Perspectives on Behavior Science (2019) 42:773–814
https://doi.org/10.1007/s40614-019-00211-4

CULTURAL AND BEHAVIORAL SYSTEMS SCIENCE

How a Few Individuals Brought about a Cultural Cusp: From a Mexican Mural Program to a Movement

Maria E. Malott[1]

Published online: 20 August 2019

Abstract

Significant cultural change often results from the interlocking behavior of a few individuals. The phenomenon is nonreplicable because a considerable portion of the major players' interactions are nonrecurring and driven by unique circumstances. Yet, these interactions can be analyzed from a behavioral science perspective. As an example, I describe how five individuals made possible the cultural cusp that created an unprecedented social revolution through public murals in Mexico. I analyze how their repertoires complemented each other, the circumstances that brought them together, and the values that united them. Their unique interactions coalesced with recurring interlocking behavioral contingencies that created the movement. The example could shed light on the understanding of other cultural phenomenon with similar properties.

Keywords Metacontingency · Cultural cusp · Interlocking-behavioral contingency · Mural painting · Mexican muralists

The largest muralist movement in the history of art after the Renaissance took place in Mexico (Capek, 1996; Koffey, 2012). The movement lasted from 1921 to approximately 1955, when it lost its strength in Mexico. It is a testament to Mexico's history and culture as demonstrated by the many frescoes that adorn public and private walls around the country (Anreus, 2012; Anreus, Barnet-Sanchez, & Campbell, 2012; Helm, 1989; Lee, 1999; Myers, 1956; Tibol, 1975). The movement had a considerable impact on the mural art of the United States (Alvarez, 2001; Becker, 2002; Cockcroft, 1989; Hurlburt, 1991; Indych-López, 2009; Marling, 1982) and other Latin American countries (Lucie-Smith, 1993).

Although murals in Mexico date back to ancient times, the use of murals to inspire social protest did not emerge as a movement until the 1920s. Especially during the dictatorship of Porfirio Diaz (1830–1915), which lasted from 1876 to 1911, art was

✉ Maria E. Malott
mmalott@abainternational.org

[1] Association for Behavior Analysis International, Portage, MI, USA

reduced to copies of European paintings. Expressions of social unconformity through art were repressed. A case in point involved Juan Cordero (1824–1884), a nationalist who attempted to challenge the Mexican society with a mural he painted in a European style in 1874 at the National Preparatory School in Mexico City. Titled *The Triumph of Science and Industry Over Ignorance and Sloth* and inspired by the Americans Benjamin Franklin (1706–1705), Robert Fulton (1765–1815), and Samuel Morse (1791–1872), the mural called for bringing science and industry to modernize the Mexican society. The mural was destroyed in 1900 and Cordero was prevented from exhibiting his work for 30 years (Carr, 2013). It took the program described in this article to bring a social revolution to art in Mexico.

My interest in the topic came from the murals I saw on my countless trips to Mexico throughout the years. They sparked my interest in learning why and when they were created and by whom. It was the murals that also attracted the curiosity of artists, intellectuals, politicians, and the public throughout history.

The movement resulted from a government program conducted from 1921 to 1924 by the Secretaría de Educación Pública (Secretariat of Public Education; SEP) as part of an educational reform. The program is referred to as the "SEP mural program" in this article. Its aim was to produce unique murals in government buildings to give voice to and educate the masses about Mexico's cultural and historical legacies. The program produced murals that became characteristic of Mexico, introduced original fresco-making techniques, and formed a critical mass of skilled artists (Espinoza, 1992). Figure 1 shows a wall painted at the SEP headquarters in Mexico City.

The SEP mural program and the movement that followed developed in part as reactions to the devastating political, social, and economic turmoil in Mexico in the 1920s—following the 35-year rule of Porfirio Díaz and a 10-year civil war—and emphasized the need for change in people at all levels of society (Bryan, 1976; Gonzalez, 2002; Reed, 1914). In the early 20th century, the economic disparity between the rich and the poor, the abuse of power, and social oppression increased the value of actions that disclosed unfair realities and helped to alter the status quo. Intellectuals, artists, and citizens of different economic levels demanded change. The murals served

Fig. 1. Wall with Diego Rivera murals at the SEP headquarters. Retrieved from https://upload.wikimedia.org/wikipedia/commons/5/5f/SEP_arcade.jpg

as a voice to express imbalanced sociohistorical conditions—not only in Mexico but in other Latin American countries as well, where oppression or economic disparity also existed.

Contextual variables were critical, but, this article does not detail the functions of the context on the creation of the program that led to a movement. The analysis of the role of contextual variables deserves a separate article. Instead, this article emphasizes how the SEP mural program resulted from recurring selection contingencies; evolving, convoluted circumstances; and the unforeseen, nonrecurring interactions of a few individuals. One thing led to another: a few individuals brought others on board, and relations among and products of some channeled the actions and results of others.

The term *cultural cusp* describes this type of complex phenomenon resulting from the combination of nonrecurring and recurring interactions. The term was coined by a group of behavior analysts associated with a think tank conducted in São Paulo, Brazil (2015), geared to cultural studies. They realized that many examples in society present similar characteristics. "Cultural cusp" was defined as "the coalescence of unique and nonrecurring interlocking and/or individual behavioral contingencies that results in a product that leads to significant sociocultural change" (Glenn et al., 2016, p. 21).

In this article, I recount how the SEP mural program became a cultural cusp that led to the Mexican muralist movement. I identify the role of a handful of individuals, the values that unified them, and the nonrecurring interlocking behavior that brought them together. Their actions and beliefs were undoubtedly affected by their individual histories and the social political context in which they lived. In addition, I describe how recurrences of the interlocking behavioral contingencies (IBCs) of multiple individuals working together over time to produce one mural after another facilitated interindividual transmission of repertoires. Using this example, I conclude with a list of elements that could benefit other programs seeking to increase their chance of long-term impact.

Major Players

Five individuals with exceptional repertories crossed paths at critical times. Their interactions—some fortuitous and others planned, some recurring and others nonrecurring—gave force to the SEP mural program. Some of them were essential to the transformation of the program into the Mexican muralist movement. These five major players were artist and mentor Gerardo Murillo Cornado, known as Dr. Atl (1875–1964); politician and philosopher José Vasconcelos Calderón (1882–1959); and the three most famous Mexican muralists, known as the "great three" ("los tres grandes"; George, 2005; Hill, 2005; Moyseén, 1970; Rochfort, 1993): Diego Rivera (1886–1957), David Alfaro Siqueiros (1896–1974), and José Clemente Orozco (1883–1949). Although others helped in important ways, I chose these individuals because they performed essential functions. Rivera, Siqueiros, and Orozco were the most renowned Mexican muralists. They were influential not only because of their impressive volume and quality of work, but because they remained loyal to their social revolutionary values. Vasconcelos brought political and economic engineering to allow the use of public walls to depict the history and culture of Mexico. Murillo, less recognized in the creation of this movement, played an important antecedent role by

creating the first modern mural and mentoring the "great three" and other artists to produce authentic Mexican art. He modeled and led relevant revolutionary endeavors, inspiring others. The five of them became internationally known and brought attention to the Mexican art movement and to the expression of social realities through public art. In this section I share part of their stories, highlighting their character and major contributions.

Gerardo Murillo Cornado (Dr. Alt)

Gerardo Murillo Cornado recounted that in 1911, the ship on which he crossed from New York to Paris almost sank in a storm. Then, he thought to change his name to "Atl," meaning "water" in Nahuatl, an Aztec language from central Mexico. With this gesture he hoped to abandon his Spanish patronymic and embrace the native heritage of Mexico. But "Atl" was too ugly a name without a title, quarreled his friend, the Argentina poet Leopoldo Lugones (1874–1938). Proclaiming a doctorate in philosophy, naked in a tub, and bathed in champagne, his friends baptized him "Dr. Atl," as Murillo would be known from then on (Espejo, 1994). (There is no corroboration that Dr. Atl earned a doctorate degree.) Figure 2 is a photograph of Dr. Atl.

Dr. Atl studied art at an early age in Guadalajara and in Mexico City, at the Academy of San Carlos—the most recognized art institute in the country in those days (Charlot,

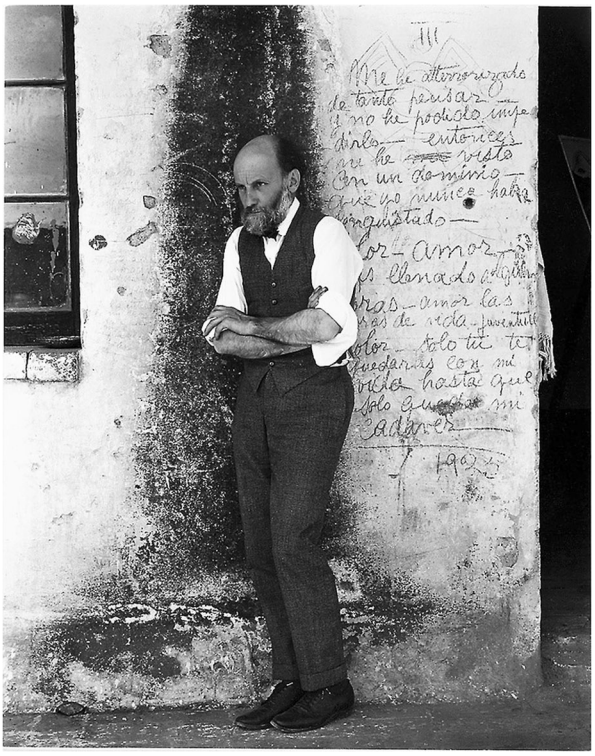

Fig. 2. Dr. Atl, aka Gerardo Murillo (1926). Photograph by Edward Weston, Art Institute of Chicago. Retrieved from http://www.artic.edu/aic/collections/artwork/75435

1962). He continued his studies in Europe for 6 years (1987–1903), thanks to a pension from President Díaz. There, Dr. Atl gained appreciation for the Italian Renaissance frescoes from the 14th to 16th centuries and for the Impressionist art movement.[1] Among other accomplishments in his first stay in Europe, he earned a silver medal for a pastel self-portrait at the 1900 exhibition of the Paris Salon, studied philosophy in Rome and criminal law in Paris, and walked from Rome to Paris and from Paris to Madrid.

On his return, he worked and mentored the "great three" and others at the Academy of San Carlos. There—and everywhere in Mexico—painting was almost exclusively limited to copies of European art, especially religious themes of the "old masters" (Charlot, 1962; Hernandez-Duran, 2016). Dr. Atl protested. He became convinced "that if there were to be a Renaissance in Mexico it must be Mexican and pagan" (Helm, 1989, ch. 1, para. 5). This statement shows that his admiration for Renaissance frescoes did not imply a desire to copy their style; instead, they were inspiration for the creation of autochthonous Mexican murals.

In 1906, he published a manifesto calling for Mexican artists to develop national art inspired by the country's ancient indigenous cultures. In 1910, he received approval and financial support to organize the first Mexican art exhibit celebrating 100 years of independence from Spain (Luna Arroyo, 1992). Orozco (1945) reported, "Our showing was an immense, an unexpected, success" (ch. 3, para. 7). Afterward, with Orozco, Siqueiros, and other young artists, Dr. Atl organized the "Artist Center of Mexico City" to pursue the creation of national art through mural painting. He secured permission to paint the walls of government buildings (Espejo, 1994) and, in 1910, he painted the first modern mural in Mexico. Years later, the mural was painted over because it contained female nudes (Sampaio Amaro, 2004).

In 1911, the students of the Academy of San Carlos stoned its director, Antonio Rivas Mercado (1853–1927), to protest the Academy's European dominance in the arts (Charlot, 1962). That year, in the beginning of the chaos of the Mexican Revolution (1910–1920), Dr. Atl left for Europe for the second time. The protests continued until 1913, the students of the Artist Center of Mexico City dispersed, and most of the painters joined one or another revolutionary army (Pérez Rosales, 2001).

During his second stay in Europe, Dr. Atl remained close to the Constitutionalist Committee of France (Comité Constitucionalista de Francia), along with Vasconcelos and others. He "moved like [a] fish in water among the French intelligentsia; but [he was] involved with the Mexican Revolution" (Espejo, 1994, p. 23). Dr. Atl participated in a campaign against Mexican president Victoriano Huerta (1845–1916) from a distance, met Vladimir Lenin (1870–1924) in Lausanne, and prepared an anticlerical paper in Switzerland with Benito Mussolini (1883–1945; Myers, 1956).

Dr. Atl returned to Mexico in 1913, dressed as an Italian Air Force officer and calling himself Gregorio Stello. He joined the army of Venustiano Carranza (1859–1920) against Huerta and encouraged the major opposition leader of the Mexican Revolution, Emiliano Zapata (1879–1919), to join forces. Dr. Atl founded various pro-Carranza newspapers, receiving contributions from Orozco, Siqueiros, and other

[1] The Impressionist movement started in France in the 1860s and expanded to other countries in Europe and eventually around the world. The Impressionists challenged traditional painting and were initially rejected because of their use of color, emphasis on light, and abandonment of realistic forms.

artists (Burton, 1998). But in the end, Dr. Atl opposed Carranza, who imprisoned him in 1916. He managed to escape to Los Angeles, where he lived from 1917 to 1918. There, an American company manufactured the bold Atl Colors palette, still popular today. In 1921, he joined the SEP mural program.

Dr. Atl had a passionate relationship, marred by violence and scandal, with Carmen Mondragón (1893–1978). An artist and writer, she was the daughter of the 1913 war and navy secretary, General Manuel Mondragón (1859–1922), who invented the Mondragón rifle. Their relationship lasted from 1920 to the mid-1920s. Carmen Mondragón mingled in the art scene in Mexico and in Europe, was in contact with Vasconcelos, and modeled for several notable painters and photographers, including Rivera. She was also known as "Nahui Olin," an Aztec name given to her by Dr. Atl, meaning earthquake (*Olin*) movement (*Nahui*; Quiroz, 2017).

In 1930, Dr. Atl became director of the SEP's Department of Fine Arts. He studied volcanology in Naples and in 1943 painted and wrote on the slopes of the Paricutín volcano for a year. In 1949, because of a circulation problem, his right leg was amputated—in a maternity hospital. "I thought I was going to have a baby, but no, they cut off my leg and I left the hospital without a baby and without a leg," he claimed (Burton, 1998, p. 3). His friends attributed the loss of his leg to his habit of wearing the same shoes and socks for months on end. The amputation did not slow him down. Exploring the countryside on mules, Dr. Atl wrote hundreds of pamphlets. With the aid of borrowed helicopters, he pioneered a new school of painting, "aerial" landscapes, which captured images of Central Mexico from the sky.

During the last decade of his life (1952–1964), Dr. Atl worked relentlessly but fruitlessly trying to find a place for his utopian city, Olinka. He dreamed of a supercity where artists, intellectuals, and scientists could work both independently and collectively in a space detached from the modern world. He hoped to create a "movement" of force against the utilitarian modernity he despised (Fierro, 2017; Szymczyk & Latimer, 2013).

Dr. Atl is buried at the Rotunda of Illustrious Persons of Mexico (Rotonda de las Personas Ilustres) in Mexico City. He is also commemorated with a statue, which portrays him at a later age, bearded, with one leg, at the garden of the Archeology Museum in Guadalajara. In addition, Oblatos Cannon Park, also in Guadalajara, was established in his honor and features a view of the Horsetail Waterfall, which he painted.

Dr. Atl first conceived the notion of using public walls for painting murals autochthonous to Mexico. He nurtured and mentored many students, especially the "great three," and encouraged them to engage politically and to rebel against existing European painting standards.

José Vasconcelos Calderón

"The spirit shall speak for my race" ("Por mi raza hablará el espíritu"; Stavans, 2011, Chapter 1, para. 74). This motto—used by the Universidad Nacional Autónoma de México (UNAM)—was authored by José Vasconcelos Calderón (Fig. 3).

Born in Oaxaca, Vasconcelos moved to the Texas border (Eagle Pass), where he enrolled in an English-language primary school. There he experienced firsthand racial

Fig. 3. José Vasconcelos Calderón (1913). Harris & Ewing Collection, Library of Congress. Retrieved from https://commons.wikimedia.org/w/index.php?curid=8684457

tensions, especially considering that he was of Portuguese and Indigenous ancestry. The independence of Texas from Mexico in 1936 and the Texas annexation of the United States in 1845 greatly strained the relationship between Anglos and Mexicans. In his autobiography, Vasconcelos (1963) recounted *". . . it made me still more angry if some pupil compared the customs of the Mexicans to those of the Eskimos, and said Mexicans are semi-civilized people. At our house, on the other hand, we believed that Yankees had just recently acquired culture"* (p. 25).

Vasconcelos opposed the notion that the white race was superior to others. This notion dominated the Iberian regions of the Americas, colonized by Spain and Portugal, even though the majority of the population was of mixed ethnicity. He argued that ethnic superiority emerged from the mixture of different racial groups. In his book, *La Raza Cósmica: Misión de la Raza Iberoamericana* (The Cosmic Race: Mission of the Ibero-American Race), published in 1948, he wrote about Mexico as a Mestizo nation and the miscegenation of blacks, whites, and Indians (Vasconcelos, 1948). He argued that "Brown is power" (Stavans, 2011, Chapter 1, para. 8), honoring the heritage of the nonpurely white. Vasconcelos's use of the term *Mestizo* was sometimes inconsistent, though it implied a broader meaning than a descendant of whites and Indians (Craven, 2006), as the term is sometimes understood. It is interesting that his writings have been criticized for their abundance of stereotypes.

Vasconcelos pursued a long career in politics. He ran for president of Mexico twice and lost on both occasions. The first attempt was in 1920 against Álvaro Obregón (1880–1928); the second, in 1929 against Pascual Ortíz Rubio (1877–1963; José Vasconcelos Manuscripts, 1935–1939, n.d.; Vázquez Mantecón, 2002). Vasconcelos lived with resentment for the rest of his life, convinced that the 1929 election had been stolen from him. Even thinking of his death, in case the government decided to bury him at the Rotunda of Illustrious People, in a letter to his son-in-law he said, "The Nation['s] conscience knows, or should know, that we won the elections of 1929, and as long as this is not recognized publicly, and perhaps officially, I could not accept any honor" (Young, 1959, p. 571). At Vasconcelos's request, he was buried in the Metropolitan Cathedral of México. Years later, the government considered moving his remains to the Rotunda, but his descendants did not permit it (Reyes, 2011).

Because of his political activism, Vasconcelos was in exile for several periods of his life. He traveled extensively to Central and South America, where he educated many young Latin American intellectuals; was named Maestro de la Juventud (Teacher of Youth) by students in Colombia, Peru, and Panama; and taught as a guest lecturer at Columbia and Princeton universities.

While living in Lima, Peru, during the Mexican presidency of Venustiano Carranza (1917–1920), Vasconcelos developed an educational plan that embraced Mexico's mixed ethnicities, cultures, and histories. He drew inspiration from a program developed by Anatoly Lunacharsky (1875–1933), the first Bolshevik soviet people's commissar, in charge of the Ministry of Education. Vasconcelos said, "I owe my plan to him more than to any other outsider. But I think my plan turned out to be simpler and better organized . . . a plan which managed to attack every problem" (Vasconcelos, 1963, p. 151). He was, however, vague about the plan and its execution.

Vasconcelos returned to Mexico in 1920 and became rector of the UNAM, at the end of the 10-year Mexican Revolution. Then Álvaro Obregón (1880–1928) became president. His four-year presidency marked the beginning of the reconstruction of Mexico after a decade of war, political turmoil, and extreme poverty. Obregón first reformed the Constitution to reestablish under federal jurisdiction the Ministry of Education, which had been abolished 4 years earlier, and appointed Vasconcelos as its minister.

Vasconcelos believed that "No nation has ever risen to true greatness without an ardent faith in some high ideal" (Stavans, 2011, Chapter 1, para. 52). For him, education would bring the races together, allow Mexico to flourish, and enable Mestizos to take control of their own destiny. He was obsessed with spreading knowledge across society. He created 2,000 libraries, conceiving them as centers for community engagement, and strengthened the value of science and the humanities in the pedagogic system. He created thousands of rural schools; started the National Polytechnic Institute; and supported the reorganization of institutions such as the Academy of San Carlos, the National Conservatory of Music, and the National Symphony Orchestra.

With the publication of a decree in the official gazette of the government, the SEP was created in October 1921. Although Obregón assigned the largest budget ever allocated to public education, in Vasconcelos's opinion, it was never enough. The education budget increased from 15 million pesos in 1921 to 35 million in 1923, constituting 15% of the nation's budget. One of the SEP departments was Fine Arts,

created to safeguard popular art and promote the works of poets, writers, composers, sculptors, and painters. It was in this department that the SEP mural program was housed.

Consistent with Dr. Atl's Mexican Renaissance, the program's mission was to educate through public art. Vasconcelos assigned the buildings of government as mural space, provided stable income to artists for painting their walls, and became the official patron of the program (Sampaio Amaro, 2004). Vasconcelos encouraged subjects that forged national and cultural awareness, such as ethnicity, popular festivities, and history. One of the first buildings assigned was the SEP headquarters (Quirarte, 1989).

At times, Vasconcelos has been credited with singlehandedly creating the Mexican muralist movement by hiring artists to paint the frescoes. However, Vasconcelos left the SEP after only 3 years. Thereafter, the program became a movement through the efforts of the "great three" muralists and the contributions of others.

Diego Rivera

On November 24, 1957, Diego Rivera (1886–1957) died at age 70 in Mexico City. He wanted to be buried next to his wife, the renowned painter Frida Kahlo (1907–1954; Carpenter, 2007; de Cortanze, 2015; Grimberg, 1997, 2004; Herrera, 1983, 1991; Hooks, 2002; Lowe, 1995; Michel, 2013; Mujica, 2002; Wolf, 2010; Zamora, 1987). But Mexico's president overrode Rivera's wish and ordered his burial to be in the Rotunda of Illustrious People. Figure 4 is a photograph of Rivera and Kahlo, a couple that attracted much interest and intrigue (Alcántara & Egnolff, 2011; Chamber, 2016; San Francisco Museum of Modern Art, 1996; Tuer & King, 2013).

Rivera painted all his life, from childhood until the year of his death, when, with his right arm paralyzed and brush in hand, he lamented, "the brush no longer obeys me" (Wolfe, 1972, Chapter 34, para. 3). Kahlo said, "For as long as I have known him, he has spent most of his waking hours painting: between twelve and eighteen a day" (Rivera & March, 1960, p. 189).

Rivera was strong-minded and a nonconformist. In 1903, at age 16, he was expelled from the Academy of San Carlos for leading a student demonstration that ended in a riot against Porfirio Díaz. In 1929, Rivera was elected director of the Academy of San Carlos and attempted to radically change the curriculum. Students were to be organized into unions, so they would see themselves as "art workers" rather than as fine artists. In total, the program would require "eight years of daytime factory work with art courses at night, followed by five years of day and night art courses" (Founders Society Detroit Institute of Arts [FSDIA], 1986, p. 70). In opposition, the wealthy student minority engaged in street fights and threatened to destroy Rivera's frescoes at the Palacio Nacional. He challenged them to try; he wore pistols and a crisscrossed belt with cartridges and armed his assistants as they worked on the murals. In May 1930, he was fired after a government commission brought 23 charges of incompetence against him (Hernandez-Duran, 2016).

Although Rivera said that joining the Mexican Communist Party was one of the most important steps in his life, his relationship with the Party was at best tumultuous. He first joined the Party in 1922, and along with Siqueiros, soon became a leader. He resigned temporarily in 1925, resisting compliance with militant activities (FSDIA, 1986, p. 59). Then he was expelled in 1929 for further noncompliance to policies,

Fig. 4. Frida Kahlo and Diego Rivera (1932). Carl Van Vechten Photograph Collection, Library of Congress, reproduction number LC-USZ62-42516 DLC. Retrieved from https://commons.wikimedia.org/wiki/Diego_Rivera#/media/File:Frida_Kahlo_Diego_Rivera_1932.jpg

"including his failure to join in party denouncements of the government and his acceptance of the government appointed directorship of San Carlos [Academy]" (FSDIA, 1986, p. 71). He was subsequently denied entry after three appeals: in 1940, 1949, and 1952. He was finally readmitted in 1954 (FSDIA, 1986; Wolfe, 1972). In 1927, the Russian people's commissar invited Rivera (along with Orozco, Siqueiros, and others) to be a guest painter at the 10th anniversary celebration of the October Revolution. In 1928, however, he was barred from the Soviet Union for his dissenting views on Stalin's regime.

Rivera's murals raised controversy in Mexico, in the United States, and elsewhere due to his antigovernment, anticlergy, and communist depictions. The most well-known mural scandal was his firing by the Rockefeller family while painting *Man at the Crossroads* at the Rockefeller Center in New York City in 1933. Although he was paid for the commission in full, the mural was eventually destroyed due to his unwillingness to remove Lenin's face. Rivera reproduced the mural in the Palace of Fine Arts in Mexico City in 1934 and called that version *Man, Controller of the Universe*. He included a "satirical portrait of Nelson Rockefeller (1908–1979) in a café-society scene, which contrasted with Lenin and his proletarian companions" (Helm, 1989, Chapter 24, para. 9).

Rivera often said that he would "rather have many intelligent enemies than one stupid friend" (Rivera & March, 1960, p. 188), and so he did. However, his relationships with well-respected friends were often strained. A case in point was his friendship with Leon Trotsky (1879–1940). Rivera first received a letter from Trotsky supporting his actions during the scandal with the Rockefellers. By 1936, Rivera convinced President Cardenas to offer Trotsky asylum in Mexico. Trotsky and his wife, Natalia Sedova (1882–1962), moved into the family home of Kahlo. This relationship put Rivera at odds with many, most notably Siqueiros (Patenaude, 2009). By 1939 Rivera and Trotsky's relationship had ended. Trotsky announced that "he no longer feels moral solidarity with Rivera['s] anarchistic views" (FSDIA, 1986, p. 96). Besides, Sedova discovered Trotsky's love affair with Kahlo, which caused the couple to move out of their home.

Another example was Rivera's relationship with Pablo Picasso (1881–1973), which ended bitterly while living in Europe. Rivera claimed that some elements of Picasso's painting *Man Seated in Shrubbery* were stolen from his greatest cubist painting, *Zapatista Landscape* (1915). Inspired by a news photo, Rivera had abstracted Zapata's hat, rifle, and serape. Rumblings about Picasso's plagiarism ended with most siding with Picasso and closing their studios to Rivera, who separated from Cubism and Picasso (López Rivera & Flores, 2007; Poundstone, 2016).

Rivera was a notorious womanizer and had tumultuous relationships with his wives and lovers, bringing public attention to him and his murals. He married five times, twice to Frida Kahlo. He had affairs with many eminent women, including photographer Tina Modotti (1896–1942); actress Dolores del Rio (1904–1983); Maria Felix (1914–2002), the foremost Mexican movie star; and actress Paulette Goddard (1910–1990), the wife of Charles Chaplin (1889–1977).

In 1906, Dr. Atl organized and promoted Rivera's first exhibit. This helped Rivera meet the prerequisite for a scholarship from Teodoro A. Dehesa Méndez (1848–1936), governor of the State of Veracruz, to study in Europe. Dr. Atl subsequently sent Rivera with a letter of endorsement to the atelier of the Spanish artist Eduardo Chicharro (1873–1949).

Rivera did not plan to be a muralist. He became one because of an invitation from Vasconcelos to return to Mexico after 14 years in Europe to participate in the SEP mural program. While living in Paris, Rivera wrote to his first wife, Guadalupe Marín (1895–1983), "Jose Vasconcelos, a friend who goes back to my school days at the Ateneo de la Juventud, convinced President Alvaro Obregón that he should support public art through Mexican mural painting, and they want me to go back" (Rivera Marín, 2004, ch. 10, para. 33).

Rivera was the most prolific Mexican muralist (Aguilar-Moreno & Cabrera, 2011; Coronel Rivera, Pliego, & Zavala, 2007; Downs, 1999; Serrano, 2006; Souter, 2014). He was gregarious, charismatic, and a storyteller well-versed in politics, history, and art. He moved in diverse circles of famous artists, intellectuals, politicians, and businesspeople. Rivera depicted his patrons, wives, and friends in his murals, leaving historical records of his connections. He became a celebrity and sparked public interest and controversy all his life, bringing international attention to the murals and to Mexico (Fuentes, 2015; Rivera Marín, 2015).

David Alfaro Siqueiros

For David Alfaro Siqueiros, art and revolution were intricately intertwined; he interrupted the completion of his murals repeatedly for revolutionary engagements. In total, throughout his life, Siqueiros was in active combat for 7 years and imprisoned for more than 5. In addition, he went into exile twice, once to Chile and once to the United States. Figure 5 shows Siqueiros behind bars in 1960.

In 1911, at age 15, Siqueiros went to jail for the first time during the student strike led by Dr. Atl at the Academy of San Carlos. In 1914, at age 18, along with Dr. Atl and others from the Academy of San Carlos, he joined general Carranza's Constitutional Army to fight the Huerta government and the forces of Zapata and of Pancho Villa (1878–1923). Siqueiros was in combat for 4 years, until 1918, and earned the title of second captain.

In 1929, he traveled to Argentina and Uruguay as a union representative and participated in the formation of the first Latin American labor union confederation. On this trip he met the Uruguayan poet Blanca Lus Brum (1905–1985), who became his common-law wife. The Mexican Communist Party demanded that Siqueiros

Fig. 5. David Alfaro Siqueiros (1960). Online Image. Retrieved from https://en.wikipedia.org/wiki/David_Alfaro_Siqueiros#/media/File:David_Alfaro_Siqueiros_(El_Coronelazo).jpg

relinquish Lus Brum because of her close relationship with the Nicaraguan revolutionary leader, Augusto César Sandino (1895–1934). Sandino was on friendly terms with then-president of Mexico, Emilio Portes Gil (1890–1978), who had outlawed the Mexican Communist Party and ordered the persecution and imprisonment of its members (Stein, 1994). Siqueiros refused, and, after being deported from Argentina for his radical positions, was imprisoned for 6 months on his return with Lus Brum and her son. In addition, Siqueiros was expelled from the Mexican Communist Party for disobedience. On his release, he was confined to the town of Taxco and was eventually reinstated as a member of the Party.

In 1932, Siqueiros was again expelled from Mexico for radical militancy and went to the United States as a political refugee. There, he painted three murals while engaging in political action, resulting in his deportation from the United States as well. In 1936, Siqueiros enlisted with the Republican Army in Spain to fight against Francisco Franco (1892–1975). He served for 3 years, rising to lieutenant colonel.

In 1940, following orders of the USSR Secret Service, Siqueiros led an unsuccessful attempt to assassinate Trotsky in his Mexico City home. Siqueiros first went into hiding and then was jailed. Through the diplomatic efforts of Chilean poet and ambassador Pablo Neruda (1904–1973), Siqueiros was released and exiled to Chile, where he painted the mural *Death to the Invader* (1941–1942).

In 1960, Siqueiros was arrested for inciting a May Day student riot (see Fig. 5). He remained imprisoned until 1964, despite the outburst of international public support (To free Siqueiros, 1961, p. 38). "Prison transformed me into an easel painter," said Siqueiros. ". . . I had to think in terms of small paintings—my cell measured only 6 by 12 feet, and the light came from only a tiny window" (Prison paintings of Siqueiros, 1964, p. 82). After his release, Siqueiros exhibited his collection, "My Prison Painting," of 204 paintings, most of them done in cell 36 of the Lecumberri Prison in Mexico City. He immediately returned to mural painting, starting with his previously interrupted mural in Chapultepec Castle.

Siqueiros developed a unique mural technique that involved tracing figures onto a wall with an electric projector and used innovative paints, spray guns, and other tools. His creativity often came out of necessity, using the rudimentary materials he had available. Siqueiros depicted the human struggle to overcome authoritarian, capitalist rule. *América Tropical* (Los Angeles, 1932), for example, represented an attack on U.S. imperialism and the European colonialism of Latin America for their role in the decline and struggles of indigenous cultures. The mural was whitewashed by city authorities but began to reappear in the late 1960s when the wash faded (Autry Museum of the American West, 2011; del Barco, 2010; Siqueiros in Los Angeles, 2018). Since then, the J. Paul Getty Museum has undertaken its maintenance.

Siqueiros met Rivera in Paris in 1919, when traveling to Europe as a cultural attaché. Both protégés of Dr. Atl, they connected right away. Siqueiros brought his direct experience with insurgency and love of art. Rivera, an established artist, brought his knowledge of European art and revolutionary spirit. They traveled to Italy to study Renaissance fresco techniques. In 1922, Siqueiros returned to Mexico and joined Rivera at Vasconcelos's SEP mural program.

One of Siqueiros's distinctive contributions was articulating in writing the connection between art and revolution. His attempts began in 1919, when he published "Three Appeals for the Current Guidance of the New Generation of American Painters and

Sculptors" in the magazine *La Vida Americana*, which was issued from 1919 to 1921 (de la Rosa, 2014). As Dr. Atl had inculcated, Siqueiros called on artists to create authentic Mexican art and to concentrate on the pre-Columbian culture, uncorrupted by European influences.

In 1923, Siqueiros led the writing of a manifesto articulating the mission that united artists in the SEP program and later in the Mexican muralist movement. It said, "We condemn so-called easel painting and all the art produced by ultra-intellectual circles on the grounds that it is aristocratic, and we glorify the expression of monumental art because it is [the] public's property" (Siqueiros et al., 1924, p. 4). The manifesto was cosigned in 1923 by seven other artists, Rivera and Orozco among them. It was published in *El Machete*, a weekly periodical of the Sindicato de Obreros, Técnicos, Pintores y Escultores (Union of Workers, Technicians, Painters, and Sculptors; SOTPE; Brenner, 2002). *El Machete* and SOTPE were created by Siqueiros, Rivera, and other artists working at the SEP mural program. Siqueiros's murals left an impressive and unique testament to revolutionary, public art. The manifesto and his murals inspired artists not only in Mexico, but also in Russia, the United States, Uruguay, Argentina, and other Latin American countries (Amador, 2017).

José Clemente Orozco

After a series of unfortunate life events (e.g., rheumatic fever as a child that left him with a weak heart and losing his father at the age of 20), José Clemente Orozco quit school and took a series of odd jobs to support his mother and two siblings. In 1904, on the 94th celebration of the Mexican Independence from Spain, Orozco accidentally set off an explosion while mixing chemicals for fireworks. Because of the celebration, he had to wait a few days to receive medical treatment. By then, he had developed gangrene in his left hand and wrist, which had to be amputated. The explosion also left him deaf in his left ear and partially blind in his left eye. But these physical limitations did not stop him from becoming one of the "great three" Mexican muralists, that is, Diego Rivera, David Alfaro Siqueiros, and José Clemente Orozco. Figure 6 shows a picture of Orozco (José Clemente Orozco: Mexican cartoonist, n.d.).

Helm (1989) said, "I have been told that he [Orozco] was grim, scornful, sarcastic, unsociable; that pathological self-consciousness . . . prevented friendly exchanges of conversation" (ch. 4, para. 10). Others said that he was known for his "sharp tongue and mordant sense of humor" (José Clemente Orozco: Cronograma, n.d.). Orozco and Rivera had very different attitudes toward their art. ". . . Rivera was a classicist, Orozco an expressionist. Rivera was optimistic, Orozco was a pessimist. . . . Rivera has been called the Mexican Revolution's ballad singer; Orozco, its interpreter and critic. Rivera [has also been called] its 'proud historian' . . . " Orozco has also been described as its "tragic poet" (Herrera, 1990). Orozco expressed his dark side in his murals, which had gloomy, sarcastic, and spiritual overtones (Manrique, 1989).

Orozco became interested in painting by watching the illustrator José Guadalupe Posada (1852–1913) working in a shop window on his way to school (Orozco, 1945). Inspired by Posada, in 1888 he enrolled in night courses at the Academy of San Carlos to learn drawing while studying agriculture.

Orozco followed Dr. Atl, participating in the protests at the Academy of San Carlos for the dominance of Spanish painting, in the first Mexican art exhibit of 1910, in the

Fig. 6. José Clemente Orozco (1932). Photograph by Arnold Genthe. © Library of Congress, Washington, DC (neg. no. LC-G412-T-6066-004). Retrieved from https://kids.britannica.com/students/assembly/view/153272

centennial celebration of the war of independence from Spain, and in the Artistic Center of Mexico City. Between 1911 and 1913, Orozco, along with Siqueiros, continued to participate in the strikes at the Academy of San Carlos.

Between 1922 and 1924, Orozco worked in the SEP mural program, along with Rivera, Siqueiros, Dr. Atl, and others. There he completed six murals, some of which were vandalized and almost destroyed by conservative students; some he destroyed himself and some he repainted in 1926.

Feeling unappreciated as an artist in Mexico, Orozco went to the United States seeking better opportunities. He spent a total of approximately 10 years there, first from 1917 to 1918 and later from 1927 to 1934. He returned in 1940 and again in 1945 when, during a midlife crisis, he left his wife and family for his lover, the prima ballerina of the Mexico City ballet, Gloria Campobello (1917–1968). He had hoped for revitalization, but after months of struggle and soul-searching, he returned to Mexico.

In the United States, Orozco created four murals, along with hundreds of easel paintings and graphic works that challenged stereotypes of Mexican art. In Mexico, his body of work was remarkable. Between 1934 and 1939, he painted his best-known works, including murals in Guadalajara's government palace and university. His magnum opus was in the Hospicio Cabañas in Guadalajara, known as the "Sistine Chapel of the Americas," where he painted *Man of Fire* (Coyle & Tejada-Flores, 2007).

Orozco proclaimed, "The highest, the most logical, the purest and strongest form of painting is the mural. It is also the most disinterested form, for it cannot be made a matter of private gain; it cannot be hidden away for the benefit of a certain privileged few. It is for the people. It is for ALL" (José Clemente Orozco: Cronograma, n.d.). He painted murals most of his life and had a unique style. Along with Rivera and Siqueiros, Orozco brought considerable force and international reputation to the Mexican muralist movement.

In conclusion, the five major players contributed to the muralist movement in different ways. Dr. Atl mentored the "great three" on core values. In addition, he was the first to use government buildings as his canvas for painting original Mexican murals and he resisted copying European art. Vasconcelos obtained funding and created the SEP mural program. Siqueiros led the formulation of the manifesto that articulated the values that unified artists. Rivera, along with Siqueiros and Orozco, painted a large body of frescoes with distinctive styles, inspired other muralists, and brought international interest to the SEP mural program.

Cultural Cusp: From a Program to a Movement

How did the SEP mural program transform into the Mexican muralist movement? Two components coalesced in the generation of the SEP grogram. The first consisted of selection contingencies that generated a significant body of murals. The second component entailed unique and nonrecurring interactions of multiple individuals. The actions of participants in the SEP program and in the mural movement were influenced by their individual histories and values, and by the sociopolitical context in which they lived.

Selection Contingencies

Figure 7 is an image of Rivera's mural *The Making of a Fresco Showing the Building of a City*. The background depicts people working on the construction of San Francisco: commissioners, engineers, assistants, sculptors, architects, and general workers. In the center, an oversized man with a helmet emphasizes the importance of the worker. The foreground illustrates how a fresco was made—the reason this mural is often described as "the fresco within a fresco." Rivera sat in the center of the scaffold with his back to the viewer. Other artists engaged in different interlocked tasks. Together they produced the mural.

Rivera's mural illustrates how the making of a fresco can be understood as a metacontingency: "a contingent relation between 1) recurring interlocking behavioral contingencies having an aggregate product and 2) selecting environmental events or conditions" (Glenn et al., 2016, p. 13). Figure 8 illustrates the components of the metacontingency using elements of Rivera's mural.

The artists highlighted inside the circle illustrate the IBCs of individuals working on the fresco. The frescoes required the efforts of several people: some prepared plaster, others mixed colors, others transferred the drawing to the wall, and so on. An element of a behavioral contingency of one individual (i.e., behavior, antecedent, consequence) or a product of one participant served as an element or a product for another participant.

Fig. 7. *The Making of a Fresco Showing the Building of a City* (1931). San Francisco Art Institute. Retrieved from https://www.wikiart.org/en/diego-rivera/the-making-of-a-fresco-showing-the-building-of-a-city-1931

For instance, the sketch of one individual (product) served as an antecedent for another painting (behavior). That is how behavioral contingencies interlocked in the IBCs.

The recurring IBCs of various individuals, hour after hour, day after day, produced each section until the entire fresco was completed. The recurrence over time of the

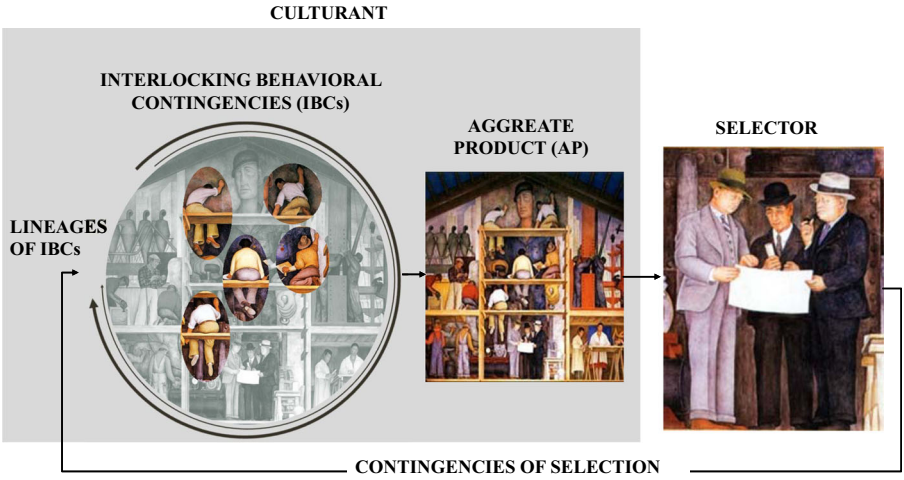

Fig. 8. The making of a fresco as metacontingency. Mural elements were extracted from Diego Rivera's mural: *The Making of a Fresco Showing the Building of a City.* San Francisco Art Institute, San Francisco, CA

collaborative work constituted lineages of IBCs, represented in Fig. 8 by an incomplete circle with an arrow. There were variations in IBCs with recurrences. For instance, a participant might have left and another might have gotten involved, a participant might have completed a task typically done by another, or the process might have needed changes to improve an aspect of the fresco. Lineages of IBCs involving different groups of artists resulted in distinctive fresco styles. The murals led by Rivera, for instance, can be easily distinguished from those led by Siqueiros.

The mural itself was the aggregate product (AP), that is, the outcome produced by IBCs of various individuals over time. The AP was composed of smaller aggregate products—sections of the fresco. The summation of all the murals completed during the SEP program constituted the program's AP. The term *culturant* establishes the relation of the IBCs and the AP they produce (Hunter, 2012). The concept is important because it helps to focus on the relevant IBCs. The dependent relationship between the culturant and the consequences constitutes the contingencies of selection, such as receiving compensation for producing murals. However, compensation was not the only variable affecting the creation of murals. Mural making was also motivated by the ability to participate in a social project, and by the opportunity to express sentiments regarding the existing sociopolitical conditions.

The part of the environment that establishes the selection contingencies is the cultural selector. If the patron stopped supporting the APs, the IBCs that produced them would also cease, as was the case when the Rockefeller family canceled Rivera's mural contract in New York. However, this event also illustrated that Rivera's work on these murals was not only driven by financial compensation, but by the opportunity to express his ideas. As a result, he preferred the termination of his contract to the altering of an important element of his design.

The selector could also impose demands on the AP, resulting in variations of the IBCs. For instance, at the beginning of the SEP mural program, the artists did not know how to paint frescoes and had to develop methods by trial and error (Quirarte, 1989). Fresco making was adjusted to meet Vasconcelos's demands; some murals had to be removed whereas others had to be painted over. For instance, Vasconcelos asked for the removal of the panels made by Dr. Atl at the cloister of Colegio Máximo de San Pedro y San Pablo at the beginning of the program (de la Vega, 1993). Vasconcelos expressed his disappointment with Rivera's first mural, *The Creation*, for its resemblance to European frescoes. In the end, Rivera destroyed all but two panels of his first assistants at the SEP building and replaced them with his own work (Anreus et al., 2012, p. 288).

Vasconcelos hired and compensated experienced and amateur artists to produce murals. Artists worked on different murals and with different groups over time. In the process, they developed mural-making skills and values that united them.

During the SEP program, the "great three" painted and led others to cover 10,696 feet of mural walls (Hooze, 1993), though a few of those walls were finished 1 or 2 years after the program ended. Rivera was the most prolific of all and continued working for the government after the program ended. Between 1921 and 1927, he painted 8,139 feet of murals (625 in the Escuela Nacional Preparatoria and the Amphitheater Simón Bolívar; 5,199 in the SEP building; and 2,414 in the National Agricultural College of Chapingo). Orozco painted 1,608 feet and Siqueiros painted 850 feet, both at the Escuela Nacional Preparatoria.

The contributions of other artists in the SEP program, and in the mural movement itself, paled in comparison to those of the "great three" for several reasons. They continued painting murals all their lives with the figurative style and sociopolitical subject matters that became the staples of the program in the 1920s. Furthermore, other participants did not equally shine for several reasons: they became focused on different artistic endeavors; painted too few murals or ones that did not survive; ended up opposing the core values; or developed a nonfigurative style, which was not as well received at that time. Nevertheless, some of the SEP mural artists became nationally or internationally famous for other mural styles or for their contributions to different artistic domains and occupied prominent roles in the arts in Mexico.

Table 1 shows lineages of three generations of artists. It includes those who participated in the SEP program and others who helped the program to become a movement. The first generation was born before 1900; the second, between 1901 and 1910; and the third, between 1911 and 1920. Their longevity demonstrates the many years they had to make an impact. Country of origin, residency, and murals inform the location of their work. Their backgrounds, sources of inspiration, and participation in the SEP program speak to their relevance. The list of artists is meant to be illustrative rather than exhaustive. Some artists may not have been identified. Others were excluded because little is known of them; this was the case with Luis Escobar, who worked with Rivera as a mason (Stein, 1994).

The name of the five major players are listed in boldface in Table 1. Vasconcelos brought several artists from abroad to work in the program[2] and hired others who resided in Mexico to assist.[3] The "great three" trained and inspired other artists, especially Rivera and Siqueiros; these artists, in turn, influenced still others in future generations.[4]

Lineages of mural-making metacontingencies were started in different ways. Figure 9 illustrates an example of how some lineages of mural-making metacontingencies were established—artists assisting other more seasoned artists acquired mural-making repertoires, and afterward, the then trained artists created their

[2] Other artists brought from abroad to the SEP mural program by Vasconcelos included Roberto Montenegro (1885–1968; Pérez Rosales, 2001; Roberto Montenegro, n.d.); Manuel Rodríguez Lozano (1891–1971; Colección Blaisten, n.d.; Manuel Rodríguez Lozano, n.d.; Sampaio Amaro, 2004); Amado de la Cueva (1891–1926; Andrews, 2011); Adolfo Best Maugard (1891–1964); and Ignacio Asúnsolo (1890–1965; Sampaio Amaro, 2004).

[3] In addition to Dr. Atl, artists residing in Mexico hired by Vasconcelos to assist in the SEP mural program included Jorge Enciso (1879–1969; Enciso, 1971); Ramón Alva de la Canal (1892–1985); Fernando Leal (1896–1964); Xavier Guerrero (1896–1974); and Fermín Revueltas Sánchez (1901–1935). Also assisting were the Guatemalan Carlos Mérida (1891–1985) and the American Pablo Esteban O'Higgins (1904–1983), both of whom remained in Mexico for the rest of their lives. O'Higgins was eventually granted honorary Mexican citizenship for his contributions to the arts (Lucie-Smith, 1993; Vogel, 2010).

[4] Some of the artists trained or inspired by Rivera and Siqueiros include Leopoldo Méndez (1902–1969; Quirarte, 1989); Juan O'Gorman (1905–1982; Lara Elizondo, 2001; Lucie-Smith, 1993); Julio Castellanos González (1905–1947; Quirarte, 1989); Jorge Gonzalez Camarena (1908–1980); Aurora Reyes Flores (1908–1985), the first woman recognized as a Mexican muralist; Alfredo Zalce Torres (1908–2003; Gutiérrez López, 2007); Luis Arenal Bastar (1908–1985); Jose Chavez Morado (1909–2002); Jesús Guerrero Galván (1910–1973; Quirarte, 1989); Francisco Dosamantes (1911–1986); José Raúl Anguiano Valadez (1915–2006; Quirarte, 1989); Ángel Bracho (1911–2005); and Fernando Castro Pacheco (1918–2013). Another artist, Rufino Tamayo (1899–1991), gained attention in subsequent years by vehemently critiquing Mexican muralist work as propagandist, nationalistic, and false. He created murals in his own abstract style (Brenson, 1991; de Conde, 1999; Paz & Lassaigne, 1995; Pereda & Sánchez Fuentes, 1995).

Table 1. Three generations of mural painters

Name	Birth	Death	Age of death	Origin	SEP	Source of inspiration	Location of murals	Comments
First Generation (born before 1900)								
Alfredo Ramos Martínez	1871	1946	75	Mexico; immigrated to the United States		Impressionism; Vasconcelos	Mexico; United States	Was director of the Academy of San Carlos from 1913 to 1914 and, in 1920, when appointed by Vasconcelos, launched Open Air Schools in Mexico, fomenting vivid colors of Impressionism and influencing artists who later became muralists, like Siqueiros (Patterson, 1964). Promoted the idea that art should reflect the history and culture of Mexico. Lived in Paris (1901–1910) and Mexico (1910–1929); moved to the United States (LA) in 1929.
Gerardo Murillo Cornado (Dr. Atl)	1875	1964	89	Mexico	x	Hired by Vasconcelos	Mexico	Was a major player in the conception of the early Mexican muralist movement, inculcating appreciation for mural painting and authentic Mexican art. Conceived the first modern mural in 1910 in Mexico City, but never finished due to the Mexican Revolution.
Jorge Enciso	1879	1969	90	Mexico	x	Hired by Vasconcelos		Became protector and guardian of precolonial and colonial art treasures. Was known for design of motifs of ancient Mexico (Enciso, 1971). Worked on projects for Vasconcelos. Abandoned painting and focused on archaeology and history of Mexico.
José Vasconcelos Calderón	1882	1959	77	Mexico	x	Dr. Atl; Mexican painters		Created the SEP mural program under the Ministry of Education.
José Clemente Orozco	1883	1949	66	Mexico	x	Dr. Atl; hired by Vasconcelos	Mexico; United States	Was one of the “three great” Mexican muralists.

Table 1. (continued)

Name	Birth	Death	Age of death	Origin	SEP	Source of inspiration	Location of murals	Comments
George Biddle	1885	1973	88	United States		Mexican muralists	United States	Suggested to President Franklin D. Roosevelt, childhood friend and classmate, that he initiate a program following the example of the Mexican muralists. The Federal Art Project, under the Works Progress Administration, produced more than 2,500 murals in the United States between 1935 and 1943 (Anreus et al., 2012; Quirarte, 1989).
Roberto Montenegro	1885	1968	83	Mexico	x	Hired by Vasconcelos and returned from abroad	Mexico; Spain	Was Rivera's classmate at the Academy of San Carlos. Lived in Paris and Spain from 1907 to 1921. Returned to Mexico to participate in Vasconcelos's SEP mural program and received the first commission. Painted his first mural in Spain (Pérez Rosales, 2001; Montenegro, n.d.).
Diego Rivera	1886	1957	71	Mexico	x	Dr. Atl; hired by Vasconcelos	Mexico; United States	Was the most prolific of the "three great" Mexican muralists.
José Sabogal	1888	1956	68	Peru		Rivera; Siqueiros; Orozco	Peru	Led the indigenous art movement in Peru. Met Rivera, Siqueiros, and Orozco in Mexico in 1922; they inspired him to disseminate his own art internationally ("Sabogal, n.d.-a, n.d.-b; Lucie-Smith, 1993).
Thomas Hart Benton	1889	1975	86	United States		Mexican muralists	United States	Was inspired by the Mexican muralists and by the opportunities they received. Was a renowned American muralist (Alvarez, 2001; Quirarte, 1989).
Ignacio Asúnsolo	1890	1965	75	Mexico	x	Hired by Vasconcelos and returned from abroad		Studied art in Europe. Was a sculptor brought by Vasconcelos to the SEP mural program. His legacy was sculptures (Sampaio Amaro, 2004).

Table 1. (continued)

Name	Birth	Death	Age of death	Origin	SEP	Source of inspiration	Location of murals	Comments
Amado de la Cueva	1891	1926	35	Mexico	x	Hired by Vasconcelos and returned from abroad. Rivera; Siqueiros; Orozco	Mexico	Received training in Rome and joined the SEP mural program in 1922. Assisted Rivera with his first mural in Mexico City. Worked with Siqueiros and Orozco on Guadalajara's murals (Andrews, 2011).
Adolfo Best Maugard	1891	1964	73	Mexico	x	Hired by Vasconcelos and returned from abroad	Mexico	Met Rivera when studying art in Europe. Brought by Vasconcelos for the SEP mural program, where he painted murals and was director of the `Department of Art Education of the SEP between 1921 and 1924 (Sampaio Amaro, 2004). Believed that art should reflect the history and culture of Mexico.
Manuel Rodríguez Lozano	1891	1971	80	Mexico	x	Hired by Vasconcelos and returned from abroad	Mexico	Was in exile in France and Spain for 8 years with wife Carmen Mondragón and her family. Returned to Mexico in 1921. Taught drawing at the SEP. Painted only two murals and distanced himself from muralism afterwards (Colección Blaisten, n.d.; Manuel Rodríguez Lozano, n.d.; Sampaio Amaro, 2004).
Carlos Mérida	1891	1985	94	Guatemala; immigrated to Mexico	x	Assisted Rivera at SEP	Mexico	Lived and worked in Paris (1910–1914). Developed a geometric style not as well received as the figurative work of the first generation of Mexican muralists. Became internationally renowned.
Ramón Alva de la Canal	1892	1985	93	Mexico	x	Hired by Vasconcelos	Mexico	Was an engraver. Learned woodcuts from Charlot. Directed the Children's Theater Department of the SEP in 1934.
Antonio M. Ruíz	1892	1964	72	Mexico		Covarrubias	United States	Spent most of his life teaching. Did not participate in the SEP mural program but worked as an assistant to Covarrubias on six mobile murals in San Francisco. Traveled to Hollywood (1926–1929; Quirarte, 1989).

Table 1. (continued)

Name	Birth	Death	Age of death	Origin	SEP	Source of inspiration	Location of murals	Comments
Fernando Leal	1896	1964	68	Mexico	x	Hired by Vasconcelos	Mexico	Was recruited by Vasconcelos for the SEP mural program after he saw one of Leal's paintings of indigenous people of Mexico. Shared a study with Charlot, who taught him wood engraving. Taught at the Academy of San Carlos. Was director of the Escuela al Aire Libre de Coyoacán. Was Minister of Culture (1952).
Xavier Guerrero	1896	1974	78	Mexico	x	Assisted Rivera at SEP; Siqueiros	Mexico	Painted at the SEP program but his mural work was destroyed. Was politically active. Helped found the SOTPE.
David Alfaro Siqueiros	1896	1974	78	Mexico	x	Rivera; Dr. Atl; hired by Vasconcelos	Mexico; United States; Argentina; Cuba	Was one of the "three great" Mexican muralists, and the most politically active among them. His mural work in Cuba was destroyed.
Emilio García Cahero	1897	1939	42	Spain; immigrated to the United States	x	First generation of Mexican muralists	Mexico; United States	Worked on the first frescoes completed in the SEP. First mural was destroyed. Immigrated to the United States in 1935. Painted six murals in Texas. His mural work in Mexico was destroyed (Leal, 1935; Sampaio Amaro, 2004).
Louis Henri Jean Charlot	1898	1979	81	France; immigrated to the United States	x	Assisted Rivera at SEP	Mexico; United States	Arrived in Mexico in 1921 and worked at the SEP mural program. Left Mexico in 1929 and taught in several schools and colleges in the United States. Moved to Hawaii, where he lived until his death(Andrews, 2011; Lucie-Smith, 1993).
Ben Shahn	1898	1969	71	Lithuania; immigrated to the United States		Assisted Rivera with New York mural	United States	Immigrated to the United States in 1906 and remained there the rest of his life. Assisted Rivera with the Rockefeller Center mural in New York. Was known for social realism (Greenfeld, 1998).
Pedro Nel Gómez Agudelo	1899	1984	85	Colombia		Mexican muralists	Colombia	Started the Colombian muralist movement and became one of the most prolific artists in the

Table 1. (continued)

Name	Birth	Death	Age of death	Origin	SEP	Source of inspiration	Location of murals	Comments
								country. Was director and professor of the Academia de Bellas Artes de Medellín.
Rufino Tamayo	1899	1991	92	Mexico		Opposed the style of Mexican muralists	Mexico	Developed an abstract style and opposed the figurative tradition of the first generation of Mexican muralists. Lived in the United States from 1926 to 1929 and from 1927 to 1949. Defended easel painting (Brenson, 1991; Pereda & Sanchez Fuentes, 1995).
Second Generation (born between 1901 & 1910)								
Fermín Revueltas Sánchez	1901	1935	34	Mexico	x	Hired by Vasconcelos	Mexico	Joined the SEP mural program in 1923 and the Mexican Communist Party in 1928. Studied in the United States. Died young, leaving his mural work unfinished.
Emilio Amero	1901	1976	75	Mexico; immigrated to the United States		Rivera; Orozco; Merida	Mexico	Taught lithography at the Academy of San Carlos and in the United States, where he moved to in 1940. Taught at the Cornish School in Seattle and at the University of Oklahoma from 1946 to 1968.
Leopoldo Méndez	1902	1969	67	Mexico		O'Higgins, who had assisted Rivera	Mexico	Worked on two notable murals: one with Pablo O'Higgins (1946) and another with José Guadalupe Posada (1956). Was an active participant in the LEAR and the TGP (Quirarte, 1989).
Cándido Portinari	1903	1962	59	Brazil		Rivera	United States; Brazil	Studied Rivera's murals in 1935 and developed his own style. Although most of his work was on canvas, he painted murals for the Library of Congress and panels for the United Nations. Was a major Brazilian artist and a member of the Brazilian Communist Party (Colar, 2010).

Table 1. (continued)

Name	Birth	Death	Age of death	Origin	SEP	Source of inspiration	Location of murals	Comments
Pablo Esteban O'Higgins	1904	1983	79	United States; immigrated to Mexico	x	Assisted Rivera at SEP	Mexico	Arrived in Mexico in 1924 and remained there, where he received honorary citizenship for his contributions to the arts. Assisted Rivera in the SEP program and on his murals in Chapingo. Was a member of the Mexican Communist Party and cofounder of the TGP (Lucie-Smith, 1993; Vogel, 2010).
José Miguel Covarrubias Duclaud	1904	1957	53	Mexico			United States	Was a painter, a caricaturist, and an illustrator. Moved to New York in 1924. Painted six murals for the Golden Gate International Exhibition in San Francisco with his assistant Antonio M. Ruíz. Did a caricature of Rockefeller discovering Lenin in Rivera's mural, *Man at the Crossroads* (Quirarte, 1989).
Juan O'Gorman	1905	1982	77	Mexico		Rivera	Mexico	Was known for the murals at the UNAM's Library. Was an established architect. Was buried in the Rotunda of Illustrious People of Mexico (Lara Elizondo, 2001; Lucie-Smith, 1993).
Antonio Berni	1905	1981	76	Argentina		Assisted Siqueiros	Argentina	Was a communist associated with the "New Realism" movement. Lived in Europe from 1925 to 1931.Joined Siqueiros and others painting a mural. Ended up rejecting murals as an instrument of social change.
Julio Castellanos González	1905	1947	42	Mexico		Rodríguez Lozano and O'Gorman, who were influenced by Rivera	Mexico	Painted only two murals, at Juan O'Gorman's Escuela Melchor Ocampo in Coyoacán (1933). Traveled to the United States (Quirarte, 1989).

Table 1. (continued)

Name	Birth	Death	Age of death	Origin	SEP	Source of inspiration	Location of murals	Comments
Santiago Martínez Delgado	1906	1954	48	Colombia		Inspired by Mexican muralists	Colombia	Studied at the Fine Arts Institute of Chicago from 1926 to 1934. Cofounded the Colombian muralist movement with Pedro Nel Gómez Agudelo. Became a renowned Colombian artist.
Luis Arenal Bastar	1908	1985	77	Mexico		Siqueiros	Mexico	Defended the Mexican muralists' sociopolitical realism. Was a founding member of the LEAR, the TGP, and the Salón de la Plástica Mexicana.
Jorge Gonzalez Camarena	1908	1980	72	Mexico		Assisted Dr. Atl	Mexico; Chile	Was assistant and protégé of Dr. Atl. Began painting murals in 1939. The government hoped to bury his remains in the Rotunda of Illustrious People of Mexico, but his family refused.
Aurora Reyes Flores	1908	1985	77	Mexico			Mexico	Was the first woman recognized as a muralist for her mural *Atentado a los Maestros Rurales* (1936). Created another six murals. Taught drawing and painting at the SEP. Was a member of the Mexican Communist Party and the LEAR.
Alfredo Zalce Torres	1908	2003	95	Mexico		Rivera; Siqueiros; Orozco; Tamayo	Mexico	Was a teacher of art most of his life at the SEP, UNAM, and other places. Was cofounder of the TGP, the LEAR, and several painting schools. Painted murals in various cities across Mexico (Gutiérrez López, 2007).
José Chavez Morado	1909	2002	93	Mexico		Rivera; Siqueiros; Orozco	Mexico	Was a socialist and a member of the LEAR. Worked in California and Alaska from 1925 to 1931. Studied art in Los Angeles (Quirarte, 1989).
Jesús Guerrero Galván	1910	1973	63	Mexico	x	Guadalajara Bohemian Circle	Mexico	Studied art in Guadalajara, and later in San Antonio in the 1920s. Was a muralist and a member of the Mexican Communist Party. Was artist-in-residence at the University of New Mexico (1942; Quirarte, 1989).

Table 1. (continued)

Name	Birth	Death	Age of death	Origin	SEP	Source of inspiration	Location of murals	Comments
Third Generation (born between 1911 & 1920)								
Francisco Dosamantes	1911	1986	75	Mexico			Mexico	Was a painter, an illustrator, and an engraver. Cofounded the TGP and was a member of the LEAR. Lived in New York for several years (Quirarte, 1989).
Ángel Bracho	1911	2005	94	Mexico		Rivera; O'Higgins	Mexico	Began his career working with Rivera. Was a founding member of the LEAR and the TGP.
Eduardo Riofrío Kingman	1913	1997	84	Ecuador		Rivera	Ecuador	Was one of the greatest Ecuadorian artists, known for expressing the social realities of indigenous people.Was influenced by Rivera as well as by other artists. Painted large murals in the 1940s (Greet, 2009).
Mario Carreño Morales	1913	1999	86	Cuba; immigrated to Chile		Rivera; Siqueiros; Orozco	Cuba	Studied in Europe. Went to Spain in 1932 and then on to Mexico to study with muralists after the start of the Spanish Civil War. Immigrated to Chile, where he died. Assisted Siqueiros with a mural in Cuba in 1942 (Anreus et al., 2012).
Reuben Kadish	1913	1992	79	United States		Siqueiros	Mexico; United States	Assisted Siqueiros with his mural in Los Angeles, along with Philip Goldstein (1932). Painted a mural with Goldstein in Morelia, Mexico.
Philip Goldstein (also known as Guston)	1913	1980	67	United States		Siqueiros	Mexico, United States	Assisted Siqueiros in mural painting in Los Angeles (1932) with Reuben Kadish. Painted a mural with Kadish in Morelia, Mexico. Interacted with Rivera and Kahlo. Painted several murals as part of the Works Progress Administration in the United States.

Table 1. (continued)

Name	Birth	Death	Age of death	Origin	SEP	Source of inspiration	Location of murals	Comments
Miguel Alandia Pantoja	1914	1975	61	Bolivia		Rivera; Siqueiros; Orozco	Bolivia	Met the Mexican muralists in exile from Bolivia. Adjudicated the manifesto developed by the SOTPE. His work increased in demand with the Socialist revolution of 1952 in Bolivia.
José Raúl Anguiano Valadez	1915	2006	91	Mexico		Rivera; Siqueiros; Orozco	Mexico; United States	Painted Rivera, Orozco, and Siqueiros in a mural depicting 20th-century Mexican art at East Los Angeles College. Was a founding member of the TGP. Joined the LEAR. Exhibited around the world (Quirarte, 1989).
Fernando Castro Pacheco	1918	2013	95	Mexico		New generation of muralists	Mexico	Was best known for his murals in the State of Yucatan (1971–1979). Was a member of the TGP.
Osvaldo Guayasamín	1919	1999	80	Ecuador		Orozco	Ecuador	Traveled with Orozco through South America: Peru, Brazil, Chile, Argentina, Uruguay, and other countries. Captured the indigenous lifestyle and poverty of the region in his paintings. Was a strong supporter of the Cuban Revolution.

Liga de Escritores y Artistas Revolucionarios (League of Revolutionary Writers and Artists; LEAR) was an organization established in 1933 after the dissolution of SOTPE. It constituted the Mexican section of the International Union of Revolutionary Writers, founded in the Soviet Union in 1930. Among other political positions, their members opposed government art censorship (Anreus et al., 2012). Taller de Gráfica Popular (People's Graphic Workshop; TGP) was an organization founded in 1937 after the dissolution of LEAR; TGP was primarily concerned with using art to advance social causes

own mural-making lineages. The example involves three muralists from different generations: Diego Rivera (first), Pablo Esteban O'Higgins (second), and Ángel Bracho (third), represented by different icons. A lighter icon represents other artists assisting throughout. O'Higgins, an American artist from Salt Lake City, Utah, was one of Rivera's assistants. Vogel (2010) describes how he first arrived in Mexico in 1924 motivated by a casual invitation of Rivera and ended up becoming a renowned Mexican muralist. O'Higgins became Rivera's assistant after watching his work on the murals of the SEP headquarters for 6 months. "Pablo's job for Rivera was to grind the colors for the Secretaría [SEP] in a metate . . . . and mixed them with distilled water" (Vogel, 2010, p. 65). In Fig. 9, each circle represents a mural generated by IBCs of multiple individuals. Murals 1, 2, and 3 were painted by Rivera at the SEP headquarters. O'Higgins was likely one of his assistants. Mural 4 represents a set of murals painted by Rivera at the National Agricultural College of Chapingo in 1924, and from 1926 to 1927 (Hooze, 1993). O'Higgins also assisted Rivera in the making of those murals.

Murals 5 to 8 represent some of the murals from the O'Higgins lineage. He painted mural 5 at the Emiliano Zapata School in Mexico City (1933); mural 6 at the Abelardo L. Rodríguez market in Mexico City (1934–1936); mural 7 at the Michoacán School in Mexico City (1939–1940); and mural 8 at the Ship Scales Union in Seattle (1944–1945) (Vogel, 2010).

"Bracho began his art career working with artists such as Pablo O'Higgins and Leopoldo Méndez under the direction of Diego Rivera on the Abelardo L. Rodríguez market in Mexico City in 1935" (Ángel Bracho, n.d.). Mural 9 illustrates Bracho's lineage. He painted his first mural, *Vitamins* (1935), at the Abelardo L. Rodríguez market; mural 10, *El Agua* (1936), at the municipal palace at Tezcatlán, Oaxaca, since destroyed; mural 11, *Libertad Sindical* (1938) at the Federación Sindical (Federation of Trade Unions) in Los Mochis, Sinaloa; and mural 12, *Las Luchas Socials del Estado de Puebla* (1938), at the Teachers' College in Puebla (Ángel Bracho, n.d.).

The mural work produced in Mexico influenced the creation of murals in the United States, but their presence was little known to the public until the 1930s. It was around that time that Rivera, Siqueiros, and Orozco started getting mural commissions. Rivera also gained the patronage of wealthy American families. Other Mexican artists also went to the United States and painted murals there.[5] Some artists who participated in the SEP mural program immigrated to the United States.[6]

The Mexican presence was felt among American artists in several U.S. cities (Marling, 1982). Two examples are Philip Goldstein, also known as Guston (1913–1980), and Reuben Kadish (1913–1992), who assisted Siqueiros in creating the mural *American Tropical* in Los Angeles (1932). Later, Goldstein and Kadish painted a mural in Morelia, Mexico. In 1930, Jackson Pollock (1912–1956) visited

[5] Other Mexican artists painted murals in the United States. For instance, José Miguel Covarrubias Duclaud (1904–1957) created six mobile murals in San Francisco, assisted by Antonio M. Ruíz (1892–1964; Quirarte, 1989).

[6] Several Mexican artists who participated in the SEP mural program who ultimately immigrated to the United States included Alfredo Ramos Martínez (1871–1946; Patterson, 1964); Spanish artist Emilio García Cahero (1897–1939; Leal, 1935; Sampaio Amaro, 2004); French artist Louis Henri Jean Charlot (1898–1979), who eventually taught at the University of Hawaii and whose writings helped disseminate the Mexican muralist movement (Andrews, 2011; Lucie-Smith, 1993); and Emilio Amero (1901–1976), who eventually taught at the University of Oklahoma.

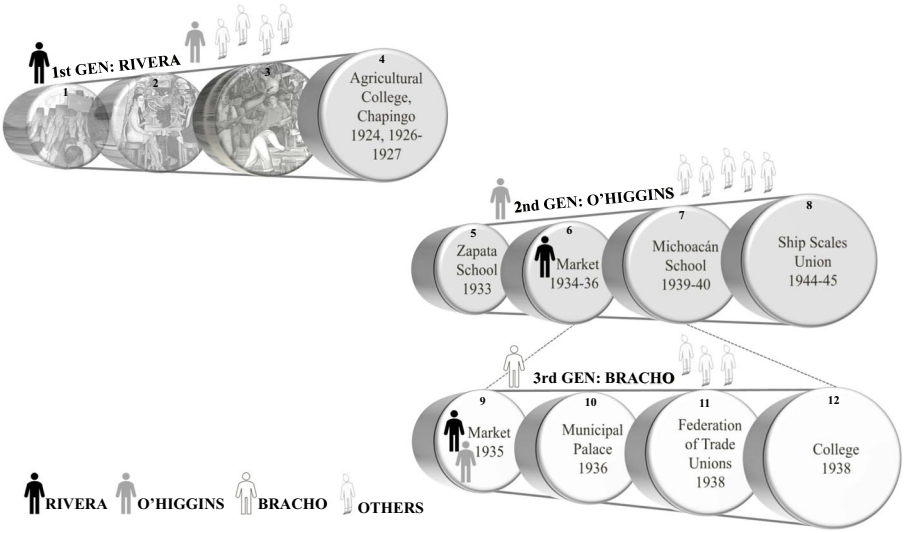

Fig. 9. Lineages of mural-making culturants involving leading artists from three generations. Elements of murals 1, 2, and 3 were extracted from Diego Rivera's murals painted at the SEP headquarters. Mural 1: *The Protest*. Retrieved from https://commons.wikimedia.org/wiki/File:SEP_Protest_Detail.JPG. Mural 2: *Dinner in the Wall Street*. Retrieved from https://commons.wikimedia.org/wiki/File:SEP_Dinner_in_the_Wall_Street.JPG. Mural 3: *In The Arsenal*. Retrieved from https://commons.wikimedia.org/wiki/File:SEP_In_the_Arsenal_2.JPG

Orozco at Pomona College, and in 1936 he attended an experimental workshop held by Siqueiros in New York City. Another example: Lithuanian-born American Ben Shahn (1898–1969) assisted Rivera at the Rockefeller Center mural (Greenfeld, 1998). Thomas Hart Benton (1889–1975) was also inspired by Mexican muralists (Alvarez, 2001; Quirarte, 1989).

Encouraged by the SEP program, a similar mural program was established in the United States as part of the economic recovery plan after the Great Depression (1929–1941). As a result, the Federal Art Project, a part of the U.S. Works Progress Administration, commissioned mural paintings from August 1935 to June 1943, generating mural-making lineages and producing more than 2,500 murals (Quirarte, 1989, p. 45) in public buildings such as post offices, government offices, and public schools.

After their success in the United States, mural painters were in high demand in Mexico and secured commissions from markets, hotels, banks, and office buildings. In addition, throughout Latin America, artists followed the Mexican tradition and used murals as a vehicle for expressing political, social, and cultural concerns at times of increasing agitation for social justice.[7]

In conclusion, metacontingencies specify functional relations between the selecting environment and the repetition of culturants over time. During the SEP

[7] Other muralists in Latin America included Antonio Berni (1905–1981) in Argentina; Miguel Alandia Pantoja (1914–1975) in Bolivia; Cándido Portinari (1903–1962; Colar, 2010) in Brazil; Cuban-born Mario Carreño Morales (1913–1999; Anreus et al., 2012) in Chile; Pedro Nel Gómez Agudelo (1899–1984) and Santiago Martínez Delgado (1906–1954) in Colombia; Eduardo Riofrío Kingman (1913–1997; Greet, 2009) and Osvaldo Guayasamín (1919–1999) in Ecuador; and José Sabogal (1888–1956; Sabogal, n.d.-a, n.d.-b; Lucie-Smith, 1993) in Peru.

program, groups of individuals worked in concert on the same mural for long periods—an occurrence that favored the transmission of repertoires. The program produced a lively mission, a body of different mural styles, a compilation of skilled muralists, and an incomparable legacy of revolutionary and socially charged murals—all of which survived the test of time.

The SEP mural program ended with Vasconcelos's resignation as minister of education. He moved on as a writer, philosopher, and politician. Dr. Atl engaged in other artistic endeavors and did not pursue mural painting. However, he joined the "great three" on the National Institute of Fine Arts' Commission for Mural Painting, created in 1947 to protect frescoes and other art under censorship threat, and to stimulate and regulate the production of Mexican murals (Rodriguez, 1947). The "great three" painted murals for the rest of their lives. They worked with other artists, who, in turn, worked with and influenced still others.

In the always-evolving context surrounding various mural-making metacontingencies, new opportunities emerged. Lineages of mural-making metacontingencies were established in various ways, one of which was illustrated in Fig. 9; however, other events and circumstances might have given rise to mural programs in other countries. New patrons came along in Mexico and other countries, giving rise to a movement of mural making as a means to express sociopolitical and historical aspects of different cultures.

Unique and Nonrecurring Interlocking Behavior

Many significant cultural endeavors involve interlocked behavior of individuals that does not reoccur over time. Connections that are often fortuitous could be critical, such as the way the major players interacted at different times and in different places, influenced each other, and altered their repertoires and subsequent events, sometimes in unpredictable ways. Rivera and Vasconcelos were childhood friends. Each took a different path and reconnected in Europe at a time when Vasconcelos was a politician and Rivera an established artist. Rivera and Siqueiros met in Paris and enriched each other. Siqueiros brought his revolutionary experience; Rivera, his expertise in contemporary art. Dr. Atl met Orozco in Guadalajara and Rivera and Siqueiros at the Academy of San Carlos. Dr. Atl also interacted with Vasconcelos and Rivera in Europe. The major players engaged in different projects for diverse reasons on various occasions during their lives. They intermingled with other relevant artists, politicians, and intellectuals. Some of those connections led to mural work and other opportunities in Mexico and abroad.

The "great three" were rebellious intellectuals, and they acquired a worldly perspective by traveling and living outside of Mexico. They became famous by the time they died, and all are buried in the Rotunda of Illustrious Persons of Mexico, with the exception of Vasconcelos, who, as noted above, requested to be buried elsewhere. Their actions and those of others involved in the start of the mural program and the subsequent transformation into a mural movement were influenced by the context in which they lived. At first, the murals served as voices to express the rich cultural heritage of Mexico, suppressed by the 35-year Díaz dictatorship; the struggles of the Mexican people; and the possibilities for a new society based on communist ideals.

After the SEP mural program ended, the Mexican government supported several touring exhibitions of Mexican art in Europe, South America, and the

United States. For example, an exhibit at the Metropolitan Museum of Art in New York that centered on the muralists traveled to seven other American cities. In the United States, only a few articles and books about Mexican art were published in the 1920s, but the number of publications increased in the following decade. Although the Mexican muralists differed in style, American art critics perceived them as a homogeneous group (Quirarte, 1989, p. 17). Mostly positive reviews appeared in art publications and newspapers, including *The New York Times* and national magazines.

A mural program was established in the United States, inspired by the SEP mural program, also because of unique, nonrecurring events. In the 1930s, George Biddle (1885–1973), an American artist who had met Rivera in Europe, wrote a letter to his close friend, Franklin Delano Roosevelt (1882–1945), referring to the success of the SEP mural program. He suggested to the president that a similar mural initiative be established in the United States as part of the economic recovery plan from the Great Depression. Roosevelt approved and the initiative was launched.

How did the SEP program constitute a cultural cusp that transformed into a movement? This was a result, in part, of a web of nonrecurring, interlocking behavior of individuals with common values who were influenced by their individual histories and the context in which they lived. These fortuitous interactions coalesced with the recurring IBCs of mural making, leaving a large and meaningful body of frescoes that furthered other cultural change.

Conclusions

In this article I described how five individuals brought about a cultural cusp that ended in a muralist movement. They contributed to the creation of a 3-year mural program, which led to a movement that lasted about 35 years in Mexico and is relevant until this day (Goldman, 1982). The program influenced the propagation of socially focused murals in the United States and in Latin America.

There were several factors that influenced the transformation of the SEP mural program into a movement that reached Mexico and other countries. First, the murals exerted different stimulus functions. For instance, many muralists saw the frescoes as an expression of their communist values, not only because of the messages the murals portrayed, but also because they were created for the public, and not for private owners. Some of the most influential Mexican muralists were committed to carry these values through their work and inspired others to follow similar paths. Second, some muralists acquired skills in the process of working with others and developed their own lineages of mural-making culturants. Others started mural lineages for other reasons influenced by their context. Third, the large body of work produced in the program imparted statements of a unique social movement through public art and was promoted through exhibits, media, and publications. Fourth, another government-sponsored mural program was developed in the United States, inspired by the SEP mural program, generating a large body of murals. Finally, private patrons also became interested in contracting muralists to adorn their private walls.

The involvement of Dr. Atl, Vasconcelos, Rivera, Siqueiros, and Orozco illustrates how cultural accomplishments can result from the contributions of a few individuals. In

fact, accomplishments rarely are singly achieved (Gladwell, 2002, 2008; Isaacson, 2009, 2010, 2014; Isaacson & Thomas, 1986; Malott, 2016a).

I described two components of cultural cusps that characterized the SEP mural program. The first was recurring behavioral contingencies of mural making. Individual behavioral contingencies are part of IBCs. However, I focused on the selection of IBCs rather than of individual behavior because mural production necessitated the collaborative work of several players. In this case, concentrating on individual behavior would be impractical and distracting. The selection of IBCs was explained within the metacontingencies framework. Vasconcelos established contingent relations between mural-making IBCs and remuneration plus feedback. Several artists worked in concert on the same mural over time, producing sections of frescoes until they were completed. Some participants moved on and became part of other mural-making metacontingencies during the program, facilitating the transmission of skills and values to other artists (Glenn & Madden, 1995; Glenn & Malagodi, 1991). After the program ended, the murals left behind inspired others. Contingent relations for mural making were established by new selection environments and IBCs in the United States, Mexico, and Latin American countries.

Much has been written in recent years about metacontingencies (Bohrer & Ellis, 1998; Franceschini, Samelo, Xavier, & Hunziker, 2011; Glenn, 1988, 1991, 2004; Glenn & Malott, 2004; Houmanfar & Rodrigues, 2006; Houmanfar, Rodrigues, & Ward, 2010; Malott, 2003, 2016b, 2018; Malott & Glenn, 2006; Marques & Tourinho, 2015; Mesoudi & Whiten, 2008; Reimer & Houmanfar, 2017; Sandaker, 2009, 2010; Todorov, 2004, 2006, 2013; Todorov, Moreira, & Moreira, 2004; Tourinho, 2013; Tourinho, Glenn, & Borba, 2014; Tourinho & Vichi, 2012). Experimental studies on metacontingencies have also been conducted (e.g., Ortu, Becker, Woelz, & Glenn, 2012; Sampaio et al., 2013; Smith, Houmanfar, & Louis, 2011; Soares et al., 2018; Tadaiesky & Tourinho, 2012; Vasconcelos & Todorov, 2015). Yet there is skepticism regarding the utility of the concept within the field of behavior analysis (Krispin, 2016, 2017; Marr, 2006; Mattaini, 2004a, 2004b; Zilio, 2019) that should be carefully addressed; doing so goes beyond the scope of this article. It should be noted that metacontingencies are not the only unit of analysis relevant in cultural phenomena. Yet, the concept is helpful in studying phenomena that result in products requiring lineages of cooperative work of several individuals.

The second component of a cultural cusp described was unique and nonrecurring interlocking behavior. Webs of metacontingencies were not established at random. Unique relations, one-time connections, and both planned and fortuitous events gave rise to opportunities and developments that led to the SEP mural program, as well as to subsequent mural initiatives. Unfortunately, unique, nonrecurring interactions get ignored in behavioral accounts of cultural phenomena, even though they are essential components.

I attempted to illustrate how the individual histories and values of the main players came to influence the course of events by elaborating on their character and life trajectories. Their actions were also profoundly affected by the context in which they lived, as well as selection contingencies established by different organizations in which some participated. Analysis of the roles of contextual variables and organizations in the emergence of the Mexican muralist movement, though important, was not the focus of this article.

Many programs come and go but do not leave much behind, whereas others do. The transformation of the SEP program into a movement offers some perspective on elements of success for initiatives of change. There were several factors that contributed to the program's achievements:

Determination of core values. The participants in the SEP program were united in their values. They followed communist ideals. They saw public art as a conduit to educate the public about the sociocultural realities of Mexico. Mural painting was attractive because it exemplified the very thing the artist depicted: a group of workers cooperating to produce something for a larger community. In addition, they believed that their work should be original, and not a copy of European art. Values brought artists together for a cause and were essential ingredients. (For relevance of values in behavioral change, see Biglan, 2009a, 2009b, 2015; Houmanfar, Alavosius, Morford, Herbst, & Reimer, 2015.)

Availability of substantial financial resources. The government allocated significant funding to the SEP mural program. Without those resources, the program would have not been able to attract and sustain the participation of reputable Mexican artists. The production of murals involved IBCs of a group of workers, but they could not have recurred in the absence of substantial funding as selector of the IBCs. Dr. Atl attempted a mural program earlier with his students, but it did not survive. His attempt took place at the beginning of the Mexican civil war, which limited the allocation of resources and prioritization of this initiative. His failure to establish the program points to the relevance of cultural selectors maintaining culturants.

Selection of the best human resources available. The program recruited the best artists of the times. Several of them had been trained overseas and were well established. They invested tremendous energy and commitment. Their involvement brought attention to the program and the murals.

Establishment of nurturing environments. The program involved an enriching environment where artists collaborated for sustained periods and produced innovative murals. Such an environment proved essential for transmission of repertories in both core values and mural-making skills. Artists from the SEP mural program moved on and participated in new environments that helped and inspired other mural initiatives.

Positive dissemination. Favorable publicity of the SEP program frescoes and the Mexican muralists inspired the creation of a mural initiative in the United States during the Great Depression. Governmental agencies, private businesses, and individual citizens began commissioning murals and hiring Mexican muralists and other artists, increasing demand in the United States and Latin America.

The type of complex cultural phenomena described in this article occurs often in society, and it could be analyzed as a cultural cusp. An example was the creation of the U.S. Declaration of Independence, which led to many significant developments in the United States and the world (Glenn et al., 2016). Another was the formation of NATO, which had a tremendous impact in the Cold War between the Western Block led by the United States and the Eastern Block led by the Soviet Union (Malott, 2016a). Like the Mexican muralism, these examples involved the

coalescence of metacontingencies with convoluted, nonrecurrent interactions that had ups and downs and took twists and turns.

Some behavior analysts feel uneasy using new concepts beyond individual behavioral contingencies to explain cultural phenomena. However, the existing behavioral terminology comes up short in explaining the type of phenomena described in this article, and new concepts are needed (Killeen, 2018). Others feel uncomfortable about arriving at conclusions without involving experimental manipulation, even though experimental work on metacontingency is ongoing. Nevertheless, more studies are needed that explore complex cultural phenomena (Biglan, 2016) outside the experimental chambers; in many cases, society itself is the only laboratory (Dixon, Belisle, Rehfeldt, & Root, 2018; Todorov, 2006). Some examples include analyses of complex sociopolitical phenomena, such as the Soviet Union reforms involved in Perestroika (Lamal, 1991; Rakos, 1991) and legislative processes affecting the well-being of people in specific societies or segments (Araújo, De Melo, & Haydu, 2015; Cabral & Todorov, 2015; Forero, García, Silva, & López-López, 2012; Todorov, 1987, 2005). Other examples include exploration of specific organizations (Malott, 2016b), industries (e.g., food, Brown & Houmanfar, 2014), or economic sectors (Bohrer & Ellis, 1998); specific groups in society (e.g., Mormon settlement, Norton, 2001); traditional festivals (e.g., Saint John's in Brazil, Neves, 2017); or particular social practices (e.g., piracy in Somalia, Ward, 2009; martyrdom in religion, Houmanfar & Ward, 2012).

It is my hope that the major elements of success of the SEP mural program are considered when planning change initiatives. In addition, I wish to encourage others to undertake further analyses and research on other cultural cusps and complex cultural phenomena.

References

Aguilar-Moreno, M., & Cabrera, E. (2011). *Diego Rivera: A biography*. Santa Barbara, CA: Greenwood.

Alcántara, I., & Egnolff, S. (2011). *Frida Kahlo and Diego Rivera*. New York, NY: Prestel Verlag.

Alvarez, L. (2001, April 26). *The influence of the Mexican muralists in the United States*. (Master's thesis). Retrieved from http://scholar.lib.vt.edu/theses/available/etd-05092001-130514/unrestricted/thesis.pdf

Amador, F. (2017, December 16). Biografía de David Alfaro Siqueiros. Arte y revolución [Biography of David Alfaro Siqueiros. Art and revolution] [Video file]. *Grandes Figuras del Arte Mexicano, Canal 22* Mexico. Retrieved from https://www.youtube.com/watch?v=UUgvh6KNZ54

Andrews, L. (2011). *Weston and Charlot: Art and friendship*. Lincoln, NE: University of Nebraska Press.

Anreus, A. (2012). Los tres grandes: Ideologies and styles. In A. Anreus, L. Folgarait, & R. A. Greeley (Eds.), *Mexican muralism: A critical history* (pp. 37–55). Berkeley, CA: University of California Press.

Anreus, A., Barnet-Sanchez, H., & Campbell, B. (2012). Cronology. In A. Anreus, R. A. Greeley, & L. Folgarait (Eds.), *Mexican muralism: A critical history* (pp. 283–317). Berkeley, CA: University of California Press.

Araújo, V., De Melo, C. M., & Haydu, V. (2015). Código penal brasileiro como descrição de prática cultural: Uma análise comportamental de contingências e metacontingências [Brazilian penal code as description of a cultural practice: A behavioral analysis of contingencies and metacontingencies]. *Revista Brasileira de Análise do Comportamento, 11*(2), 147–156. https://doi.org/10.18542/rebac.v11i2.1943.

Autry Museum of the American West (2011, October 25). *Timeline: David Alfaro Siqueiros: Artistic & political history. Legacy & Legend Productions*. Retrieved from https://legacyandlegend.wordpress.com/inf/timeline/

Becker, H. (2002). *Art for the people: The rediscovery and preservation of progressive and WPA-era murals in the Chicago public schools, 1904–1943*. San Francisco, CA: Chronicle Books.

Biglan, A. (2009a). Increasing psychological flexibility to influence cultural evolution. *Behavior & Social Issues, 18*, 15–24.

Biglan, A. (2009b). The role of advocacy organizations in reducing negative externalities. *Journal of Organizational Behavior Management, 29*(3–4), 215–230 https://www.tandfonline.com/doi/abs/10.1080/01608060903092086.

Biglan, A. (2015). *The nurture effect*. Oakland, CA: New Harbinger.

Biglan, A. (2016). The need for a more effective science of cultural practices. *The Behavior Analyst, 39*(1), 97–107. https://doi.org/10.1007/s40614-016-0051-z.

Blaisten, C. (n.d.). *Manuel Rodríguez Lozano, 1896–1971*. Retrieved from http://museoblaisten.com/Artista/401/Manuel-Rodriguez-Lozano

Bohrer, K., & Ellis, J. (1998). Analysis of contingencies and metacontingencies in a private sector workplace. *Behavior & Social Issues, 8*, 41–52. https://doi.org/10.5210/bsi.v8i1.319.

Bracho, Á. (n.d.). In *Wikipedia*. Retrieved April 16, 2019, from https://en.wikipedia.org/wiki/%C3%81ngel_Bracho

Brenner, A. (2002). *Idols behind altars: Modern Mexican art and its cultural roots*. New York, NY: Payson & Clark.

Brenson, M. (1991, June 25). Rufino Tamayo, a leader in Mexican art, dies at 91. *The New York Times*. Retrieved from https://www.nytimes.com/1991/06/25/obituaries/rufino-tamayo-a-leader-in-mexican-art-dies-at-91.html

Brown, L., & Houmanfar, R. (2014). The cost of affluence: A closer look at the food industry. *Behavior & Social Issues, 24*, 4–22. https://doi.org/10.5210/bsi.v24i0.4946.

Bryan, A. T. (1976, August). Political power in Porfirio Diaz's Mexico: A review and commentary. *The Historian, 38*(4), 648–668.

Burton, T. (1998). Dr. Atl and the revolution in Mexico's art. *Mexconnect*. Retrieved from http://www.mexconnect.com/articles/1205-dr-atl-and-the-revolution-in-mexico-s-art.

Cabral, M., & Todorov, J. C. (2015). Contingências e metacontingências no processo legislativo da lei sobre a remição da pena pelo estudo [Contingencies and metacontingencies in a law on diminishing time in prison through education]. *Revista Brasileira de Análise do Comportamento, 11*(2), 195–202. https://doi.org/10.18542/rebac.v11i2.4013.

Capek, M. (1996). *Murals: Cave, cathedral, to street*. Minneapolis, MN: Learner Publications.

Carpenter, E. (Ed.). (2007). *Frida Kahlo*. Minneapolis, MN: Walker Art Center.

Carr, S. (2013). Mexico's academy of San Carlos: How a school of art helped to build a nation. The Schiller Institute. Retrieved from https://archive.schillerinstitute.com/educ/hist/2013/academy_of_san_carlos.html

Chamber, N. (Ed.). (2016). *Frida Kahlo and Diego Rivera: From the Jacques and Natasha Gelman Collection [Exhibition Catalogue]*. New York, NY: Skira Rizzoli.

Charlot, J. (1962). *Mexican Art and the Academy of San Carlos (1785–1915)*. Austin, TX: University of Texas Press.

Cockcroft, E. (1989). The United States and socially concerned Latin American Art. Mexican and Mexican American Artists: 1920–1970. In L. R. Cancel (Ed.), *The Latin American Spirit: Art and Artists in the United States, 1920–1970* (pp. 184–221). The Bronx Museum of the Arts. New York, NY: Harry N. Abrams.

Colar, D. (2010). *Portinari & Rivera: Dois artistas; Um objetivo* [Portinari & Rivera: Two artists; one objective]. UNIFATEA. University Center Teresa D'Avila. Retrieved from https://slidex.tips/download/artes-portinari-rivera-dois-artistas-um-objetivo-denise-colar.

Coronel Rivera, J. R., Pliego, R., & Zavala, M. (2007). *Diego Rivera illustrious words: 1886–1921*. Mexico D.F.: Editorial RM.

Coyle, L., & Tejada-Flores, R. (Directors). (2007). "Orozco: Man of fire" [Video file]. *PBS American Masters Film*. Retrieved from https://www.youtube.com/watch?v=h6qplBcL_Cg.

Craven, D. (2006). *From art and revolution in Latin America, 1910–1990* (2nd ed.). New Haven, CT: Yale University Press.

de Conde, T. (1999). The words of others. In T. de Conde (Ed.), *Tamayo* (pp. 86–127). Boston, MA: Little, Brown & Company.

de Cortanze, G. (2015). *Frida Kahlo: The Gisele Freund photographs*. New York, NY: Abrams.

de la Rosa, N. (2014). Vida Americana, 1919-1921. Redes conceptuales en torno a un proyecto trans-continental de vanguardia [American Life, 1919-1921. Conceptual networks around a cutting-edge trans-continental project]. *Artl@s Bulletin, 3*(2), 22–35. Retrieved from https://docs.lib.purdue.edu/cgi/viewcontent.cgi?article=1045&context=artlas.

de la Vega, M. (1993). La "reposicion" de los murales de Atl en San Pedro y San Pablo, para un filme sobre Nahui Olin, desempolva su misteriosa destruccion [The "reposition" of the murals of Atl in San Pedro and San Pablo, for a film about Nahui Olin, clarify its mysterious destruction]. *Proceso.com.* Retrieved from https://www.proceso.com.mx/163985/la-reposicion-de-los-murales-de-atl-en-san-pedro-y-san-pablo-para-un-filme-sobre-nahui-olin-desempolva-su-misteriosa-destruccion

del Barco, M. (2010, October 26). Revolutionary mural to return to L.A. after 80 years. *National Public Radio.* Retrieved from http://www.npr.org/templates/story/story.php?storyId=130519329

Dixon, M. R., Belisle, J., Rehfeldt, R. A., & Root, W. B. (2018). Why we are still not acting to save the world: The upward challenge of a post-Skinnerian behavior science. *Perspectives on Behavior Science, 41*(1), 241–267. https://doi.org/10.1007/s40614-018-0162-9.

Downs, L. B. (1999). *Diego Rivera: The Detroit industry murals*. Detroit, MI: Detroit Institute of Arts Founders Society.

Enciso, J. (1971). *Designs from pre-Columbian Mexico*. New York, NY: Dover.

Espejo, B. (1994). *Dr. Alt: El paisaje como pasión* [Dr. Atl: The landscape as passion]. Coyoacán, Mexico: Fondo Editorial de la Plástica Mexicana.

Espinoza, A. (1992). *Four decades after the Muralists* [Exhibition Catalogue]. Mexico City, Mexico: Kimberly Gallery of Art.

Fierro, A. (2017). *Doctor Atl's Olinka*. Berkeley, CA: Berkeley Center for Latin American Studies, University of California, Berkeley, Clasberkely Retrieved from https://clasberkeley.wordpress.com/2017/07/14/doctor-atls-olinka/.

Forero, D. D. R., García, D. A., Silva, L. M., & López-López. (2012). Análisis metacontingencial de la ley de "justicia y paz" (975 de 2005) en Colombia [Metacontingency analysis of the "justice and peace" law (975 from 2005) in Colombia]. *Revista Latinoamericana de Psicología, 44*(1), 149–157.

Founders Society Detroit Institute of Arts (FSDIA). (1986). *Diego Rivera: A retrospective*. Markham, Canada: Penguin Books.

Franceschini, A. C., Samelo, M. J., Xavier, R. N., & Hunziker, M. H. (2011). Effects of consequences on patterns of interlocked contingencies: A replication of a metacontingency experiment. *Revista Latinoamericana de Psicología, 44*(1), 87–95.

Fuentes, Y. (2015, Fall). The Mexico of my father. *Berkeley Review of Latin American Studies.* Retrieved from https://clas.berkeley.edu/research/art-mexico-my-father

George, H. S. (Ed.). (2005). *Mexican masters: Rivera, Orozco, and Siqueiros, selections from the Museo De Arte Carrillo* Gil. [Exhibition Catalogue]. Oklahoma City: Oklahoma City Museum of Art.

Gladwell, M. (2002). *The tipping point*. New York, NY: Black Bay.

Gladwell, M. (2008). *Outliers: The story of success*. New York, NY: Little, Brown & Company.

Glenn, S. S. (1988). Contingencies and metacontingencies: Toward a synthesis of behavior analysis and cultural materialism. *The Behavior Analyst, 11*(2), 161–179.

Glenn, S. S. (1991). Contingencies and metacontingencies: Relations among behavioral, cultural, and biological evolution. In P. A. Lamal (Ed.), *Behavioral Analysis of Societies and Cultural Practices* (pp. 39–73). New York, NY: Praeger.

Glenn, S. S. (2004). Individual behavior, culture, and social change. *The Behavior Analyst, 27*(2), 133–151.

Glenn, S. S., & Madden, G. J. (1995). Units of interaction, evolution, and replication: Organic and behavioral parallels. *The Behavior Analyst, 18*(2), 237–251.

Glenn, S. S., & Malagodi, E. F. (1991). Process and content in behavioral and cultural phenomena. *Behavior & Social Issues, 1*(2), 1–14.

Glenn, S. S., & Malott, M. E. (2004). Complexity and selection: Implications for organizational change. *Behavior & Social Issues, 13*, 89–106. https://doi.org/10.5210/bsi.v13i2.378.

Glenn, S. S., Malott, M. E., Andery Benvenuti, M., Houmanfar R., Sandaker, I., Todorov, J. C., . . . Vasconcelos, L. (2016). Toward consistent terminology in a behaviorist approach to cultural analysis. *Behavior & Social Issues, 25,* 11–17. https://doi.org/10.5210/bsi.v25i0.6634

Goldman, S. M. (1982). Mexican muralism: Its social-educative roles in Latin America and the United States. *International Journal of Chicano Studies Research, 13*(1–2), 111–133.

Gonzalez, M. J. (Ed.). (2002). *The Mexican Revolution, 1910–1940*. Albuquerque, NM: University of New Mexico Press.

Greenfeld, H. (1998). *Ben Shahn: An artist's life* [Kindle ed.]. Lexington, Massachusetts: Plunkett Lake Press.

Greet, M. (2009). *Beyond national identity: Pictorial indigenism as a modernist strategy in Andean art, 1920–1960 (refiguring modernism)*. University Park, PA: Pennsylvania State University Press.

Grimberg, S. (1997). *Frida Kahlo*. Greenwich, CT: Brompton Books.

Grimberg, S. (2004). *I will never forget you . . . Frida Kahlo & Mickolas Muray: A love story*. Munich, Germany: Schirmer/Mosel.

Gutiérrez López, M. A. (2007). La obra mural de Alfredo Salze en el Museo Regional Michoacano [La obra mural de Alfredo Salze en el Museo Regional Michoacano]. *Revista de Estudios Históricos, 46*, 129–144. Retrieved from https://dialnet.unirioja.es/descarga/articulo/3230571.pdf.

Helm, M. (1989). *Mexican painters: Rivera, Orozco, Siqueiros, and other artists of the Social Realist School* [Kindle ed.]. (Original work published 1941. New York, NY: Harper & Brothers.)

Hernandez-Duran, R. (2016). *The Academy of San Carlos and Mexican art history: Politics, history, and art in nineteenth-century Mexico*. New York, NY: Routledge.

Herrera, H. (1983). *Frida*. New York, NY: HarperCollins.

Herrera, H. (1990, November 16). *Jose Clemente Orozco and Diego Rivera: The murals* (Unpublished lecture, Metropolitan Museum of Art). Retrieved from http://www.mexconnect.com/articles/1085-jose-clemente-orozco-and-diego-rivera-the-murals

Herrera, H. (1991). *Frida Kahlo: The paintings*. New York, NY: HarperCollins.

Hill, C. (2005). *Mexican masters: Rivera, Orozco, and Siqueiros: Selections from the Museo de Arte Carrillo Gil.* Oklahoma City: Oklahoma City Museum of Art.

Hooks, M. (2002). *Frida Kahlo: Portraits of an icon*. Madrid, Spain: Turner.

Hooze, R. (Curator) (1993). *The Mexican muralists* [Exhibition catalogue]. Ghent, Belgium: Museum voor Schone Kunsten.

Houmanfar, R., & Rodrigues, N. J. (2006). The metacontingency and the behavioral contingency: Points of contact and departure. *Behavior & Social Issues, 15*, 13–30.

Houmanfar, R., & Ward, T. (2012). An interdisciplinary account of martyrdom as a religious practice. *Revista Latinoamericana de Psicología, 44*(1), 65–75.

Houmanfar, R. A., Alavosius, M. P., Morford, Z. H., Herbst, S. A., & Reimer, R. (2015). Functions of organizational leaders in cultural change: Financial and social well-being. *Journal of Organizational Behavior Management, 35*, 4–27.

Houmanfar, R. A., Rodrigues, N. J., & Ward, T. A. (2010). Emergence & metacontingency: Points of contact and departure. *Behavior & Social Issues, 19*, 78–103. https://doi.org/10.5210/bsi.v19i0.3065.

Hunter, C. S. (2012). Analyzing behavioral and cultural selection contingencies. *Revista Lationomericana de Psicología, 44*(1), 43–54.

Hurlburt, L. P. (1991). *The Mexican muralists in the United States*. Albuquerque, NM: University of New Mexico (Original work published 1937.).

Indych-López, A. (2009). *Muralism without walls: Rivera, Orozco, and Siqueiros in the United States, 1927–1940*. Pittsburgh, PA: University of Pittsburgh Press.

Isaacson, W. (2009). *American sketches: Great leaders, creative thinkers, and heroes of a hurricane*. New York, NY: Simon & Schuster.

Isaacson, W. (2010). *Profiles in leadership: Historians on the elusive quality of greatness*. New York, NY: W. W. Norton.

Isaacson, W. (2014). *The innovators: How a group of hackers, geniuses, and geeks created the digital revolution*. New York, NY: Simon & Schuster.

Isaacson, W., & Thomas, E. (1986). *The wise men: Six friends and the world they made*. New York, NY: Simon & Schuster.

José Clemente Orozco: Cronograma [José Clemente Orozco: Timeline]. (n.d.). *American Masters*. Retrieved from http://www.pbs.org/wnet/americanmasters/database/orozco_j_timeline_es.html

José Clemente Orozco: Mexican cartoonist, printmaker, painter, and muralist. (n.d.). The Art Story: Modern Art Insight. Retrieved from https://www.theartstory.org/artist-orozco-jose-clemente.htm

José Vasconcelos Manuscripts, 1935–1939. (n.d.). *Benson Latin American Collection, General Libraries.* Austin, TX: University of Texas. Retrieved from https://legacy.lib.utexas.edu/taro/utlac/00061/lac-00061.html#did

Killeen, P. R. (2018). The future of experimental analysis of behavior. In A. Poling, D. A. Lundervold, A. Li, & A. Mahoney (Eds.), *Behavior analysis: Research and Practice, 2* (pp. 124–133). https://doi.org/10.1037/bar0000100.

Koffey, M. K. (2012). *How a revolutionary art became official culture* [Kindle ed.]. Durham, NC: Duke University Press.

Krispin, J. V. (2016). What is the metacontingency? Deconstructing claims of emergence and cultural-level selection. *Behavior & Social Issues, 25*, 28–41.

Krispin, J. V. (2017). Positive feedback loops of metacontingencies: A new conceptualization of cultural-level selection. *Behavior & Social Issues, 26*, 95–110.

Lamal, P. A. (1991). Three metacontingencies in the pre-perestroika Soviet Union. *Behavior & Social Issues, 1*(1), 75–90. https://doi.org/10.5210/bsi.v1i1.191.

Lara Elizondo, L. (2001). Cincuenta años, cicuenta artistas [Fifty years, fifty artists]. In L. Lara Elizondo (Ed.), *Visión the México y sus Artistas: Siglo XX (1901–1950)* (2nd ed.; pp. 71–271). Mexico City, Mexico: Quálitas Compañía de Seguros.

Leal, F. (1935, January 20). "Los frescos de García Cahero en el Paso E.U." ["The frescoes of García Cahero in the Paso E.U."]. *El Nacional: Diario popular (Mexico City)*. Retrieved from http://icaadocs.mfah.org/icaadocs/ELARCHIVO/RegistroCompleto/tabid/99/doc/753021/language/es-MX/Default.aspx

Lee, A. W. (1999). *Painting on the left*. San Francisco, CA: University of California Press.

López Rivera, D. (Producer), & Figueroa Flores, G. (Director). (2007). *Diego Rivera, un artista en la encrucijada* [Diego Rivera, an artist at the crossroads] [DVD, Video file]. Mexico City, Mexico: Instituto Mexicano de Cinematografía.

Lowe, S. M. (1995). *Frida Kahlo: An intimate self-portrait*. New York, NY: Harry N. Abrams.

Lucie-Smith, E. (1993). *Latin American art of the 20th Century*. London, UK: Thames & Hudson.

Luna Arroyo, A. (1992). *Dr. Atl*. Barcelona, Spain: Editorial Salvat.

Malott, M. E. (2003). *Paradox of organizational change: Engineering organizations with behavioral systems analysis*. Reno, NV: Context Press.

Malott, M. E. (2016a). What studying leadership can teach us about the science of behavior. *The Behavior Analyst, 39*(1), 47–74. https://doi.org/10.1007/s40614-015-0049-y.

Malott, M. E. (2016b). Selection of business practices in the midst of evolving complexity. *Journal of Organizational Behavior Management, 36*(23), 103–122. https://doi.org/10.1080/01608061.2016.1200511.

Malott, M. E. (2018). What influences audience response to figure painting? *The Psychological Record, 68*(3), 331–341. https://doi.org/10.1007/s40732-018-0313-0.

Malott, M. E., & Glenn, S. S. (2006). Targets of intervention in cultural and behavioral change. *Behavior & Social Issues, 15*(1), 31–56. https://doi.org/10.5210/bsi.v15i1.344.

Manrique, J. A. (1989). *Los murales de Orozco* [The Orozco murals]. Mexico City, Mexico: Nacional Financiera y Fondo Editorial de la Plástica Mexicana.

Manuel Rodríguez Lozano. (n.d.). *Wikipedia*. Retrieved December 26, 2018, from https://en.wikipedia.org/w/index.php?title=Manuel_Rodr%C3%ADguez_Lozano&oldid=821684013

Marling, K. A. (1982). *Wall-to-wall America: A cultural history of post-office murals in the Great Depression*. Minneapolis, MN: University of Minnesota Press.

Marques, N. S., & Tourinho, E. Z. (2015). The selection of cultural units by non-contingent cultural events. *Behavior & Social Issues, 24*, 126–140. https://doi.org/10.5210/bsi.v24i0.4283.

Marr, M. J. (2006). Behavior analysis and social dynamics: Some questions and concerns. *Behavior & Social Issues, 15*, 57–67.

Mattaini, M. A. (2004a). Systems, metacontingencies, and cultural analysis: Are we there yet? *Behavior & Social Issues, 13*, 124–130.

Mattaini, M. A. (2004b). Editorial: Toward a natural science of cultural analysis. *Behavior & Social Issues, 13*, 85–88.

Mesoudi, A., & Whiten, A. (2008). The multiple roles of cultural transmission experiments in understanding human cultural evolution. *Philosophical Transactions of the Royal Society, 363*, 3489–3501. https://doi.org/10.1098/rstb.2008.0129.

Michel, A. (2013). *Frida Kahlo: The Giséle Freund photographs*. New York, NY: Abrams.

Montenegro, R. (n.d.). *Wikipedia*. Retrieved December 26, 2018, from https://en.wikipedia.org/w/index.php?title=Roberto_Montenegro&oldid=810706741

Moyseén, X. (1970). Mexican painting in the Museum of Modern Art. *Artes de México, 127*, 18–104 Retrieved from https://www.jstor.org/stable/24316022.

Mujica, B. (2002). *Frida*. New York, NY: Penguin Books.

Myers, B. S. (1956). *Mexican painting in our time*. New York, NY: Oxford University Press.

Neves, A. J. (2017). Uma interpretação analítico-comportamental de aspectos culturais e simbólicos da fogueira de São João [A behavioral-analytic interpretation of cultural and symbolic aspects of Saint John's bonfire]. *Perspectivas em Análise do Comportamento, 8*(1), 79–96. https://doi.org/10.18761/pac.2016.035.

Norton, W. (2001). Following rules in the intermontane west: 19th-century Mormon settlement. *The Behavior Analyst, 24*(1), 57–73. https://doi.org/10.1007/BF03392019.

Orozco, J. C. (1945). *Autobiografía de José Clemente Orozco* [Kindle ed.]. Mexico City, Mexico: Ediciones Era.

Ortu, D., Becker, A., Woelz, T. A. R., & Glenn, S. S. (2012). An iterated four-player prisoner's dilemma game with an external selecting agent: A metacontingency experiment. *Revista Latinoamericano de Psicología, 44*(1), 111–120.

Patenaude, B. M. (2009). *Trotsky: Downfall of a revolutionary* [Kindle ed.]. New York, NY: HarperCollins.

Patterson, R. H. (1964). An art in revolution: Antecedents of Mexican mural painting, 1900–1920. *Journal of Inter-American Studies, 6*(3), 377–387.

Paz, O., & Lassaigne, J. (1995). *Rufino Tamayo*. Barcelona, Spain: Ediciones Polígrafa.

Pereda, J. C., & Sánchez Fuentes, M. (1995). *Los Murales de Tamayo* [The Murals of Tamayo]. Mexico City, Mexico: Américo Arte Editores.

Pérez Rosales, L. (2001). Trayectoria del arte Mexicano [Trajectory of Mexican art]. In L. L. Elizondo (Ed.), *Visión the México y sus Artistas: Siglo XX, 1901–1950* (2nd ed., pp. 43–70). Mexico City, Mexico: Quálitas Compañía de Seguros.

Poundstone, W. (2016). The fight that broke apart Cubism. *Los Angeles County Museum on Fire*. Retrieved from http://lacmaonfire.blogspot.com/2016/12/the-fight-that-broke-apart-cubism.html.

Prison paintings of Siqueiros draw leftists and art lovers. (1964, September 3). *The New York Times Archives*, 82. Retrieved from https://spiderbites.nytimes.com/1964/articles_1964_09_00005.html/.

Quirarte, J. (1989). Mexican and Mexican American artists, 1920–1970. In *The Latin American spirit: Art and artists in the United States, 1920–1970* (pp. 14–71). The Bronx Museum of the Arts. New York, NY: Harry N. Abrams.

Quiroz, E. (Director & Producer). (2017, September 12). *Nahui Olin. Una mujer de los tiempos modernos* [Nahui Olin. A woman of modern times]. [Video file]. Retrieved from https://www.youtube.com/watch?v=2eqhLcpQrGU

Rakos, R. F. (1991). Perestroika, glasnost, and international cooperation: A behavior analysis. *Behavior & Social Issues, 1*(1), 91–100. https://doi.org/10.5210/bsi.v1i1.192.

Reed, J. (1914). *Insurgent Mexico*. Westport, CT: Greenwood Press.

Reimer, D., & Houmanfar, R. A. (2017). Internalities and their applicability for organizational practices. *Journal of Organizational Behavior Management, 37*(1), 5–31. https://doi.org/10.1080/01608061.2016.1257969.

Reyes, J. P. (2011, September 25). José Vasconcelos, un prometeo mexicano [José Vasconcelos, a Mexican promethean]. *Excelsior*. Retrieved from http://www.excelsior.com.mx/2011/09/25/nacional/770460

Rivera, D., & March, G. (1960). *My art, my life: An autobiography*. New York, NY: Citadel Press.

Rivera Marín, G. (2004). *Diego Rivera the red* (D. Gerdes, trans.) [Kindle ed.]. Houston, TX: University of Houston.

Rivera Marín, G. (2015, November 3). *The Mexico of my Father Diego Rivera* (A. Kluger, Interviewer) [Video file]. Retrieved from https://www.youtube.com/watch?v=-bY1pTPLCUM

Rochfort, D. (1993). *Pintura Mural Mexicana: Orozco, Rivera, Siqueiros* [Mexican Mural Painting: Orozco, Rivera, Siqueiros]. Mexico City, Mexico: Editorial Limusa.

Rodriguez, A. (1947, August 24). "Contra los 'Grandes': La pintura mural no puede sujetarse a ningún control" ["Against the 'Great': The mural painting cannot be subjected to any control"]. *El Nacional*. Mexico City, Mexico. Retrieved from http://icaadocs.mfah.org/icaadocs/ELARCHIVO/RegistroCompleto/tabid/99/doc/755474/language/es-MX/Default.aspx

Sabogal, J. (n.d.-a). In *Wikipedia*. Retrieved December 26, 2018, from https://en.wikipedia.org/w/index.php?title=Jos%C3%A9_Sabogal&oldid=832228279

Sabogal, José (1888–1956). (n.d.-b). *Encyclopedia of Latin American history and culture*. Retrieved from http://www.encyclopedia.com/humanities/encyclopedias-almanacs-transcripts-and-maps/sabogal-jose-1888-1956

Sampaio, A. A. S., Araújo, L. A. S., Gonçalo, M. E., Ferraz, J. C., Alves Filho, A. P., Brito, I. S., . . . Calado, J. I. F. (2013). Exploring the role of verbal behavior in a next experimental task for the study of metacontingencies. *Behavior & Social Issues, 22,* 87–101.

Sampaio Amaro, F. (2004). *Mexican mural movement: Myths and mythmakers.* [Doctoral thesis]. Retrieved from http://hdl.handle.net/10400.1/1637.

San Francisco Museum of Modern Art (SFMOMA). (1996). *Frida Kahlo, Diego Rivera and Mexican Modernism: From the Jacques and Natasha Gelman Collection. [Exhibition Catalogue]*. San Francisco, CA.

Sandaker, I. (2009). A selectionist perspective on systemic and behavioral change in organizations. *Journal of Organizational Behavior Management, 29*(3), 276–293. https://doi.org/10.1080/01608060903092128.

Sandaker, I. (2010). Some comments on "emergence and metacontingency". *Behavior & Social Issues, 19*, 90–93.

Serrano, A. H. (2006). The Latin American left and the contributions of Diego Rivera to national liberation. *Third Text, 19*(6), 637–646. https://doi.org/10.1080/09528820500381715.

Siqueiros, D. A., Rivera, D., Guerrero, X., Revueltas, F., Orozco, J. C., Alva Guadarrama, R., . . . Merida, C. (1924, June). Manifiesto del Sindicato de Obreros Técnicos Pintores y Escultores [Manifest of the Syndicate of Technical Workers Painters and Sculptors]. *El Machete, 7*, 4.

Siqueiros in Los Angeles: Censorship defied. (2018, December 23). *Autry Museum of the American West*. Retrieved from http://artdaily.com/index.asp?int_sec=11&int_new=41194&int_modo=1

Smith, G. S., Houmanfar, R. A., & Louis, S. J. (2011). The participatory role of verbal behavior in an elaborated account of metacontingency: From conceptualization to investigation. *Behavior & Social Issues, 20*, 122–146.

Soares, P. F. R., Rocha, A. P. M. C., Guimaraes, T. M. M., Leite, F. L., Guimarães, T. M. M., Andery, M. A. P. A., & Tourinho, E. Z. (2018). Effects of verbal and nonverbal consequences on culturants. *Behavior & Social Issues, 27*, 31–46.

Souter, G. (2014). *Diego Rivera: Su arte y sus pasiones* [Diego Rivera: His art and his passions]. New York, NY: Parkstone Press International.

Stavans, I. (2011). *Jose Vasconcelos: The prophet of the race*. New Brunswick, NJ: Rutgers University Press.

Stein, P. (1994). *Siqueiros: His life and works*. New York, NY: International Publishers.

Szymczyk, A., & Latimer, Q. (Eds.). (2013). *Olinka, or where movement is created*. México City, Mexico: Fundación Olga y Rufino Tamayo.

Tadaiesky, L. T., & Tourinho, E. (2012). Effects of support consequences and cultural consequences on the selection of interlocking behavioral contingencies. *Revista Latinoamericana de Psicología, 44*, 133–147.

Tibol, R. (1975). *Historia general del arte Mexicano* [General history of Mexican art]. Mexico City, Mexico: Hermes.

To free Siqueiros: Continued imprisonment of Mexican artist in protest. (1961, November 21). *The New York Times Archives*, 38. Retrieved from https://www.nytimes.com/1961/11/21/archives/to-free-siqueiros-continued-imprisonment-ofmexican-artist-in.html.

Todorov, J. C. (1987). A constituição como metacontingência [The constitution as a metacontingency]. *Psicologia: Ciência e Profissão, 7*(1), 9–13. https://doi.org/10.1590/S1414-98931987000100003.

Todorov, J. C. (2004). Metacontingencies: Interlocked and unrelated contingencies. Institutions and macrocontingencies: Comments on Glenn and Malott's "Complexity and selection.". *Behavior & Social Issues, 15*(1), 147–151.

Todorov, J. C. (2005). Laws and the complex control of behavior. *Behavior & Social Issues, 14*, 86–91. https://doi.org/10.5210/bsi.v14i2.360.

Todorov, J. C. (2006). The metacontingency as a conceptual tool. *Behavior & Social Issues, 15*, 92–94.

Todorov, J. C. (2013). Conservation and transformation of cultural practices through contingencies and metacontingencies. *Behavior & Social Issues, 22*, 64–73. https://doi.org/10.5210/bsi.v22i0.4812.

Todorov, J. C., Moreira, M. B., & Moreira, M. (2004). Metacontingencies: Interlocked and unrelated contingencies. In *Contemporary challenges in the behavioral approach: A Brazilian overview* (pp. 221–225). Santo Andre, Brazil: ESETec Editores Associados.

Tourinho, E. Z. (2013). Cultural consequences and interlocking behavioral contingencies: Selection at the cultural level. *Behavior & Philosophy, 41*, 60–69.

Tourinho, E. Z., Glenn, S., & Borba, A. (2014). Establishing the macrobehavior of ethical self-control in an arrangement of macrocontingencies in two microcultures. *Behavior & Social Issues, 23*, 68–86.

Tourinho, E. Z., & Vichi, C. (2012). Behavioral-analytic research of cultural selection and the complexity of cultural Phenomena. *Revista Latinoamericana de Psicología, 44*(1), 169–179.

Tuer, D., & King, E. (Eds.). (2013). *Frida & Diego: Passion, politics and painting. Toronto*. Canada: Art Gallery of Ontario.

Vasconcelos, I. G., & Todorov, J. C. (2015). Experimental analysis of the behavior of persons in groups: Selection of an aggregate product in a metacontingency. *Behavior & Social Issues, 24*, 111–125.

Vasconcelos, J. (1948). *La raza cósmica: Misión de la raza Iberoamericana* [The cosmic race: Mission of the Ibero-American race]. Mexico City, Mexico: Editorial Trillas.

Vasconcelos, J. (1963). *A Mexican Ulysses*. Bloomington, IN: Indiana University Press.

Vázquez Mantecón, A. (Producer). (2002). *La pasión de José Vasconcelos* [The passion of José Vasconcelos] [Video file]. Retrieved from https://www.youtube.com/watch?v=fubakzN00AM

Vogel, S. (2010). *Becoming Pablo O'Higgins*. San Francisco, CA: Pince Nez Press.

Ward, T. (2009). Piracy in Somalia: Interbehavioral assessment and intervention. *Behavior & Social Issues, 18*, 126–154. https://doi.org/10.5210/bsi.v18i1.2497.

Wolf, V. (2010). *Frida Kahlo: Photographs of myself and others*. New York, NY: Pointed Leaf Press.

Wolfe, B. D. (1972). *La fabulosa vida de Diego Rivera* [The fabulous life of Diego Rivera]. Mexico City, Mexico: Editorial Diana.

Young, H. T. (1959). José Vasconcelos (1881–1959). *Hispania, 42*(4), 570–572.

Zamora, M. (1987). *Frida: El pincel de la angustia* [Frida: The brush of anguish]. Mexico City, Mexico: Martha Zamora.

Zilio, D. (2019). On the function of science: An overview of 30 years of publications on metacontingency. *Behavior & Social Issues.* https://doi.org/10.1007/s42822-019-00006-x.