 839 students enrolled in specialization courses (extension). There were 77 professors, 96% full-time dedicated to teaching and research activities, and 176 technical-administrative workers.

CSGPS was created to be a practical field of the academic activities of the university, and is located in the city of São Paulo, next to FSP. At the time of the study, it accounted for 72 employees; of those, 56 were linked to the university, and the others were commissioned and/or hired employees. CSGPS was responsible for a territory with 110 thousand inhabitants, and its main activity was the provision of primary and secondary health care. In the 20th century, CSGPS was a teaching-healthcare unit considered as a model, but in recent years it has been facing difficulties due to lack of human and financial resources as it is also the case of USP.

Since 2014, financial difficulties of the university have strengthened old questions about the permanence of health units linked to it such as CSGPS. In an attempt to solve its budget crisis, the Incentive Program for Voluntary Resignation (*Plano de Incentivo à Demissão Voluntária* - PIDV) was launched, and the detachment of units that are not related to its target activities began.

Other features of the context have been calling into question the existence of the center and weakening its relationship with the school regarding academic activities, such as the healthcare needs of this population due to the change in its epidemiological profile; increase in the number

of users seeking comprehensive health care that CSGPS could not provide, since it was not fully linked with SUS; and the lack of replacement of human resources. This context has impaired CSGPS regarding its workforce and promotion of healthcare services, making it unattractive as a training field for such school.

Methodological process: collection and analysis of historical data

After negotiations, in 2013 the CL started collecting ethnographic data on the operation of the two institutions. Were carried out interviews and participant observation of the work in the institutions, in addition to documental analysis. Between September and December 2015, were held 11 sessions of the CL of 2 hours/week, at a space granted by CSGPS, with the participation of FSP professors, staff, users of the center, and graduate students. Sessions were recorded on audio and filmed. This material was analyzed, and a few sessions were transcribed by the researchers. The research team was composed of three researchers and one sound and film technician. Five of these 11 sessions were devoted to historical analysis, in which participated from 7 to 18 people.

Historical analysis started in the third CL session, questioning participants about the collaborative activities between the institutions at the beginning of their relationship, in 1925. In the following sessions, participants opted for drawing a *time line*, which is an analytical tool that enables the identification of events that occurred in the AS and their respective dates (Miettinen, 1999). Analysis of the time line was encouraged by the identification of historical events that produced gradual, notable, and qualitative changes in the activity structure (Sewell; Willian, 1996). Participants were asked to identify these change periods and to name them, discussing the changes in the institutions and between them, from one period to another.

According to Engeström (1987), the historical analysis of the activity focusing on the transformations of the object allows us to formulate hypothesis of the current development stage and contradictions between the elements of the system or other systems.

In CL, there is a dynamic character between data production and analysis. Analysis is mostly constituted by participants and researchers during the intervention. Both the identification of contradictions in the two AS and the indication of possible solutions resulted from the analysis of the records of discussions and interpretations of the participants during the sessions. These records and interpretations were made during sessions and comprise empirical evidence of the CL results.

The study was approved by the Ethics Committee, COEP Official Letter no. 060/13.

Results

Emergence and development of the relationship of collaboration and crisis between activity systems – CSGPS and FSP

CSGPS was founded in 1925 under the administration of Instituto de Higiene, former name of FSP, founded in 1918. It was the first center of this kind in Brazil, created to be a practical field to students of medicine, healthcare workers, healthcare educators, and teachers of elementary education. The result aimed by CSGPS was learning and training in public health of professionals for the control of infectious diseases, through healthcare education and the promotion of health care to the local population. At the same time, FSP expected training individuals (students of the Faculty of Medicine, healthcare workers, healthcare educators, and professors) for the control of such diseases; professors of the school promoted the teaching-learning practice while providing health care to users of the center. In 1925 there was a collaborative relationship between the school and the healthcare center, since each AS focused on a different dimension of the same objects, namely, students and users. This means that objects were shared between both systems.

One of the concrete results produced by participants in the CL was the time line, which enabled creating the AS of the school and the CSGPS in several periods. In 1925, the analysis of the AS enabled to identify the existence of a strong cooperation between both institutions, as shown

in Figure 2, in which the characteristics of both AS are detailed. We perceive that the shared objects and the confluence between elements facilitate cooperation between both systems.

The time line created and analyzed from 1925 to 2015 (Figure 3) resulted in the definition, on the part of the participants, of relevant periods of change in the relationship between both AS, delimited by periods.

Figure 2 – Relationship between the university and the society represented by the collaboration between FSP and CSGPS in 1925

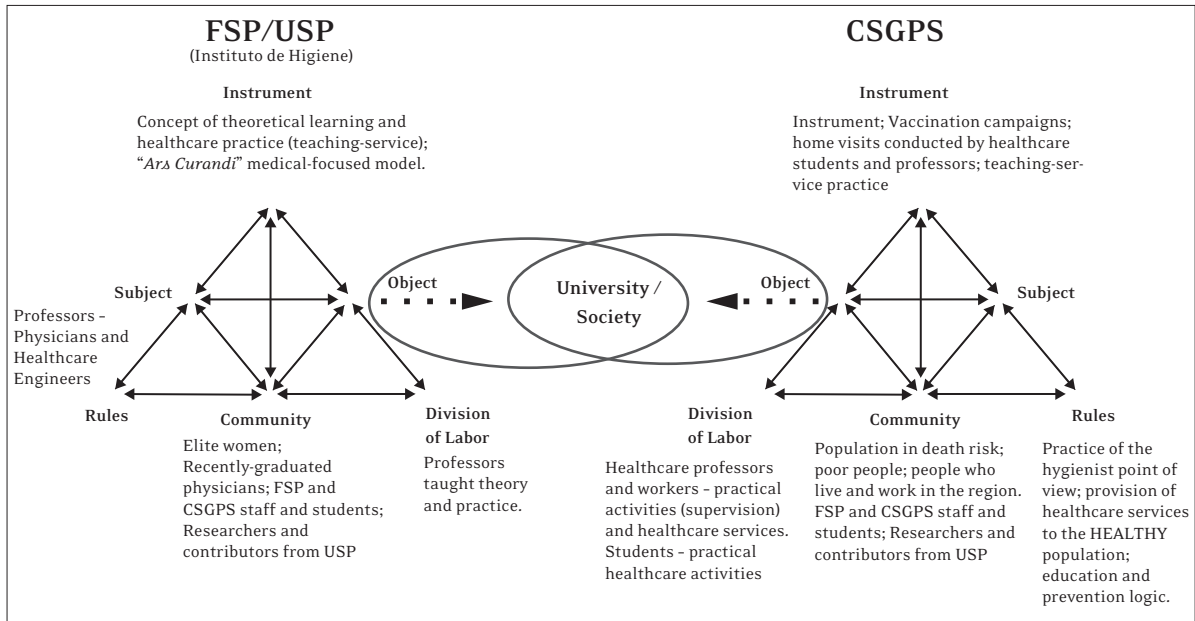
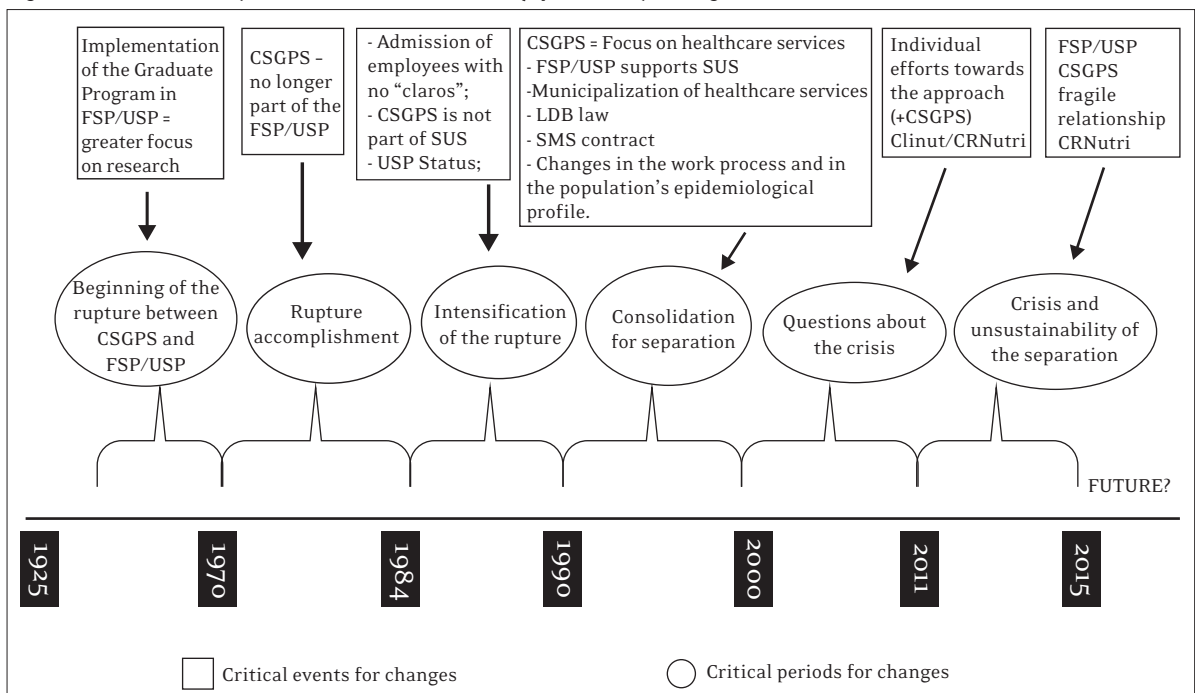


Figure 3 – Time line of CSGPS and FSP divided by periods of change (1925 to 2015)



In 1970, the implementation of graduate programs at FSP induced greater orientation of its faculty towards research activities. This period was appointed by the participants as the “*beginning of the rupture*” between the institutions. In 1982 the center shifted to another physical space, no longer being among the facilities of the school, but in a building next to it. This period was called “*rupture accomplishment*.” The late 1980s and early 1990s was called “*intensification of the rupture*,” and, during this period, there were three significant events. The first one was the incorporation of staff working in CSGPS to the staff of USP, but without formal contract negotiating their occupation in the unit. This meant that, in case of retirement, transfer, death etc., there would not be replacement of staff. The second event was the choice of CSGPS staff to not integrate the SUS and maintain contracts with the State Department of Health (*Secretaria Estadual de Saúde - SES*) and later with the Municipal Department of Health (*Secretaria Municipal de Saúde - SMS*). The third was the reform of USP status, which started emphasizing the international scientific research with assessment of professors based on publication parameters. Extension activities that do not produce publications became little valued.

As for 1990 to 2000, the participants analyzed that the rupture started in 1970, with the implementation of graduate programs, resulted in this period of “*consolidation for separation*” due to a number of relevant events such as: municipalization of healthcare services in the SUS organization context; changes in the epidemiological profile of the population of this area; changes in the work process of its employees; contract between the center and SMS to provide services in specialties, although primary healthcare, the greater demand, was not paid by the SMS.

The interval between 2000 and 2011 was named “*questions about the crisis*.” Separation was identified as crisis between the institutions. Employees of the healthcare center did not wish to be detached from USP, so they questioned this situation and tried to promote approaching actions. However, the group perceived that these were incipient, isolated, and non-institutional

actions. During this period, it was highlighted the beginning of the curricular internship organization of students of the nutrition program of FSP in CSGPS, with the creation, in 2009, of the Centro de Referência para Prevenção e Controle das Doenças associadas à Nutrição (CRNutri). The years between 2011 and 2015 were recognized as a period of “*crisis and unsustainability of the separation*,” marked by difficulties in the renewal of the contract for the provision of service with SMS, which caused loss of financial resources and staff hired with this feature. On this occasion there was also the adhesion of eight employees to the Incentive Program for Voluntary Resignation at the university, with consequent increase in the workload of the remnants and longer waiting time for assistance to users.

Another event was the creation, in 2011, of the Associação dos Usuários do centro de saúde (Usosus). From 2012, it started claiming improvements in healthcare services provided to the population such as inauguration of a drug store and maintenance of the relationship between CSGPS and FSP. The participants analyzed that, during this period, the AS were separated and the relationship continued by a fine line of collaborative actions represented by the interns of the nutrition program of CRNutri.

In 2012, the creation of the undergraduate program in Public Health was another event that strengthened the unsustainability of AS. Incompatibility of academic activities became evident between the undergraduate program in Public Health and the work done at the Center, according to the speeches of a professor of such program:

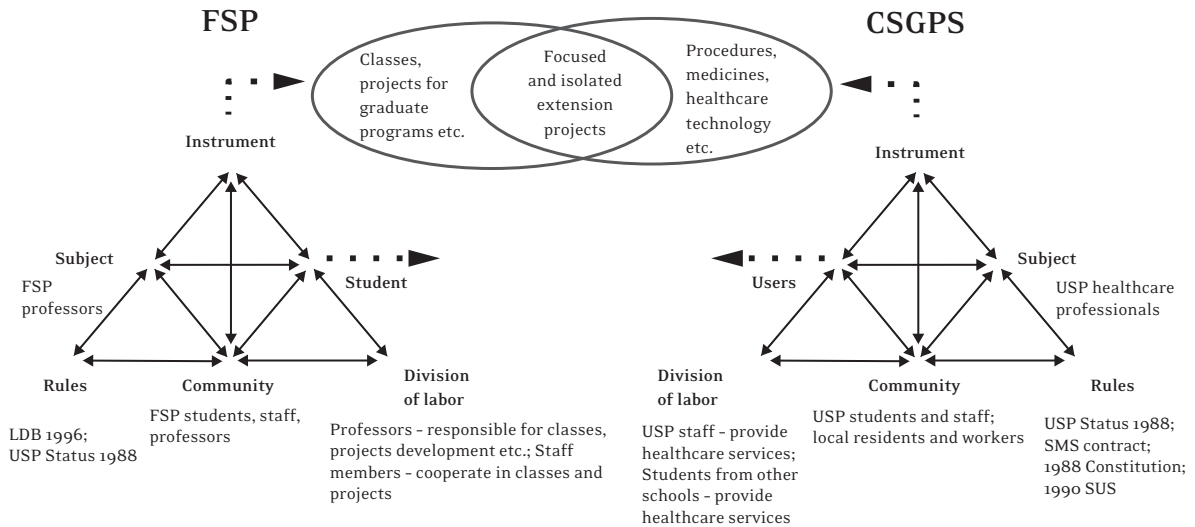
So, for my students [...] this place has nothing interesting. [...] the way it is, it's infeasible [...]. CSE (CSGPS), in fact, is no longer part of the project, in practice, of the professors of the school. It was once! The university, as a research institute, does not recognize CSE as a space [such as a laboratory].

One of the main issues of the professors was that the center did not fully participate in the

SUS. In Figure 4 we present partial collaborative relationships between the AS in the period of “questions about the crisis,” which came about in punctual and incipient actions within the working instruments of the systems.

When comparing Figure 4 (partial collaborative relationships in 2015) with Figure 3 (collaborative relationships in 1925), we observe that the AS no longer share its objects (users and students) but do it so with its instruments.

Figure 4 – Partial collaborative relationship between AS in the period comprising questions about the crisis



Contradictions in the systems of activity-institutions

From the historical analysis, we identified primary and secondary contradictions within and between AS of CSGPS and PSF.

Throughout the AS development of the school, users are no longer a direct motivation for their academic activities the way they were in 1925, at the beginning of the collaboration between both institutions. With the implementation of graduate programs, the main goal of the university and, therefore, of FSP started being related to the scientific production and dissemination of research. Professors expressed the need for teaching and producing scientific research and articles consistent with a positive evaluation for the school has hindered their dedication to extension activities. Hence, currently, teaching, research, and extension activities, which should be inseparable, are mostly exclusive and constitute a contradiction, since conducting extension activities, such as healthcare provision, decreases

the time to manage research and teaching. This contradiction is deemed primary in the object of the AS of FSP.

This tension was also identified in the CSGPS object by the absence of students. CSGPS should be organized to work both in relation to students and users, that is, these should be system objects in such a way the center would be properly structured according to its role, a “healthcare” and “teaching” unit. Differently from what occurred in 1925, being a healthcare and teaching unit became two contradictory roles, since the concept/idea of a healthcare-teaching center in Public Health is currently dissociated from the instruments used in this AS to seek congruent results. In addition, FSP understands that CSGPS does not have many of the tools needed to provide a comprehensive health care and that is not organized to achieve the results required for students’ learning. Thus, the community expects CSGPS to develop a role in the society to which its subjects (students and staff) have not found ways to do it so yet.

The CSGPS secondary contradictions were identified between: (1) object (users) and rules: the center works under contract with SMS to provide specialized healthcare services and is partially linked with SUS. These rules are incompatible with the users' need for receiving a comprehensive health care in addition to the specialties; (2) between subject (healthcare professionals) and object (users): there are not enough professionals to meet the demand of users in the region attended by the center; (3) between subject and instruments: there is little integration between the conceptual tools that are results of the school teaching-learning processes and which could be used as instruments in the healthcare center. These results enhance the SUS context, but are not incorporated into the practice of the services provided at the center; (4) between the instruments and the object (users): CSGPS instruments are insufficient to meet the demand of comprehensive health care towards users, for example, there are no available vacancies in the coordination center for examinations and appointments. Basic Healthcare Units (*Unidades Básicas de Saúde* - UBS) of the city hall have more vacancies in these cases when compared with those intended for healthcare centers. Another instrument that the center does not provide is the supply of medicines to the local population, since there is no pharmacist in its staff. Opening a drug store is one of the main complaints and demands of users who require an organized service according to the SUS logic.

Between 1980 and 1990, different forces pressured the healthcare center for changes. The primary contradictions of the objects suggest that the ASs are at different stages of development that resulted in contradictions between them, being expressed by a sense of impasse on the part of professionals of the center, as reported next:

When the whole movement of professors (FSP) reached the university reform, the healthcare reform, and for implementing SUS in Brazil, CSE was isolated from this process with the SES, which was also isolated from the world. (Professor, CL session, 2015)

Possibilities of solutions for the crisis

Participants could envision possible collaborative scenarios between the two institutions in addition to changes in the work process at the center and at FSP. This reflection was used as the base to model possibilities for developing solutions to resolve the identified contradictions. These alternatives were synthesized in a model (Figure 5) created by the researchers, who presented and discussed with the participants and other actors with greater authority for decision-making.

The model comprises two aspects that we consider key to the development of the systems under study because they emerged from the historical analysis and the analysis of contradictions: "health care" and "academic activities." These aspects form elements that express the concrete collaborative actions between them. Elements 1 and 3 represent current practices in the relationship between the institutions-systems, i.e., possibilities for maintaining features similar to the condition of crisis.

In the "health care" aspect, the development direction would be towards comprehensive health care, along with promotion, prevention, and recovery of health. This would occur with the fully link between CSGPS and SUS, in such a way the school can have it as a field of practice (elements 2 and 4). In this case, the following secondary contradictions would be resolved: (1) between object (users) and rules, because CSGPS, when linked with SUS, could meet the needs of users regarding comprehensive health care; (2) between subjects (healthcare professionals) and object (users), since there would be enough human resources to meet the demand of users in the region, reducing the waiting time and conflicts between employees and users; (3) between subjects (healthcare professionals) and instruments, since CSGPS, when integrating SUS, would have more tools to provide similar services to those of UBS such as access to the Coordination Center of Healthcare Provision and Services (*Central de Regulação de Ofertas e Serviços de Saúde* - Cross).

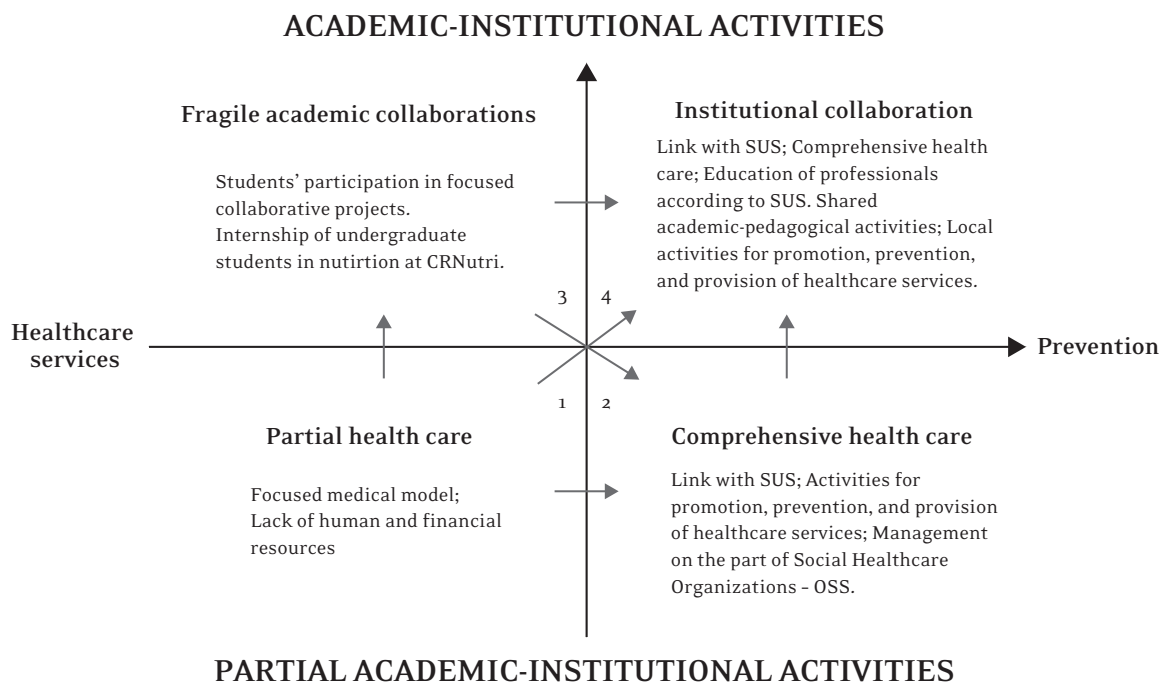
As for the "academic activities" aspect, the development would be directed towards element 4,

which includes both comprehensive health care and institutional activities of research, education, and extension. The development for this element may resolve the contradiction between subject (faculty of FSP) and instruments, since it would be possible to gather FSP teaching and research activities in addition to the clinical practice of nursing students. CSGPS, when linked with SUS, would be conceived as a more practical field option for students in the undergraduate program in Public Health, within the management of local needs such as planning for surveillance and prevention to health impairments. In this context, the maintenance of the CSGPS and its relationship with USP would be justified, since it would meet the demands of the target activities of the university. These demands became more prominent with the creation of the undergraduate program in Public Health, which negatively assessed CSGPS as a field of practice.

On the other hand, the simple and complete separation between CSGPS and USP and the

equipment delivery for the SMS would contemplate the arrival of human and financial resources, expansion and acquisition of instruments that would meet, according to models proposed by SUS, the needs of the local population, but could lose a privileged field of research and training for students. In these cases, the city hall has used Social Healthcare Organizations (*Organizações Sociais de Saúde* - OSS) to manage the service. This situation would comprise the resolution of contradictions identified in CSGPS without necessarily resolving contradictions between both ASs, sources of the crisis of the collaborative relationship between the units. This, therefore, would be a development possibility for CSGPS, although it does not guarantee that FSP students will become once more its object. If the work process in the center approaches the situation in other healthcare units, which is also desired, there may be difficulties for CSGPS to develop its “school” quality, as discussed by the participants during the CL intervention.

Figure 5 – Development possibilities for resolution of contradictions



Discussion and final considerations

We presented current problems of the relationship between public university and society, from the analysis of the crisis of collaboration between a college and a healthcare center, as a manifestation of the institutional “crisis of contradiction” of public education institutes. We believe that society is composed of activities, and the analyzed activity systems are its microcosm; both CSGPS and FSP are part of the reality. However, there is a social division of labor in each activity, which is dedicated to the production of objects/services that benefit society as a whole (Cassandre; Pereira-Querol, 2014; Engeström et al., 1996). The expansion of the original idea of the issue, promoted by the actors during the intervention, is based on initiatives of the aforementioned authors and on the understanding that the healthcare center, being a college instrument, represents the public university in a direct relationship with society.

The use of CL enabled the historical and systemic understanding of contradictions that explain the issues of the relationship crisis between both ASs and the stimulus to the development of possible individual and collective activities for their resolution. Historical analysis enabled a deep understanding of the crisis in terms of two groups of contradictions. The first is the result of historical changes concerning rules such as greater academic investment for research activities and assessment of professors mostly considering their production of scientific articles. Consequently, these new rules promoted changes in the objects of FSP and CSGPS activities. They influenced the way, intensity, and frequency of use of instruments such as teaching, research, and extension. Overall, the rule of research valorization favored the separation of this “trio” and collaborated, among other factors, with the gradual abandonment of CSGPS as a field of practice for FSP students.

The second group is internal to CSGPS, and we perceived direct changes in its object. Users (object) have increased in number and in diversity of demands, and epidemiological data showed progressive ageing of the local population, thus requiring consistent needs at this stage of life. However, the entire CSGPS structure remained little

changed. Such change has led to the emergence of a number of incompatibilities that are interpreted as contradictions between the AS elements of CSGPS.

The unveiling of the historical roots occurred collaboratively with participants and not just due to the work of a researcher or expert who collects and interprets data for subsequent presentation and validation of results and solutions. This aspect is related to the fact that CL, as a training intervention methodology, integrates diagnosis, protagonism, and provision of solutions as part of the same process, being a tool that includes teaching, research, and extension activities. Our findings suggest that this type of interventional methodology can, in a participatory and sustainable way, help understanding the reasons and finding new solutions to the complex relationship between public university and society.

CL can be complementary to other methods. However, the THCA is unusual to this and other participatory methods, and we highlight its historical approach, which enables to understand the emergence of contradictions in the system.

According to THCA, the individual, the collective work, and the social sphere are not seen as independent entities. A human activity is understood as a set of activities aimed at transforming an object and which are formed by personal actions. Therefore, the individual is part of a collective activity and, therefore, composes the community. The relationship between this subject and their social environment is dialectical. Following this reasoning, expansive learning is a collective activity formed by actions of personal learning. This means that the transformation of the object of collective activities can be achieved only through individual actions of expansive learning, which occurs in the interaction between individuals, aided by systemic and conceptual elements, and which strengthens the protagonism of individuals and groups in understanding the issue, in creating and implementing solutions.

Regarding possibilities for solution, this is not a task of adaptations or simply improvements: the challenge proposed by CL is to establish something qualitatively new. However, intermediate changes, aiming their goals, must be tested in order to start

the process that does not finish with the end of CL sessions (Engeström, 2016). Although the method has supported the identification of the roots of disturbances in the AS in crisis and in developing solutions to overcome them, it does not guarantee that such solutions are adopted. To do so, it is necessary, besides the involvement of participants, the presence and support of actors with capacity to influence decision-making. In this sense there are no solutions supported without participation, but it is not any participation, but rather that guided by the principles and instruments of THCA. We believe that for AS suffering severe crises, it is not enough for actors to recognize it in order to develop protagonism and put into practice the aimed transformations.

In the context of higher education education for healthcare, contradictions between interrelated elements can be the core of the crisis in the collaborative relationship between other similar systems, causing disturbances among them, as in our study.

To favor the approaching of a scenario that focuses on the theoretical education combined with the practice of the service, we must think about a pedagogical project with activities and tools that integrate them. However, Universidade de São Paulo displays a complex operation structure in which traditional and innovative forces coexist, since when part of the path is taken, many other changes are already required (Cervato, 2013).

Generalization of these results are due to the current historical context of crises emerging from the influence and practice of neoliberal politics in many sectors of society. According to Santos (2011), in this structure we coexist with mercantilization of public services, such as education and healthcare, which causes relativism of social rights and questioning about some university responsibilities. This context pressured even more a crisis situation that had already been formed by historical changes in the elements of the systems, especially of their objects. Initiatives reported in the literature devoted to the activities of teaching, research, and extension, when pointing to their diagnoses, do not adopt a historical perspective to understand them, which can limit the resolution of the problems. In

our study, innovations were designed, and these were created and began to be tested as a conscious choice of subjects involved in the process and not of external experts.

References

- BRASIL. Lei nº 8.080, de 19 de setembro de 1990. Dispõe sobre as condições para a promoção, proteção e recuperação da saúde, a organização e o funcionamento dos serviços correspondentes, e dá outras providências. *Diário Oficial da União*, Brasília, DF, 20 set. 1990.
- BRASIL. Lei nº 9.394, de 20 de dezembro de 1996. Estabelece as diretrizes e bases da educação nacional. *Diário Oficial da União*, Brasília, DF, 20 dez. 1996.
- CASSANDRE, M. P.; PEREIRA-QUEROL, M. A. O percurso dos princípios teórico-metodológicos vygotskianos: um olhar sobre o CRADLE. *Revista Brasileira de Estudos Organizacionais*, Curitiba, v. 1, n. 2, p. 454-509, 2014.
- CERVATO, A. M. *Do “coma direito, família!” ao direito à alimentação da família brasileira: 75 anos do curso de Nutrição da Universidade de São Paulo*. 2013. Livre-docência - Universidade de São Paulo, Faculdade de Saúde Pública, São Paulo, 2013.
- ELLERRY, A. E. L.; BOSI, M. L. M.; LOIOLA, F. A. Integração ensino pesquisa e serviços em saúde: antecedentes, estratégias e iniciativas. *Saúde e Sociedade*, São Paulo, v. 22, n. 1, p. 187-198, 2013.
- ENGESTRÖM, Y. *Learning by expanding: an activity-theoretical approach to developmental research*. Helsinki: Orienta-Konsultit, 1987.
- ENGESTRÖM, Y. Expansive learning at work: toward an activity theoretical reconceptualization. *Journal of Education and Work*, London, v. 14, p. 133-156, 2001.
- ENGESTRÖM, Y. *Aprendizagem expansiva*. Campinas: Pontes Editores, 2016.
- ENGESTRÖM, Y.; SANNINO, A. Discursive manifestations of contradictions in organization change efforts: a methodological framework.

Journal of Organization Change Management, Bingley, v. 25, n. 3, p. 368-387, 2011.

ENGESTRÖM, Y. et al. The change laboratory as a tool for transforming work. *Lifelong Learning in Europe*, Helsinki, v. 1, n. 2, p. 10-17, 1996.

FLORES, L. M. et al. Avaliação do Programa de Educação pelo Trabalho para Saúde - PET-Saúde/Vigilância em saúde pelos seus atores. *Interface: Comunicação, Saúde, Educação*, Botucatu, v. 19, p. 923-930, 2015. Suplemento 1.

LEONTIEV, A. N. *Activity, consciousness, personality*. New Jersey: Prentice Hall, Englewood Cliffs, 1978.

LEONTIEV, A. N. *Problems of the development of the mind*. Moscow: Progress, 1981.

MARX, K. *O capital: crítica da economia política*. São Paulo: Abril Cultural, 1983. (Coleção Os Economistas).

MIETTINEN, R. The riddle of things: activity theory and actor network theory as approaches to studying innovations. *Mind, Culture, and Activity*, Abingdon, v. 6, n. 3, p. 170-195, 1999.

PEREIRA-QUEROL, M. A.; JACKSON FILHO, J. M.; CASSANDRE, M. P. Change laboratory: uma proposta metodológica para pesquisa e desenvolvimento da aprendizagem organizacional. *Administração: Ensino e Pesquisa*, Rio de Janeiro, v. 12, n. 4, p. 609-640, 2011.

SANTOS, A. M. et al. Enfermagem em saúde pública: uma proposta articulando ensino, pesquisa, estágio e extensão. *Revista Brasileira de Enfermagem*, Brasília, DF, v. 53, p. 159-164, 2000. Número especial.

SANTOS, B. S. *Universidade do século XXI: para uma reforma democrática e emancipatória da universidade*. 3. ed. São Paulo: Cortez, 2011.

SEWELL, J. R.; WILLIAM, H. Historical events as transformation of structures: inventing revolution at the Bastille. *Theory and Society*, New York, v. 25, n. 6, p. 841-881, 1996.

VASCONCELOS, A. C. F.; STEDEFELDT, E.; FRUTUOSO, M. F. P. Uma experiência de integração ensino-serviço e a mudança de práticas profissionais: com a palavra os profissionais de saúde. *Interface: Comunicação, Saúde, Educação*, Botucatu, v. 20, n. 56, p. 147-158, 2016.

VILELA, R. A. G.; PEREIRA-QUEROL, M. A.; LOPES, M. G. R. O Laboratório de Mudança como uma ferramenta para transformação colaborativa de atividades de trabalho: uma entrevista com Jaakko Virkkunen. *Saúde e Sociedade*, São Paulo, v. 23, n. 1, p. 336-344, 2014.

VIRKKUNEN, J.; NEWNHAM, D. S. *O Laboratório de Mudança: uma ferramenta de desenvolvimento colaborativo para o trabalho e a educação*. Belo Horizonte: Fabrefactum, 2015.

Authors' contribution

Costa and Silva-Macaia were responsible for the design and writing of the article, analysis, and data interpretation. Maeda conducted the final review of the manuscript. Querol conducted the critical review and theoretical interpretation of the intellectual content. Seppänen was responsible for the design of the article and theoretical interpretation of the contents. Vilela coordinated the research project and collaborated in the writing and critical review. All were responsible for approving the final version to be published.

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