

Covid-19 Pandemic in Work Spaces in Brazil

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Abstract

The disaster of the COVID-19 pandemic, change the relationship between the works and their work. In Brazil, we have until today six hundred and fifteen thousand deaths in this disaster. Pandemic was no just a biological disaster, but also, technological and societal, due to the elements acting in its propagation. Conducted by the question “what change at the Brazilian work spaces during the covid-19 pandemic?”, we propose an interdisciplinary research that try to understand the intersection points between Activity-Centered Ergonomics and the Psychology in the Integral Management of Risks, Emergencies and Disaster, intending to contribute with future researches about accident prevention culture and adverse events in workplaces, mainly in aspects related to mental health at work. As a result, we found correlation that was represented using the Disaster Management Cycle. At the prevention time, we had, at the workplaces, actions about risk management. At mitigation phase we still don't know about the pandemic, so, the normality was established, between the prescribed and real work. On preparation, everyone knows about COVID-19 and we were able to find that numerous actions were carried out in the workplaces to increase the capacity to overcome the pandemic. And, when we talk about the coping response, the tacit knowledge of professionals was highlighted, as there was no explicit knowledge that could handle with this crisis. As a conclusion, we identify similarities in both literature, indicating that a practical application between the concepts is interesting to develop management strategies in workplaces.

Keywords: activity-centered ergonomics, covid-19, emergency and disaster psychology, mental health, work

1. Introduction

In December 2019, humanity began to experience a situation that was not expected in any of the corporate strategic 2020 plans, the COVID-19 pandemic. The arrival of the virus in the Brazilian reality occurred approximately in February 2020, having its first official case confirmed on 26th of the same month, just two months after the confirmation of the first episodes of a still unknown pneumonia on December 8th, 2019, in China. During this period, little was known about the contamination process, the manifestation of the disease, its symptoms, strategies to fight it and its consequences in the short, medium and long term.

With a better understanding of the course of the disease in Brazil, we realize that, probably, work spaces were one of the places that contributed to the spread of the virus, given the example that our patient zero, reported by the local media, was a 61-year-old man, who travelled to Italy for work, returning to his hometown, São Paulo. With this, we can see that not only hospitals and health institutions should be considered places with risk of contamination, but also any workspace was and should be considered as a possible contagion point, clearly understanding that there are different degrees of risks, according to the nature of the economic activity.

Understanding that a disaster can be defined, according to the United Nations International Strategy for Disaster Reduction (2017), as a serious interruption in the functioning of a community that involves losses and wide impacts on human, material, economic or environmental elements, exceeding the capacity of that affected location to deal with a given situation with its own resources, we can characterize the pandemic generated by the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) as a disaster. Taking into consideration that this fact exceeded our coping capabilities as a society.

When we talk about Brazilian work spaces, many transformations were undergone in their activity systems during this disaster (Virkkunen & Newnham, 2015), from the moment new work instruments were introduced (masks, alcohol gel, work spaces in residences, etc.), rules were changed (social distance, reinforcement in health and hygiene aspects, etc.) and new divisions of labor were implemented, through the creation of new tasks or even new functions. Thus, we can see that the disaster of the COVID-19 pandemic has gone beyond the context of work, increasing the need for innovation and bricolage of workers in our country.

From this context, the studies of Activity Ergonomics (Abrahão et al., 2019; Clot, 2010; Guérin et al., 2001) and the Psychology that study Risk, Emergency and Disaster Integral Management (CFP, 2021; Franco, 2015; Alves et al., 2021) were articulated, in intention to propose a conceptual intersection, in order to contribute to the understanding of the complex work scenario in which we are inserted. Conducted by the question “what change at the Brazilian work spaces during the COVID-19 pandemic?”, we propose an interdisciplinary research that has by objective understand the intersection points between Activity-centered Ergonomics and the Psychology that study Risk, Emergency and Disaster Integral

Management, intending to contribute with future researches about accident prevention culture and adverse events in workplaces, mainly in aspects related to mental health at work. The social relevance of this study lies in the possibility of creating scientific literature about the current historical moment, which can be used for the development of health and safety strategies at work.

Finally, understanding that the human being is a social being and that work can be defined as the way in which the human places itself in the world, transforming it, at the same time as it transforms itself (Martins, 2008), this study has a hypothesis that ruptures occurred in the way contemporary human beings relate to their work. With this, analysing the current moment, as a point of mutation in our way of relating to the world, will be essential for us to better understand the new organizational configurations of work, with a view to ensuring that the role of individuals is respected in this new context.

2. Method

The research methodology was based on the narrative review model, in which the researchers have autonomy to explore the contents of the literature, without a previously defined question, building the research question based on the interpretation of bibliographic references (Cordeiro, 2008). For this study, some basic books for Activity-Centered Ergonomics were read, such as "Understanding Work to Transform it" (Guérin et al., 2001), "Work and power to act" (Clot, 2010) and "Introduction to Ergonomics: from practice to theory" (Abrahão et al., 2019) and to the Psychology in the Integral Management of Risks, Emergencies and Disasters, "The Psychology in accidents and air disasters" (Alves et al., 2021) and "The Psychological Intervention in Emergencies" (Franco, 2015) and Technical References for the practice of Psychology in the Integral Management of Risks, Emergencies and Disasters (CFP, 2021). Then, the concepts located in these and in additional literatures were confronted, in order to achieve the interdisciplinarity of this study. Finally, the contents found were described, aiming to understand the intersection points between Ergonomics and the Psychology, in this pandemic moment in Brazil.

3. Results

3.1 Brief background on emergency and disaster management

The scientific look of Psychology for the theme of emergencies and disasters can be considered relatively recent. The first background about this subject was the study by the Swiss Edward Stierling, who published a paper in 1909 about an explosion in a coal mine in northern France, in 1906. In this episode, more than a thousand miners died in the accident and, with that, the first crisis intervention techniques were used with family members, friends and other co-workers of these workers (Franco, 2015). In this way, it is possible to see that, in

many cases, emergency scenarios affect professionals in their work routines, reinforcing the need to understand this phenomenon not only as accidents at work, but also as disasters in which these professionals become affected (people who are impacted by a disaster but do not die) or victims (human beings who die as a result of an adverse event).

Despite recent literature, we must remember that the first catastrophe involving human beings in history is the eruption of the volcano Vesuvius in the year 79 of the Christian era, which completely destroyed the city of Pompeii, in the Roman Empire. Showing us that, tangible and intangible losses, such as loss of security or sense of belonging to a community, are always present in the history of humanity (Franco, 2015).

In Brazil, the main studies in the Psychology of Emergencies and Disasters take place after the contamination of Cesium-137 in the region of Goiânia, in 1987. This was considered the biggest radioactive accident in the country, resulting in short and long-term effects to the contaminated. At that time, data were collected and interventions of different natures were carried out by professionals from Brazil and the world, starting the Brazilian literature on the subject (Oliveira, 2018). It is also important to remember that, in this same period, the United Nations (UN) declared the 90s as the "International Decade for Natural Disaster Reduction", thus aiming to build global initiatives to reduce climate effects, given the substantial increase of the world population (Franco, 2015).

In 2000, the International Strategy for Disaster Reduction (ISDR) was created, structured around three main concepts: natural hazards, vulnerability and risk (Silva, 2020). This organization linked to the UN, established from 2005 to 2015 the Framework of Hyogo, which aimed to implement actions to reduce losses caused by disasters and increase the resilience of nations and communities to deal with eventualities. This document, in 2015, was replaced by the Sendai Framework, which has an agenda until 2030. The latter establishes a new, more concise level, oriented towards actions that promote transformations. This agenda was also connected with the creation of the 17 Millennium Development Goals.

Anchored in this global movement, in 2012, Brazil created the National Civil Defense and Protection Policy (PNPDEC) and structured the National Civil Defense and Protection System (SINPDEC). These milestones were considered important to organize the transfer of resources on this subject, between federated entities, define responsibilities and establish a focused look at our territorial needs. This organization also shed light on some indicators not so mentioned, such as, for example, the occurrence of almost 22,000 natural disasters in Brazil just in 2000-2010. Or even, that those events that generate the greatest number of people affected in our country are: droughts and floods (CEPED-UFSC, 2013a). These disasters, which are influenced by the socioeconomic vulnerabilities of certain Brazilian locations. Because, if we had adequate access to water and food, for example, a drought could not be considered a disaster, given that that community would have sufficient resources

to deal with a given phenomenon. Also showing us that although many disasters have natural origins, their factors are also influenced by social elements.

3.2 Characterization of a disaster

The COVID-19 pandemic could have been another type of biological contamination that we have suffered throughout our human history on Earth. However, as this has certain characteristics, it can be classified under the concept of disaster. We can affirm this because the three items of the disaster characterization equation are present: (a) an adverse event, whether natural or caused; (b) the vulnerability of the region; (c) low local coping capacity for the adverse event (UNISDR, 2017). Some studies also indicate that the current economic development model, which aims at the deep exploitation of wealth, added to the current social organization and strong globalization, are increasing socio-environmental instabilities, causing this way, an increase of the risk exposure to a disaster (Beck, 2011).

The term risk is used in different types of knowledge to characterize a probability of danger. When used by the economy, it can be understood as a factor to be considered by a group of investors when taking on a certain investment (Gabriel, 2014). As for health and safety at work, the risks can be those that pose a danger to the worker and need to be regulated through regulations to ensure the proper functioning of that work space (BRASIL, 1995). For the literature focused on civil defence, risk can be considered as the “probability of occurrence of an adverse event, causing damage or harm” (CEPED-UFSC, 2013b, p. 57).

Thus, the same situation can be considered risky in a given context and not in another. For example, we can think of an earthquake in Tokyo, capital of Japan, and another, with the same intensity in Brasília, capital of Brazil. In Japan, due to the history of threats from phenomena of this nature, there was a gradual local adjustment to create norms, population training and efficient constructions to deal with these types of events. On the other hand, if the same adverse event occurred in Brasília, as it is a location with no history on the subject, we would probably have a greater risk, given the local vulnerability to deal with that scenario. In this way, the view for disaster risk management is fundamentally implied by other social-economic-historical factors of a given community.

Knowing better which characteristics culminate in the construction of a disaster, we can now understand what its causes are, how its periodicity/evolution and its intensity occur. According to the World Health Organization (WHO), there are four types of disasters: natural (earthquakes, droughts, tsunamis), biological (epidemics, infestations), technological (due to human errors such as collapse of buildings, air accidents, etc.), and societal (resulting from conflicts or intentional acts such as terrorism, cyber-attacks) (Rodrigues et al, 2020). According to this classification, the COVID-19 pandemic can be characterized as a biological disaster, due to its transmission nature, however, it also presents characteristics related to technological and societal disasters, due to the elements acting in its propagation. For, the human practice of indiscriminate consumption of natural resources has generated a greater

probability of the emergence of zoonotic donations (in which viruses or bacteria "jump" from host animals to human beings) (Rodrigues et al, 2020). And, societal, "the contemporary characteristics of the movement of people around the world and the high vulnerability of basic access to health and sanitation in some territories, have made this crisis worse" (Bergström et al, 2021, p. 3).

Disasters can be understood as sporadic or cyclical/seasonal, in this case, the COVID-19 pandemic is understood as sporadic, as its occurrence is rare, unlike other events that respect a certain season of the year (CEPED-UFSC, 2013b). Thinking now about the evolution of disasters, we can classify them as sudden (violent phenomenon, with rapid evolution), slow (progressive evolution over time) and cascade effects (accumulated sequence of phenomena, in which the damage accumulated in that period culminated in a disaster). In this case, it was identified that the current pandemic can be understood as a slow disaster, which had its evolution and contamination occurring in a spaced way across the globe, unlike a dam failure, for example, which occurs suddenly (Varella, 2020).

Finally, we can characterize disasters in four levels, in which level I represents an easily bearable damage by the affected community itself, being characterized as small. Up to level IV, in which the damages and losses are not surmountable and bearable by the community itself, with the need for help from outside the affected area, which is characterized as an extremely large event (Oliveira, 2009). At this point, the COVID-19 pandemic can be considered a level IV event, as the coping strategies to overcome the event needed to be globally articulated.

To better understand how the dynamics of disaster management works, it is also necessary to understand that we are always preparing for adverse events to happen, so that we increasingly develop resilience in our communities and municipalities to deal with the most different types of phenomenon. And, so that the actions are understood in an organized way, the literature on the subject divides the management of the disaster cycle into five major moments:

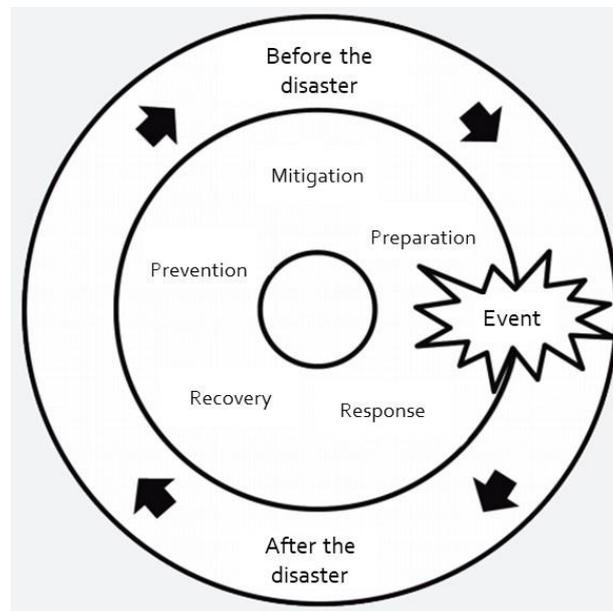


Figure 1. Disaster Management Cycle

Source: Rodrigues et al, 2020. Translation: own authorship

Prevention is the first sentence of the emergency and disaster management cycle and, its objective, is to reduce the occurrence of disaster intensity. Right now, the focus is on building risk assessments and building educational materials. Mitigation aims to reduce the consequences of the disaster, creating resilient processes and structures to prevent a certain calamity from occurring. Then, the preparation phase is focused on minimizing the effects of the adverse event, disseminating scientific literature on the topic, preparing teams and communities and organizing the chain of command and logistics for a threat that is about to occur. During the response phase, the adverse event finally occurs, and that is when the priority must be to save human lives and, the protocols established in the previous phases, must be put into practice (CEPED-UFSC, 2013b); (Rodrigues et al, 2020). At this time, the first psychological care must also be present. This care does not need to be performed exclusively by Psychology professionals, but by anyone who is prepared to deal with this moment (WHO, 2015). After this phase, we are faced with recovery and reconstruction, a moment that aims to restore normality in that locality, children return to schools, necessary works are carried out and the rehabilitation of spaces is in focus (Rodrigues et al, 2020).

When we relate these phases to the current pandemic, we realize that the phases were experienced differently by the world. For example, while Europe had a first big wave of contagion, being in the phase of responses to the pandemic. Brazil was still at the moment of preparation, where the necessary actions were being carried out. Therefore, when we talk about the slow and gradual disaster of COVID-19, this disaster management cycle can seem continuous, as the disaster itself and its overcoming/recovery with a possible worldwide vaccination, also require slow actions.

After the crisis generated by a disaster, we can see that the damages may have been material, environmental and human. And when we talk about loss of life, we refer to these people as victims of a disaster, with the survivors considered affected. In the COVID-19 pandemic, we can consider that we are all affected, even those who did not have human losses in their lives, because in some way, the economic or social routine of the locality was affected by this crisis.

It is also worth remembering that we live in a state of constant crisis experienced by the current neoliberal context and that, when we talk about a continuous crisis, we find a contradiction, given that the term crisis is used to characterize an exceptional and fleeting fact. However, some scholars report that we have been experiencing a permanent crisis in the last 40 years, due to all the economic, political and social disparities experienced (Santos, 2020). And, that these experienced crises can stimulate two processes: creativity and imagination to seek new solutions or, a search for the return of stability or salvation. But one of the most important phenomena that we can expect from this crisis within the crisis that we are experiencing due to this pandemic is the possibility of the emergence of a new paradigm, which usually occurs in pain and chaos (Morin, 2020).

3.3 Psychology in the Integral Management of Risks, Emergencies and Disasters

During the occurrence of a disaster, the first 72 hours are essential for the provision of First Psychological Aid¹. It is through them that the risks of psychological aggravation, as a result of that traumatic event, can be mitigated. This care can be offered by anyone who is trained in the subject, expanding the possibility of offering this help. As examples of grievances from emergencies we have anxiety disorders and post-traumatic stress, much identified in soldiers after the war period (CFP, 2021). In addition, we use the term “affected” to expand the range of people who suffered mental exhaustion as a result of an emergency situation, including in this process, not only the physical victims of this scenario, but also all professionals who somehow had their subjectivity affected in the disaster.

Thinking about the disaster of the COVID-19 pandemic, it is not possible to measure the consequences in mental health related to work, considering the inter and intra-individuality of the subjects (Abrahão et al, 2009). Also, it is not possible to specify how many works were infected in their workspaces, without having the privilege of dodging or isolating themselves from this scenario.

Added to this context of changes that the pandemic has submitted to us, we need reinforce that, in recent years, we have already observed an increase on the indicators of suffering, illness and work leaves, triggered by mental aspects related to the workplace (Brasil, 2018). These regional numbers are in line with the increase predicted by the World Health

¹ A set of humanized techniques and actions to support people in situations of suffering.

Organization (2018), which estimated a significant increase in rates of work-related mental illness.

When we think about mental health in workspaces in the recovery phase of a disaster, is important to take a closer look at the subjective aspects of the works in a medium and long term, recognizing the role of subjectivity in the constitution of the results of the human vital activity of working. This way, themes such as suffering and mental exhaustion (Seligmann-Silva, 2011) in a context of crisis, come to have an even more relevant role for the social organization of work.

Finally, it is important to remember that the emergencies impact workers in different ways, according with her or his own social situation. In other words, each people have your own economic, social and phycological condition, that was created during its lives. Soo, we need to understand a person in an integral way (CFP, 2021).

3.4 Ergonomics and Emergencies & Disasters

In a crisis situation, the activity system changes, however, not all individuals can perceive these changes. In this context, there is a great need for improvisation and bricolage, so that adverse situations can be overcome with creativity, using available resources. In this way, tacit knowledge, that which is passed between generations and acquired through years of experimentation in a given activity, becomes essential. After all, it is not possible to predict all eventualities that may occur in a work situation, with this, the explicit knowledge, described in the most robust manuals, may not contribute efficiently in disaster contexts (Rogalsk; Falzon, 2018).

It is also worth mentioning that an activity system has dynamic characteristics, that is, it is able to adapt and change over time, with this, professions have evolved in the course of history. However, when we talk about a crisis that culminates in an emergency or disaster, we are mentioning that this same activity system is confronted with an unexpected situation, generating an abrupt impact (Rogalsk; Falzon, 2018). In this way, we can see that a disaster has the same modus operandi whether in a work activity system or for a group of people waiting for public transport, if something unexpected happens in that situation, we are facing a crisis being installed. So, we went from a routine situation to a non-routine one.

When this dynamic of normality is broken by a given problem, social organizations at work need to learn how to play new roles and reorganize themselves to overcome the challenge. With this, crisis management implies that a collective of actors act together and simultaneously, so that the situation is overcome (Rogalsk; Falzon, 2018). In this way, for emergencies and disasters to be mitigated, prevented or even overcome through responses to a given situation, the effort needs to be a group effort, in the same way as the organization of work, which, however lonely, is also considered collective, because, at a given moment, someone produced the instruments and tools of that action, or even, there were social and historical constructions about a certain function (Clot, 2010). It is worth emphasizing that, in

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crisis scenarios, collective cognition is considered a key element for cooperation to occur. Thus, in scenarios in which there is a shared medium or long-term objective (to overcome the crisis), however, they have different immediate objectives (each with its function within the activity system to overcome the crisis) (Vidal-Gomes, Delgoulet, Geoffray, 2014).

Finally, relating the phases of the disasters mentioned above, the COVID-19 pandemic and what can be expected for crisis management in a given generic workspace, we were able to build the following table as a suggestion of actions. In addition, we insert psychological aspects expected through the literature, so that we can identify in greater depth what we can find in work contexts.

Table 1. Disaster Management Cycle, Mental Health and Labor Relations in the COVID-19 Pandemic

Disaster Management Cycle	Psychological Aspects	Ergonomics Aspects	Expected Actions in Workspaces in COVID-19 Pandemic
Prevention	<ul style="list-style-type: none"> - Normality established. - Labor standards of health and disease at work. 	<ul style="list-style-type: none"> - Prescribed work vs Real work. - Constant changes in activity systems. 	<ul style="list-style-type: none"> - Actions prior to the pandemic, such as preventing the spread of diseases in workplaces. - Education and frequent risk assessment to reduce threats and/or vulnerabilities.
Mitigation	<ul style="list-style-type: none"> - Normality established. - Labor standards of health and disease at work. 	<ul style="list-style-type: none"> - Prescribed work vs Real work. - Constant changes in activity systems. 	<ul style="list-style-type: none"> - Implementation of actions to reduce vulnerability to disaster risk in the work organization.
Preparation	<ul style="list-style-type: none"> - Feelings of fear and insecurity, generated by the uncertainty of the adverse situation. 	<ul style="list-style-type: none"> - Increased of innovation and bricolage. - Greater importance of tacit knowledge (acquired through real work), rather than explicit knowledge (books and norms). 	<ul style="list-style-type: none"> - Application of training and safety dialogues to clarify workers about the current situation. - Acquisition of personal protective equipment and other items to face the oncoming pandemic. - Creation of an epidemiological center to monitor the evolution of the disaster in the organization of work.
Response	<ul style="list-style-type: none"> - Grief for the human, material, economic and social losses. - Increase of mental disorders related to the adverse situation. 	<ul style="list-style-type: none"> - Social reorganization of work by an collective action. - Increased collective cognition. 	<ul style="list-style-type: none"> - Work protocols about hygiene, health and safety need to be adjusted to the COVID-19 pandemic. - Readjustment of work spaces to respond to the moment of disaster. - Carrying out oh the first psychological care with teams and workers.
Recuperation	<ul style="list-style-type: none"> - Grief for the human, material, economic and social losses. - Increase of mental disorders related to the adverse situation. 	<ul style="list-style-type: none"> - New alterations at the activity systems. 	<ul style="list-style-type: none"> - Resumption of routines and reconstruction of workspaces. - Health protocols for post traumatic stress.

Source: Prepared by the authors based on BRASIL (2012); Franco (2015)

4. Final Considerations

As Morin would say, “we cannot predict the unpredictable, but we can predict its eventuality” (2020), in this way, we could not predict when a profound impact on social and work relationships to the detriment of a biological disaster could occur, but we could predict that a pandemic could leave traces in our history. Whether they are economic, as experienced in Brazil with the strong loss of jobs, decrease in wages or the creation of aid. As the increased incidence of anxiety disorders, depression and post-traumatic stress generated by this scenario.

When we look at active professionals during the pandemic period, we perceive a disaster within a disaster. Whether through the unsafe working conditions of food delivery workers, the work overload of professionals who work remotely, or the virus containment measures that seem not to exist in certain work spaces. The lessons on social inequalities in isolation also showed socio-spatial differences within the work teams themselves, as many did not have an extra residence to escape the city, or a house capable of holding all residents comfortably and safely, performing the recommended social distance (Morin, 2020). Furthermore, it is not possible to specify how many victims were infected in their own work spaces, without having the privilege of avoiding or isolating themselves from this scenario.

For some, when the workplace became the kitchen table or the living room sofa, there were ruptures between private and work spaces, with a mix between time and space of all kinds of relationships. The objective of Activity-Centered Ergonomics to transform work is confused, as work itself becomes confused during a crisis context. The meaning of work and the power to act of the workers are impacted, given that several griefs and losses are being experienced. Also remembering that griefs here refers not only to the physical loss of a loved one or co-worker, but also to the loss of routines, of coffee shared with colleagues, of dressing for toil, fear of unemployment, among others infinite griefs, according to the subjectivity of each one.

Some questions were still raised for future research, such as, what is the relationship between Vygostki's zones of proximal development, Engström's expansive learning and this crisis scenario at work? Is it possible to guarantee anthropometric and biomechanical conditions in a long-term disaster context? How are the cognitive and mental aspects in a context of double disaster?

It is hoped that this brief contextualization on the contemporary scenario, can contribute to future learning in the prevention of work accidents, promoting a greater connection between the aspects of Psychology and Activity-Centered Ergonomics. After all, every work routine is a confrontation of what was idealized and materialized, in this way, even in typical scenarios, crises and adverse situations become inherent to the work activity.

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