Water, Waste, and Disease: Struggles of Chinese communities and environmental racism in California, 1870-1910

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Zusammenfassung

Chinesische Immigration in die Vereinigten Staaten im 19. Jahrhundert: ein historischer Überblick

In der Mitte des 19. Jahrhunderts erlebte China die Taiping-Bewegung gegen die Mandschu-Herrschaft, bürokratische Korruption, Hungersnöte und die Opiumkriege. Politische Unruhen und wirtschaftliche Instabilität veranlassten die Chinesen, die in Guangdong, einer Küstenregion im Süden Chinas mit engen Handelsbeziehungen zum Ausland, lebten, nach Beschäftigungsmöglichkeiten im Ausland zu suchen. Unmittelbar nach der Entdeckung von Gold in Sutter's Mill im Frühjahr 1848 löste ein Massenexodus von Goldsuchern und Einwanderern aus aller Welt den kalifornischen Goldrausch aus. Sie legten das politische und kulturelle Fundament für die spätere sozioökonomische Entwicklung Kaliforniens. Um die Expansion des Westens zu unterstützen und eine transkontinentale Eisenbahn zu bauen, schlug der Geograf Aaron H. Palmer den Import chinesischer Arbeitskräfte vor. Bauern, Arbeiter, Kaufleute und andere qualifizierte Handwerker aus der Provinz Guangdong im chinesischen Perlflussdelta gehörten zu den ersten Gruppen, die auf der Suche nach Gold nach Kalifornien reisten, um dort zu arbeiten und am nationalen und internationalen Handel teilzunehmen.

Die meisten der frühen verarmten chinesischen Einwanderer kamen nach Kalifornien im Rahmen eines von den wohlhabenden chinesischen Kaufleuten geregelten "Credit-Ticket"-Systems. Alternativ boten ausländische Unternehmen, die als Agenten in chinesischen Hafenstädten und Hongkong (damals eine britische Kolonie) tätig waren, die direkte Anwerbung chinesischer Arbeitskräfte an. Bei ihrer Ankunft wurden die chinesischen Einwanderer sofort nummeriert und entsprechend ihrem Herkunftsort oder Clan als Mitglieder chinesischer Bezirksverbände registriert. Die meisten der ankommenden Chinesen arbeiteten in Kalifornien, um ihren Lebensunterhalt zu verdienen. Abgesehen von den frühen Goldsuchern gingen viele chinesische Einwanderer sofort nach ihrer Landung auf das Land, um auf Straßen und Farmen zu arbeiten. Die chinesische Gemeinschaft in Kalifornien setzte sich aus verschiedenen sozialen Schichten zusammen, wobei das Geschlechterverhältnis eher männlich geprägt war und es eine Mischung aus Durchreisenden und Einwanderern gab. Die frühen Bezirksorganisationen schlossen sich dann zu einer einflussreichen Vereinigung zusammen, den Chinese Six Companies, auch bekannt als Chinese Consolidated Benevolent Association, die 1882 in San Francisco offiziell gegründet wurde.

Seit den Anfängen des Goldrausches waren chinesische Einwanderer in Aktivitäten involviert, die eng mit Wasser verbunden waren. Der Goldabbau, die Landwirtschaft und die Urbarmachung von Ödland waren allesamt mit Wasser verbunden und veränderten zwangsläufig die örtlichen Landschaften. Die chinesischen Einwanderer aus der Provinz Guangdong lebten jahrhundertelang in einer Schwemmlandebene, wo sie im Alltag mit Flüssen zu tun hatten. Da das Delta niedrig und feucht war, nutzten sie das verfügbare Land in vollem Umfang, um Landwirtschaft zu betreiben. Folglich trugen ihre Fähigkeiten im Bereich der Wassertechnik wesentlich zur frühen Entwicklung und zum Wirtschaftswachstum Kaliforniens bei.

Während des Arbeitskräftemangels, der auf den Goldrausch folgte, waren chinesische Arbeiter eine wichtige Quelle für Arbeitskräfte. 1862 unterzeichnete Präsident Lincoln den Pacific Railroad Act in der Hoffnung, die Ost-West-Verbindungen zu stärken und die Einheit Amerikas in der Zeit des Bürgerkriegs zu erhalten. Für den Bau dieser Eisenbahn, die die Ost- mit der Westküste der Vereinigten Staaten verbinden sollte, wurden zahlreiche Arbeitskräfte benötigt, und chinesische Arbeiter, die aus dem abflauenden Goldrausch stammten, waren für die Bundesregierung die beste Wahl, weshalb chinesische Arbeiter in großem Umfang am Bau beteiligt waren. In diesem Zusammenhang wollten die Vereinigten Staaten mehr chinesische Arbeitskräfte aus China anwerben, und so wurde Anson Burlingame von Lincoln zum amerikanischen Gesandten in China ernannt, um die Zusammenarbeit zu suchen, was schließlich auch zu einem diplomatischen Erfolg führte. Im Jahr 1868 wurde der berühmte Vertrag von Burlingame zwischen der chinesischen Qing-Regierung und den Vereinigten Staaten unterzeichnet, der gleichberechtigte Beziehungen zwischen beiden Seiten herstellte.

Aufgrund der Abschaffung der Sklaverei in den Vereinigten Staaten Ende 1865 fehlte den Kapitalisten in der verarbeitenden und produzierenden Industrie ein großes Angebot an billigen und qualifizierten Arbeitskräften. Zweifellos waren chinesische Arbeitskräfte die beste Wahl. Gleichzeitig führte die Fertigstellung der transkontinentalen Eisenbahn im Jahr 1869 zu einem raschen Wachstum der städtischen Bevölkerung und zur Industrialisierung in den folgenden Jahrzehnten. Infolgedessen führte die Abwanderung der Menschen in die Städte zu einer raschen Verschlechterung der städtischen Umwelt und zu weit verbreiteten Bedenken hinsichtlich der öffentlichen Gesundheit. Im gleichen Zeitraum begann das städtische Chinatown in Kalifornien, den Zustrom chinesischer Einwanderer aufzunehmen, die zuvor auf dem Lande für ihren Lebensunterhalt gearbeitet hatten. Den Gesetzen zufolge durften die

meisten chinesischen Einwanderer nicht die amerikanische Staatsbürgerschaft annehmen und besaßen daher keinen Grundbesitz. In der Regel mieteten sie Häuser von weißen Vermietern.

Die Antwort auf die Frage, ob die Chinesen damals die Möglichkeit hatten, außerhalb von Chinatown zu leben, war traurig und enttäuschend. Aufgrund der sozialen Segregation von Chinatown gegenüber dem Rest der Stadt war es für Chinesen schwierig, außerhalb von Chinatown eine Unterkunft zu finden, es sei denn, sie lebten als Dienstboten oder Angestellte in chinesischen Wäschereien. Folglich war Chinatown durch den ständigen Zuzug von Chinesen stets überfüllt. Die ethnische Enklave war sowohl kulturell als auch räumlich vom Rest der amerikanischen Welt abgegrenzt, und doch war sie ein spiritueller Zufluchtsort, an dem Überseechinesen lebten, arbeiteten, Hilfe von Gemeinschaftsorganisationen erhielten, ihre kulturelle Identität fanden und vor offenkundiger Diskriminierung und gewalttätigen Übergriffen flohen. In den 1870er- und 1880er-Jahren wurde Chinatown immer autarker, was eine direkte Folge der wachsenden Produktionsunternehmen und der stabilen Produktions- und Versorgungsketten innerhalb des Viertels war. Mit dem Aufkommen antichinesischer Ressentiments und dem Chinese Exclusion Act wurde das verarbeitende Gewerbe in den großen Chinatowns in Kalifornien zu einer der wenigen Möglichkeiten, Arbeitsplätze für chinesische Lohnarbeiter zu schaffen. Dies führte jedoch zu einer weiteren Verschlechterung der Lebensbedingungen in Chinatown.

Seit den Anfängen des Goldrausches waren Chinesen mit strukturellem Rassismus konfrontiert. Vor dem 1882 vom US-Kongress verabschiedeten Chinese Exclusion Act wurden viele diskriminierende staatliche Gesetze und Steuerpolitiken gegen Chinesen erlassen. Das Gesetz war nicht nur das erste diskriminierende Gesetz in der Geschichte der USA, das die Einreise einer bestimmten Rasse in die Vereinigten Staaten untersagte, sondern auch eine Missachtung des großen Beitrags, den chinesische Einwanderer zur Expansion des amerikanischen Westens und zur frühen Entwicklung Kaliforniens geleistet hatten. Das Gesetz wurde vor dem Hintergrund einer langen wirtschaftlichen Rezession von 1873 bis 1877 erlassen, die zu Arbeitslosigkeit in der weißen Arbeiterklasse führte. Im Laufe der nächsten 60 Jahre wurde das Gesetz mehrfach geändert und verlängert, bis der US-Kongress Ende 1943 den Magnuson Act verabschiedete, der den Chinese Exclusion Act in Frage stellte.

Die chinesische Wäscherei hat eine lange Geschichte, die bis in die Zeit des Goldrausches zurückreicht. Archäologische Funde deuten darauf hin, dass chinesische Bergleute bereits damals in den Bergbaulagern in Teilzeit als Wäschereiarbeiter tätig waren. Aufgrund des geringen Kapitaleinsatzes, der geringen Englischkenntnisse und der für die Eröffnung einer

Wäscherei erforderlichen beruflichen Fähigkeiten war dies in der zweiten Hälfte des neunzehnten und bis ins frühe zwanzigste Jahrhundert die wichtigste Option für chinesische Einwanderer. Mit der antichinesischen Agitation, die in den 1870er Jahren begann, verlor jedoch eine große Zahl chinesischer Arbeiter ihren Arbeitsplatz, so dass nur noch die Sprengstoffindustrie, Wäschereien und Haushaltsdienste als lebensfähige Beschäftigungsmöglichkeiten übrigblieben. Wie Alexander Saxton hervorhebt, akzeptierten die Weißen trotz der Diskriminierung und Ausgrenzung chinesischer Arbeitskräfte im Allgemeinen, dass chinesische Einwanderer Dienstleistungen mit geringem Prestige erbrachten, die Weiße nicht übernehmen wollten.

Von der Mitte des neunzehnten bis zum frühen zwanzigsten Jahrhundert prägten wiederkehrende Epidemien die Geschichte Kaliforniens. Auch das Schicksal der chinesischen Einwanderergemeinschaft war von diesen Krankheiten stark betroffen. Neben der weißen Arbeiterklasse hetzten auch die Gesundheitsbehörden gegen die chinesischen Einwanderer. Die zeitgenössischen Krankheitstheorien berücksichtigten die Umweltbedingungen, um den Zusammenhang zwischen Wasser, Abfall und Krankheit zu begründen. Die Gesundheitsbehörden verfügten über eine Reihe von Gesundheitskonzepten, die sich in der klassischen Periode herausgebildet hatten und der traditionellen chinesischen Medizin ähnlich waren. Sie glaubten, dass die körperliche Gesundheit eng mit der Gesundheit der Umgebung (wie Wasser, Luft und Boden) und der Gesundheit der Nation verbunden war. Man glaubte, dass die Abgase aus Abflüssen, offenen/defekten Abwasserkanälen, Abortanlagen und stehendem Wasser auf den Straßen Gift und Krankheiten verbreiteten. Der unhygienische Zustand des Ortes sowie die schlechten Abwasserkanäle wurden als Ursache für Epidemien geltend gemacht. Die menschliche Gesundheit wurde also von der Umgebung, in der man lebte, geprägt.

Darüber hinaus verknüpfte die moderne westliche Medizin der damaligen Zeit die Begriffe Hygiene und Gesundheit mit Identität, Moral und sozialer Klasse. Die frühen Reformen des öffentlichen Gesundheitswesens verschönerten zwar die Städte und verbesserten in gewissem Maße die öffentliche Gesundheit, verschärften, aber auch soziale Ungleichheit und Rassismus. Auf diese Weise wurden die in Ghettos lebenden und ausgegrenzten Menschen als noch größere Bedrohung für die Gesundheit und Moral der amerikanischen Bevölkerung und Kultur angesehen. Ab den 1860er Jahren ergriff Kalifornien allmählich Initiativen zur Reform des öffentlichen Gesundheitswesens und begann mit dem (Wieder-)Aufbau einer sanitären Infrastruktur und der Verbesserung des öffentlichen Gesundheitsumfelds, z. B. durch die

Pflasterung von Straßen, den Bau getrennter Leitungssysteme für Abwasser und Wasser usw. Allerdings wurden die kalifornischen Chinatowns in den Plänen oft vernachlässigt und litten noch bis zur Jahrhundertwende unter den schlechten sanitären Einrichtungen und dem benachteiligten Umfeld der Stadtviertel.

Das Bild von Chinatown als schmutzigem und von Krankheiten verseuchtem Gebiet war in medizinischen Berichten, in den Erzählungen von Politikern und Gesundheitsbeamten, in der antichinesischen politischen Propaganda und in der Sensationsberichterstattung der Presse weit verbreitet und beeinflusste schließlich die Einwanderungspolitik in den folgenden Jahrzehnten. Anhaltende und systematische antichinesische Anschuldigungen lösten in Kalifornien weit verbreitete Feindseligkeit aus. In diesem Prozess spielten Schmutz und Krankheit eine wichtige Rolle bei der Interpretation rassischer Unterschiede und des Andersseins und rechtfertigten die damalige Ausgrenzung der Chinesen. Darüber hinaus ging die Assoziation der Krankheit mit chinesischen Einwanderern über die medizinische Dimension hinaus und berührte auch den sozialen Bereich.

Die inhärente Schichtung, das Bildungsniveau und die wirtschaftlichen Ungleichheiten innerhalb der chinesischen Bevölkerung führten zu komplexen und unterschiedlichen Einstellungen gegenüber einigen Verordnungen der Regierung und der Gesundheitsbeamten. Doch auch chinesische Hilfsorganisationen, die von der chinesischen Elite und den Handelsschichten geführt werden, haben eine wichtige Rolle im Kampf der chinesischen Gemeinschaft gegen Rassismus und Ungleichheit gespielt. Die traditionelle chinesische Medizin und chinesische Kräuterkundige kämpften ebenfalls für den Schutz der Gesundheit ihrer Gemeindemitglieder und ihrer traditionellen kulturellen Praktiken. Dass die chinesische Gemeinschaft die Verfassungsgesetze und die Bundesgerichte nutzte, um lokale diskriminierende Verordnungen anzufechten und ihre Rechte geltend zu machen, spiegelte auch den Widerspruch zwischen Bundes- und Lokalbehörden wider.

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Introduction

Nineteenth Century Chinese Immigration to the United States: A Historical Overview

In the mid-nineteenth century, China was experiencing the Taiping movement against the Manchu-ruled Qing dynasty, bureaucratic corruption, famine, and the Opium Wars. Political unrest and economic instability drove Chinese people living in Guangdong, a coastal area in the south of China with close commercial communication with foreign countries, to seek employment possibilities abroad. Immediately after the discovery of gold at Sutter's Mill in early 1848, a mass exodus of gold seekers and immigrants from around the world sparked the California gold rush. They also laid the political and cultural foundation for California's later socioeconomic development. To support the expansion of the West and to build a transcontinental railroad, Aaron H. Palmer, the geographer, proposed the importation of Chinese laborers.[1] Farmers, workers, merchants, and other skilled craftsmen from Guangdong Province in China's Pearl River Delta region were among the first groups to travel to California in pursuit of gold, to work, and to engage in national and international trade.

Most early impoverished Chinese immigrants arrived in California under a "credit-ticket" system regulated by the wealthy Chinese merchants. Alternatively, foreign companies operating as agents in Chinese port cities and Hong Kong (then a British colony) offered direct recruitment of Chinese laborers. Upon arrival, Chinese immigrants were immediately numbered and registered as members of Chinese district associations according to their place of origin or clan.[2] Most of the Chinese arrivals labored for their livelihood in California. Apart from the early gold seekers, large numbers of Chinese immigrants went to the country to work on roads and on farms as soon as they landed. The Chinese community in California consisted of a range of social classes, characterized by a male-biased gender ratio and a mix of sojourners and immigrants. The early district organizations then joined together to form an influential association known as the Chinese Six Companies, also referred to as the Chinese Consolidated Benevolent Association, which was formally founded in 1882 in San Francisco.

Chinese miners and hydraulic waterworks in California mining camps

[1] Ronald T. Takaki, *Strangers from a Different Shore: A History of Asian Americans* (Penguin Group, 1990), 22.

[2] David L. Phillips, *Letters from California: Its Mountains, Valleys, Plains, Lakes, Rivers, Climate and Productions. Also Its Railroads, Cities, Towns and People as Seen in 1876* (Springfield [Ill.]: Illinois State Journal Co, 1877), 132.

The discovery of gold in California appeared in the newspaper for the first time on March 15, 1848, and the exciting news foretold the influx of immigrants with various backgrounds in the near future. In the following years, when the news of gold crossed the Pacific Ocean and reached the south-eastern region of China, the allure of prosperity and opportunity attracted more Chinese immigrants to chase their fortunes from Guangdong to California mining camps. The news was widely spread among local Chinese people through foreign traders in Guangdong or letters from acquittances in California.[3] In fact, three Chinese immigrants had already arrived in California as early as February 1848 according to the writings of Rosena Giles.[4] By the early 1850s, local newspapers reported a rapidly expanding Chinese population in the northern mining states.

From the beginning of the Gold Rush, Chinese immigrants were engaged in activities that were closely linked to water. Gold mining, farming, and wasteland reclamation all involved interaction with water and inevitably altered local landscapes. For centuries, the Chinese immigrants from Guangdong Province lived on an alluvial plain, where they needed to deal with rivers in everyday life. Since the delta was low and humid, they made full use of the available lands to develop agriculture. The skills in water-related engineering of Chinese immigrants contributed significantly to the early development and economic growth of California. The use of ancient Chinese techniques, tools, and skills in mining activities during the second half of the nineteenth century showed both adherence to long-standing customs and flexibility in response to new circumstances.

As historical documents have shown, Chinese immigrants worked as both staffed labor and individual miners during the time of the Gold Rush. Although contemporary newspapers and mining reports showed technological acculturation by Chinese miners in the American West, a transfer of Chinese knowledge in hydraulic works was also made known in scattered historical photos, illustrations, and accounts.[5] It is noteworthy that the tools and techniques employed by the Chinese miners were based mainly on their agricultural background in China. A few examples included the Chinese pumps for draining rivers, the small-size Chinese waterwheel, and the well-practiced skills in constructing dams and ditches.

[3] Herbert Ingram Priestley, "The Celestials at Home and Abroad," July 1852, BANC MSS 2011/112, box 1, folder 1, Chinese in California Collection, circa 1851-1963, Bancroft Library, Berkeley.
[4] Giles referred to historical records and found that the two Chinese men and one Chinese woman arrived in California in February 1848. Rosena A. Giles, *Shasta County, California: A History* (Oakland, Calif.: Biobooks, 1949), 150.
[5] Randall Rohe, "Chinese River Mining in the West," *Montana: The Magazine of Western History* 46, no. 3 (1996): 14–29, http://www.jstor.org/stable/4519895.

Doubts about the engineering skills of Chinese laborers who usually changed their identities from peasants to miners could be explained in part by the corvée tradition in imperial China. Historically, corvée was organized by the imperial governments that required the male statute labor to construct public works as a form of taxation in a limited time. Corvée was certainly a mandatory service with abiding laws, yet there were also exemptions from this unpaid labor in some circumstances. However, the exemptions usually excluded the poor people at the lowest stratum of society who later became the main source of Chinese miners and workers in California. The most widely operated governmental works were "hydraulic installations, extended fortifications, the state highways, government buildings, palaces, and tombs for the rulers."[6] The gazette of the Guangzhou district showed the official teaching and promotion of hydraulic construction by local governments for irrigation water management.[7] Besides, the self-governing clanship and lineage communities in rural Guangdong villages also required the male labor from clan-families to build and maintain communal public works and agricultural facilities. In this sense, it was probable that most of Chinese miners, who were previously poor peasants, were familiar and even skilled at constructing hydraulic works and operating-related techniques.

In California and the neighbouring mining regions, the availability of water supply and location were the decisive factors in choosing suitable mining tools and devices since the inception of the Gold Rush. The early apparatus featured low technology and involved traditional mining tools of picks, shovels, rockers, pans, and sluice boxes for the shallow placers.[8] At the same time, miners used long toms, wing dams, and flumes to work the deeper deposits in the riverbeds.[9] Later, the mining industry developed hydraulic mining that applied high-pressure spraying water to remove placer and gravel deposits, and to mine the gold to the most profitable extent. In the process of gold excavation, water assumed a critical and constant role in removing unwanted placers from the precious treasure, shaping itself a necessity as in the interaction between human beings and nature. To use a more technological phrase, the process was named gold washing. In this vein, the first important attempt by gold mining was to construct hydraulic works to channel, divert and store water from rivers miles away. And as a result, water and

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[6] To Abolish Forced Labor through ILO. 1956. Washington, D.C., 266.

[7] Zengyu Lu 鲁曾煜 (jinshi 1721), *Guangdong Tongzhi* 广东通志 [Complete Gazetteer of Guangdong] (*Wenyuange siku quanshu* edition), juan 15.

[8] Augustus Jesse Bowie, *A Practical Treatise on Hydraulic Mining in California: With Description of the Use And Construction of Ditches, Flumes, Wrought-Iron Pipes, and Dams*, 11th ed. (New York: D. Van Nostrand, 1910), 47-48.

[9] Ibid.

canal companies – by-products of the Gold Rush – developed a more considerable influence in the history of California.

River mining required large start-up investment, yet it brought a high rate of return. Therefore, both Euro-American and Chinese miners continued using these mining methods on an extensive scale in the American West. Dams, pumps and flumes were used to divert rivers from the previous channels, making it feasible for the miners to excavate the deeper deposits in the riverbed. Despite the constant riots against Chinese miners and the consequent exclusion laws that aimed to prohibit Chinese people from buying or working the claims, the Chinese never disappeared in the American legend of gold-seeking. Indeed, Chinese miners were hired by the white mining companies at the very beginning to construct hydraulic facilities. On the other hand, some wealthy Chinese merchants already possessed mining enterprises and hired their countrymen to work the claims in the early 1850s.[10] Other Chinese immigrants without substantial capital usually bought or leased the claims deemed worthless by the white miners and continued washing gold with good earnings from the riverbed.[11] In some instances, Chinese miners also worked on shares with white miners.[12] Besides, the more economically disadvantaged small mining groups only worked the waste tailings discharged into streams by other mining companies.[13] As a local newspaper noted, it was "a fact well known that when the Chinese worked their mines, it was on ground that had been abandoned or rejected as unremunerative by the whites."[14]

River mining rested on large-scale hydraulic works, including ditches, sluices, flumes, embarkment, water wheels, and pumps, among others. Except for one oft-mentioned Chinese pump, there was little difference between the mining apparatus and devices used by Chinese and Euro-American miners in the West mining states. Also noteworthy was the long history of placer and river mining in Guangdong, from where the majority of Chinese miners originally

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[10] John David Borthwick and George Cosgrave, *Three years in California* (Edinburgh and London: W. Blackwood and Sons, 1857), 262-263; *Sacramento Daily Union*, September 25, 1857; *Camden Journal*, June 11, 1852.

[11] Numerous mining and local newspapers and deed books have mentioned that Chinese mining companies or wealthy individuals bought or leased the river claims from the hands of white miners. See for example, *Oroville daily Butte record*, October 1, 1857; United States Department of the Treasury and Rossiter Worthington Raymond, *Statistics of Mines and Mining in the States and Territories West of the Rocky Mountains* (Washington: Government Printing Office, 1872), 3; Siskiyou County Historical Society, *The Siskiyou Pioneer*, vol. 6, no. 3 (Yreka, CA: Siskiyou County Historical Society, 1990), 24.

[12] Mae M. Ngai, "Chinese Gold Miners and the 'Chinese Question' in Nineteenth-Century California and Victoria," *The Journal of American History* 101, no. 4 (2015): 1082–1105.

[13] United States War Department, *Report of the Secretary of War, Being Part of the Message and Documents Communicated to the Two Houses of Congress at the Beginning of the First Session of the 52nd Congress*, vol. 2, part 5 (Washington: Government Printing Office, 1891), 3045.

[14] "Well done," *Sacramento Daily Union*, September 30, 1870.

came.[15] One chapter on Metallurgy in the book *Tian Gong Kai Wu* has documented and illustrated ancient Chinese mining of iron ore, gold, silver, copper, and tin with sluice and pans along the rivers.[16] The book was written in 1637, and it was a compiled intellectual work of ancient industrial and agricultural techniques passed down through generations. Chinese traditional river mining of gold, silver, iron, and tin used picks, shovels, pans, rectangular chutes, and bamboo baskets with grooved panels installed. As seen in historical photos and records, Chinese miners acculturated some of the American mining tools and techniques. They replaced the traditional chute with the more efficient sluice box and long tom in California, and they learnt quickly to mine the riverbeds by diverting rivers through wing dams, flumes, and ditches. In many cases, Chinese miners used wing dams to "hold considerable quantities of tailings."[17] Other mining tools and methods, especially the preferred use of Chinese chain pumps and water wheels, remained almost unchanged when Chinese worked the river claims in the early time of the Gold Rush.

In 1852, the operation of a Chinese chain pump by a group of Chinese miners was written down by a contemporary observer.[18] The chain pump was previously used for agricultural purposes to drain or lift water from the channels in ancient China, and Chinese miners continued to employ this device in the American mining claims at the second half of the nineteenth century. As a comparison, the pump used by Euro-American miners was driven by the water wheel, while the Chinese pump was usually operated by manpower that resembled the treadmill.[19] As vividly described in the book *3 Years in California* written by the journalist John David Borthwick, the Chinese pump on the Yuba River in 1857 operated as follows:

> on the principle of a chain-pump, the chain being formed of pieces of wood about six inches long, hingeing on each other, with cross-pieces in the middle for buckets, having about six square inches of surface. The hinges fitted exactly to the spokes of a small wheel, which was turned by a Chinaman at each side of it working a miniature treadmill of four spokes on the same axle.[20]

[15] Zhongguo Renmin Daxue Qingshi Yanjiusuo 中国人民大学清史研究所 et al., *Qingdai de kuangye* 清代的矿业 [The Mining Industry in the Qing period], juan 1 (Beijing: Zhonghua Shuju, 1983), 265; "Celeng tiwei caixi shangrong biantong deng 策楞题为采锡尚容变通等," 16 November, Qianlong 12 nian, no. 000100722, *Neige daku dangan* 内阁大库档案 [Grand Secretariat Archives].

[16] Yingxing Song 宋应星, *Tiangong Kaiwu* 天工开物 [The Exploitation Of The Works Of Nature], trans. into modern Chinese by Pan Jixing, trans. into English by Wang Yijing et al., Library of Chinese Classics (Guangzhou: Guangdong Education Publishing House, 2011), 258 and 264.

[17] United States War Department, *Report of the Secretary of War*, 3054 and 3080.

[18] Borthwick and Cosgrave, *Three Years in California*, 265-266.

[19] *Daily national Democrat*, November 16, 1858.

[20] Borthwick and Cosgrave, *Three Years in California*, 265.

Another travelogue by A. Hersey Dexter, who travelled to California from the autumn of 1849, recounts a detailed description of how Chinese pumps were operated in early days:

> These Chinese pumps were made on the principle of an endless chain, and like a treadmill. A pole was fastened across the top, by which the men held, about as high as their heads. The pumps were worked with the feet, by constant walking or stepping. They were generally made large enough to accommodate six persons, and could throw out a large stream of water. The Chinamen kept to their primitive ways of hard labor instead of making their pumps so that water would be the motive power.[21]

Therefore, a comparative analysis of Chinese pumps used in American mining camps and ancient Chinese pumps is necessary to see if there is a knowledge transfer. In the book *Tian Gong Kai Wu*, various pumps and waterwheels applied in everyday agricultural and manufacturing practices were documented in both written form and illustrations. As described in the book, the chain pump was used for irrigation and drainage in ancient Chinese agricultural, manufacturing, and engineering activities. It was usually powered by two men paddling up the tread boards fixed on each side of a rotating log; the axis was set on the riverbank with a horizontal wooden handrail. Then, the rotating log powered by men turned the wooden gear that drove the chain of hollow tubes to lift water from the ditch.[22]

Moreover, the book also detailed another widely used hydraulic device in ancient China – the water wheel.[23] A late eighteenth-century Chinese literature note described how residents in Guangdong used such waterwheels to irrigate higher lands. The water wheel was about ten to twelve meters fitted with bamboo tubes on its rims that transported water from the river to the trough on higher ground.[24] At times, the water wheel also provided power for machines.[25] This water-powered wheel was usually set in turbulent rivers or streams to move it around. Oftentimes, the residents needed to use trees as a natural barrier or put woods and bushes in the river to form a kind of wing dam; this natural dam could slow down the rapid flow and prevent

[21] A. Hersey Dexter, *Early Days in California* (Denver: Tribune-Republican Press,1886), 57.
[22] The man-powered waterwheel, also known as treadmill in the nineteenth century American accounts. Song, *Tiangong Kaiwu*, 29.
[23] Ibid., 27.
[24] Dajun Qu 屈大均, *Guangdong Xinyu* 广东新语 [New Records of Guangdong], juan 16 (Taiwan: Yigeren, 2015).
[25] Ibid.

the destruction of the water wheel.[26] In this sense, one could infer that the Chinese water wheel probably had a limited driving force compared to the one widely used in the Euro-American mining claims. Besides, the traditional Chinese water wheel that appeared in the American accounts was often of a smaller size and was known as dip wheel.[27] Nevertheless, the Chinese water wheel had advantages in small-scale mining claims because it was simple in structure and easy to assemble.

In contrast with the dominant view that the Chinese had entirely acculturated the Euro-American hydraulic mining technologies and methods, the Chinese pump became a successful case of knowledge transfer from ancient China to American soil during the time of Gold Rush. The historian and sinologist Joseph Needham believed that the presence of Chinese pumps and the hydraulic construction skills in California were attributed to Chinese immigrants' agricultural experience in China.[28] The Chinese wet-rice agriculture required a complicated irrigation network and water-raising techniques that helped to channel, drain, and raise the water for irrigation, especially in the difficult times of floods and droughts. The Euro-American miners adopted the Chinese pump and modified it to be powered by the water wheel. Archaeological reports and historical photos of the hydraulic mines scattered throughout northern California and the neighboring states of Oregon and Nevada gave evidence of the widely modified Chinese pumps.[29] Meanwhile, the modified Chinese pump was also applied in hydraulic construction, farmlands, gardens, and land reclamation. Until the 1890s, many newspaper articles and reports celebrated the efficiency of Chinese chain pumps in draining water in the tidal canal.[30]

Furthermore, the man-powered Chinese pump was able to be flexibly used in diverse environments. As *Tian Gong Kai Wu* has specified, "near lakes and ponds where there is still water, an ox is used to turn the waterwheel, or several persons manually operate the chain pump to draw water."[31] Thus, the Chinese pump was more adaptable in such dry seasons and regions.[32] This was also true in northern Californian and Nevada mining regions where summer

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[26] Ibid.
[27] Siskiyou County Historical Society, *The Siskiyou Pioneer*, vol. 2, no. 10 (Yreka, CA: Siskiyou County Historical Society, 1957), 31.
[28] Joseph Needham, *Science and Civilisation in China*: *Volume 4, Physics and Physical Technology, Part 3, Civil Engineering and Nautics* (Cambridge: Cambridge University Press, 1971), xlvii.
[29] Jeffrey M. LaLande, "Sojourners in Search of Gold: Hydraulic Mining Techniques of the Chinese on the Oregon Frontier," *The Journal of the Society for Industrial Archeology* 11, no. 1 (1985): 29–52.
[30] *Daily Alta California*, vol. 84, no. 136, May 16, 1891; *Sacramento daily record-union*, September 24, 1888.
[31] Song, *Tiangong Kaiwu*, 25.
[32] Hongwei Zhou 周宏伟, *Qingdai liangguang nongye dili* 清代两广农业地理 [Agricultural geography of Guangdong and Guangxi in Qing dynasty] (Changsha: Hunan jiaoyu chubanshe, 1998), 101.

is usually long and dry, whereas precipitation occurs most frequently during the short winter. Spring and autumn are transitional seasons with fickle weather. Therefore, the supply of water during summers and falls was often unable to meet the demand of both placer and river mining where many Chinese miners worked.[33] In this regard, the Chinese pump was quite practical and easily deployed, whereas the water-powered waterwheel was only practical in seasons or claims with abundant water.

On the other hand, portability remained a critical element in selecting mining tools and methods at a time when recurrent anti-Chinese riots and expulsion threatened most Chinese miners.[34] For instance, a 1857 newspaper report commented on the Chinese "practicable utility," which was easy to disassemble and to be removed.[35] In this context, the Chinese pump was still popular among the Chinese miners because it was simple and set a-going for a quick move.[36]

The advantages of the Chinese pumps rested on the efficiency, power-saving, and economic value for short-distance lifting.[37] Chinese pumps were quickly adopted and utilized by many Euro-American mining companies. Some modified the pump by connecting it with a complicated water wheel that provided power to supply water, while others kept the manual operation.[38] Although Euro-American mining companies had more advanced and complicated machines, they also used Chinese pumps to lift water and tailings for further operation in certain circumstances.[39]

The Chinese pumps had a profitable market in both mining and agricultural industries since some Euro-American-owned factories had manufactured and advertised the modified Chinese pumps in newspapers. Instead of eliminating this obsolete equipment in a time of numerous modern technological improvements, the manufacturers called for a return to the "old style" water device, and they appraised the high effectiveness of the chain pumps invented by the Chinese.[40] In addition, the manufacturer explained that either running water or horses could

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[33] Department of the Treasury and Raymond, *Statistics of Mines and Mining in the States and Territories West of the Rocky Mountains*, 39.
[34] Robert F. G. Spier, "Tool Acculturation among 19th-Century California Chinese," *Ethnohistory* 5, no. 2 (January 21, 1958): 97, https://doi.org/10.2307/480571.
[35] *San Andreas Independent*, June 20, 1857.
[36] *The Sierra Citizen*, October 21, 1854.
[37] "Use a Chinese pump," *Los Angeles the herald* [microfilm reel], August 28, 1893, 5.
[38] California State Mining Bureau, *Twelfth Report of the State Mineralogist* (Sacramento: State Office, A. J. Johnston, 1894), 273, 261, 262; California State Mining Bureau, *Eighth Annual Report of the State Mineralogist* (Sacramento: State Office, J. D. Young, 1888), 588; A photo from the 1890s shows that around 500 Chinese miners worked at Scott Bar and utilized complex water wheels to power their pumping operations. Siskiyou County Historical Society, *The Siskiyou Pioneer*, vol. 2, no. 10 (1957), 40.
[39] California State Mining Bureau, *Eighth Annual Report of the State Mineralogist*, 496.
[40] "Use a Chinese pump," August 28, 1893, 5.

drive the pumps, thus resolving the water-shortage problem in dry seasons.[41] In the last decades of the nineteenth century, the Chinese chain pump was introduced to white Americans' gardens for irrigation and drainage because of its lower operation cost than many contemporary pumping plants.[42] Unlike the pump powered entirely by Chinese labor in the mining claims of the early days, here, the Chinese pump of the same design was driven by the stream current. However, many American observants had raised concerns about the efficiency and limitation of the modified pump. The comparatively small size and simple assembly of the modified pump limited its application on a broader range, and its advantages lay mainly in the efficiency of water lifting for a short distance with little human or animal power.[43] Nevertheless, the Chinese pump was popular beyond the mining claims because it was considered very "serviceable" and easy to make at home.[44]

Moreover, no evidence showed the knowledge transfer of mercury in amalgamating gold either from the Euro-American or the Chinese side. Still, mercury had been an essential material for the extraction of gold and silver in ancient Chinese metallurgy for centuries before the Chinese made their fortune in the American West from the 1850s onwards.[45] Both Chinese and Euro-American miners collected gold in the same way by forming an amalgam using quicksilver in the California mining claims.[46]

To summarise, Chinese miners who went across the Pacific Ocean to seek opportunities during the Gold Rush played an important and constant role in the construction of agricultural and mining waterworks in California. The rich experience in building waterworks and controlling water was largely attributed to their agricultural background and ancient Chinese culture. They quickly learned and acculturated American mining devices and modern mining technology in the West. Some traditional Chinese agricultural tools, such as the Chinese chain pump, were widely adopted and modified by the Americans. In the meantime, Chinese miners continued to use some of their familiar tools and methods for mining, channelling, and draining water. To disagree with some research views suggesting that these Chinese tools were merely "the

[41] Ibid.
[42] Ibid.
[43] "Garden Irrigation," *Pacific Rural Press*, vol. 55, no. 1, January 1, 1898.
[44] Ibid.
[45] Peter J. Golas, *Science and Civilisation in China: Volume 5, Chemistry and Chemical Technology, Part 13, Mining* (Cambridge University Press, 1999), 146.
[46] An archaeological examination of a Chinese skeleton interred at the turn of the twentieth century has led to the conclusion that the deceased was likely a miner, as evidenced by the high mercury concentration in the remains. Sue Fawn Chung and Priscilla Wegars, *Chinese American Death Rituals: Respecting the Ancestors* (Rowman Altamira, 2005), 123; Siskiyou County Historical Society, *The Siskiyou Pioneer*, vol. 2, no. 10 (1957), 28.

adaptative use of traditional Chinese irrigation devices," as these tools had been used in agriculture, manufacturing, and mining in ancient China for centuries.[47]

For want of water

The secret of prosperity in nineteenth-century California was water. In the desert climate of Southern California where agriculture was the dominant industry, water channelled by ditches irrigated vast farmlands and orchards.[48] In the northern mining zone with more abundant seasonal precipitation, water was conveyed through artificial waterworks to boom the mining industry. Such networks of ditches and canals helped to later develop California's agricultural resources. After all, water was a critical commodity that guaranteed a profitable revenue and regional success. Moreover, as an article pointed out in 1878, California made its initial fortune from mining. This meant that the interests of the mining industry usually structured the early regulations of the state.[49] Since water was the lifeblood of the mining sector, the investment, laws, rights, and privileges to channel and sell water finally paved the way for the commodification and monopoly of water in California.

With the rise of hydraulic mining at the beginning of the 1850s, gold mining developed into "a technology-driven enterprise" that relied on the control of water and supply networks.[50] For this reason, water was of paramount importance to the economic success of many mining and ditch companies. In many cases, the high water-rate made early independent miners in debt to the ditch companies, and those miners had to transfer their claims to cover the unaffordable debts in the end.[51] In the mining camps, water and mining companies made temporary contracts with Chinese laborers to construct hydraulic infrastructure.[52] In such a way, the American capitalists took advantage of the efficient and cheap labor while not facing protests from Euro-American workers.[53] As a result, Chinese workers were hired by the capital market with a relatively low wage, whereas those individual white miners who had earlier relied on traditional mining methods faced both the monopoly of hydraulic mining companies and the competition from Chinese labor in the market.

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[47] LaLande, "Sojourners in Search of Gold: Hydraulic Mining Techniques of the Chinese on the Oregon Frontier," 29-52.

[48] Phillips, *Letters from California*, 35.

[49] "The monopoly of water," *Sacramento Daily Union*, November 20, 1878.

[50] Andrew C. Isenberg, *Mining California: An Ecological History* (Hill and Wang, 2010), 31.

[51] Charles B. Turrill, *California Notes*, Chapter X (San Francisco: E. Bosqui & Co., 1876), PDF, https://www.loc.gov/item/rc01000893/.

[52] Rudi Batzell, "Free Labour, Capitalism and the Anti-Slavery Origins of Chinese Exclusion in California in the 1870s," *Past & Present*, no. 225 (2014): 143–186.

[53] Ibid.

In some cases, the conflict between Euro-American and Chinese mining groups rested in their competition for water rights. An abundant and proper water supply was especially crucial for hydraulic mining for a successful gold output and a good pay. By the 1880s, Chinese hydraulic mining companies had largely occupied the mining claims abandoned and sold by previous Euro-American companies. In this manner, the Chinese companies legally enjoyed the corresponding water rights and privileges. In an inflammatory report published in July 1883, the white miners in the Sierra region appealed for a privilege to purchase water rights in preference to the Chinese miners.[54] According to their critique, the Chinese mining companies were to the detriment of the white companies' use of water for hydraulic mining.[55] Apparently, such provocative discourse aimed to deprive the water rights of Chinese mining groups authorized by water companies and laws.

Given the situation, the transfer, lease, and sales records of mining claims always included special notes in the contracts, in which the seller or leaser would clarify whether the water rights were included. Like their white counterparts, Chinese mining groups or companies also highly valued the importance of water rights.[56] After obtaining the mining lands, the Chinese mining companies often acquired water rights through buying or leasing the ditch and canal property.[57] In this way, they were legally entitled to the ditches and succeeded to the water rights.[58] However, this ownership of water rights within the legal context still instigated increasing opposition from other interest groups. In November 1878, for instance, some farmers spoke out in the *Sacramento Daily Union* against Chinese ownership of ditches. They believed that such ownership granted Chinese miners the control of the relevant water rights and would threaten their use of water for irrigation after the area would become agricultural lands in the future.[59] Three days later, another article published in the *Morning Union* criticized the misinterpretation and the prejudice towards Chinese miners and considered it unjust to blame the Chinese for the so-called water monopoly.[60]

In fact, the out-of-value mining claims sold to Chinese miners were no longer profitable in the eyes of the Euro-American miners. Oftentimes, the claims were relatively small and brought

[54] "The Daily Appeal," *Marysville Daily Appeal*, July 31, 1883.
[55] Ibid.
[56] Liping Zhu, "No Need to Rush: The Chinese, Placer Mining, and the Western Environment," *Montana: The Magazine of Western History* 49, no. 3 (1999): 42–57.
[57] "The monopoly in the interest of Chinese labor," *Sacramento Daily Union*, November 20, 1878; "Siskiyou Chinese mining," *Mining and Scientific Press*, April 15, 1876.
[58] "The monopoly in the interest of Chinese labor," November 20, 1878.
[59] Ibid.; *Tehama Tocsin*, vol. 4, no. 6, November 23, 1878; "The monopoly of water," November 20, 1878.
[60] "Water rights," *Morning Union*, November 23, 1878.

down ditches of short distances, which were “almost invariably used for that (the resale to Chinese miners) purpose” and not “worthy of a name.”[61] In some instances, to solve the problems of water shortage, Chinese miners had to build new ditches to meet the demands of mining.[62] At times, big Chinese mining companies would also make a complete repair, clean out and maintenance of the ditches.[63] Most prominently, the origin of the Chinese hunting for gold in the nineteenth century California centered on the counties Sam Yup (Three Counties) and Sze Yup (Four Counties) in the Pearl River Delta of China.[64] Managing water in ways that support agriculture, manufacturing, domestic and national needs was the basis of their life. This background provides a better understanding of some features of the Chinese mining claims in the American West.

Based on the research papers and archaeological surveys on the Chinese gold miners by the historian Jeffrey M. LaLande, the Chinese mining claims were characterized with “numerous ditches” and “long diversion ditches” that assured a relatively stable water supply for hydraulic mining.[65] In general, mining in California was a seasonal job. The climatic condition of northern California only allowed for an abundant water supply for river and hydraulic mining in late winter and early spring, and a large number of seasonal workers mined gold at this time. However, due to the dry seasons of summer and autumn, many miners were unable to obtain enough water for river and hydraulic mining and had to stop their work. Therefore, an abundant water supply was a determinant of gold mining during dry seasons. In many instances, Chinese miners continued to work even in dry seasons as long as there was an adequate water supply.[66] However, the rich experience in assuring water supply through managing ditches was a double-edged sword. The continuous and large body of water brought increasing profit in gold mining, but the sufficient water also drove the Chinese companies to mine intensively from day to night, and all year round.[67] The intense work pace, instead, brought frequent complaints from the Euro-American competitors, and the anti-Chinese sentiment was further aggravated within the broader context.

[61] Ibid; “The monopoly in the interest of Chinese labor,” November 20, 1878.
[62] “The monopoly in the interest of Chinese labor,” November 20, 1878.
[63] Randall Rohe, “The Chinese and Hydraulic Mining in the Far West,” *Mining History Association Annual* 1 (1994): 73-91.
[64] Stewart Culin, “Customs of the Chinese in America,” *Journal of American Folklore* 3, no. 10 (July 1, 1890): 191–200.
[65] LaLande, “Sojourners in Search of Gold: Hydraulic Mining Techniques of the Chinese on the Oregon Frontier,” 29-52.
[66] Siskiyou County Historical Society, *The Siskiyou Pioneer*, vol. 2, no. 10 (1957), 30.
[67] Rohe, “The Chinese and Hydraulic Mining in the Far West,” 73-91.

Today, one can barely see any traces of nineteenth-century gold mining in California and the neighbouring mining states. The old waterworks and mining devices disappeared; only the ditch scar and tailings deep in the mountains still tell the story of the days when hydraulic mining was in full swing. The arrival of many Chinese immigrants with agricultural and hydraulic construction skills during the Gold Rush revolved around many issues. Firstly, the Chinese workers met the demand of the hydraulic mining industry to control the water resource and water rights by constructing water systems. Secondly, they became powerful pawns of the capitalists to fight against the strikes of the white labor unions. With the expansion of an industrial mining empire, Chinese miners were "the least affected" of ethnic groups of miners, as historian Ralph Mann has pointed out, owing to the fact that they were regarded as cheap and hard-working labor welcomed by capitalists.[68] Chinese workers played a constant role in the mining activities and the construction of waterworks, resulting in a long-lasting impact on California's environmental landscape.

Chinese miners, waterworks, negative impacts on local environment

By the end of the nineteenth century, the Chinese mining activities performed both manual labor and mechanical device operations. In river and hydraulic mining, they acculturated the modern Euro-American techniques, including flumes, sluices, wing dams, and hydraulic mining equipment.[69] However, the construction of waterworks and the extensive system of ditches required a large amount of timber that resulted in deforestation and soil erosion in the surrounding mining regions. Moreover, the boom of mining towns as a direct outcome of the Gold Rush inevitably transformed the forest into lumber to support the construction of waterworks and mining towns.[70] From the 1850s, the logging business remained unregulated for decades and did not take into account forest management and conservation.[71] Nevertheless, the boom of the logging industry, as a way to achieve prosperity since the discovery of the New World, generated fears of the exhaustion of forests in the 1870s.[72]

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[68] Ralph Mann, *After the Gold Rush: Society in Grass Valley and Nevada City, California, 1849-1870* (Stanford University Press, 1982), 54.

[69] California State Mining Bureau, *Eighth Annual Report of the State Mineralogist*, 591-593; *The Trinity Journal*, September 14, 1889.

[70] Sue Fawn Chung, *Chinese in the Woods: Logging and Lumbering in the American West* (University of Illinois Press, 2015), 129 and 132.

[71] Susan G. Lindstrom, Laura Leach-Palm, and Far Western Anthropological Research Group, *Archaeological Survey of 1830 Acres Between Spooner and Marlette Lakes, Lake Tahoe Nevada State Park: Results*, 2001.

[72] Burrell B. Taylor, *How to get rich in California. A History of the Progress and Present Condition of the Gold and Silver Mining and Other Industrial Interests of the Great Pacific State, Etc* (Philadelphia: McMorris & Gans, 1876), 84.

Mining activities triggered logging industry in the American West, and in both sectors, Chinese workers constituted an important part of labor who worked independently or hired by enterprises. From 1870s to 1880s, for example, a large number of Chinese workers were recruited by many mining companies that also encompassed the logging business.[73] In the lumbering industry, Chinese workers were involved in many roles including lumbermen, traders, and transient laborers. By the end of the nineteenth century, the American logging industry shifted its focus from domestic needs to an increasing overseas market, exacerbating further the attendant environmental problems.[74] The increased demand for imported U.S. lumber in the Chinese market made the logging activity and the trans-Pacific trade more active. To detail this, the volume of lumber exported to China in 1875 was 1,136,813 feet with a value of 22,331 dollars, which was more than four times higher than in 1874.[75] With years of massive logging in the West, the rapidly shrinking forests in Sierra Nevada and the growing cycle of trees could no longer meet the ever-expanding lumber market. Inevitably, the Chinese lumbermen, like their Euro-American counterparts, turned to work new forests in other states.[76]

The expansion of the map of the lumber industry accelerated deforestation and provoked growing awareness of the depletion and the conservation of natural resources. In 1888, the American Horticulture Society asked Congress to further examine and even to repeal the Mining Act that granted timber to locators.[77] The Horticulture Council also petitioned the Congress to make laws regulating certain portion of public forests to be protected and "permanently reserved for the best interests of the nation."[78] The concerns of diminishing forests and frequent fires then urged the Congress to pass the Forest Reserve Act in 1891. Under the Act, the President of the United States has the right to designate forest reserves from public lands. However, such reserved forests still need to serve the mining and lumbering activities in the eyes of the preservationists.[79] In the same period of the second half of the nineteenth century, the rising interest of many intellectuals and politicians in the relationship between human and nature underlined the sustainable development of natural resources for future generations. The new understanding of this relationship marked the beginning of the conservation movement in the United States. Among the influential leaders who shared the ideals of conservation, Gifford

[73] Chung, *Chinese in the Woods*, 141.
[74] Ibid., 190.
[75] Taylor, *How to get rich in California*, 85.
[76] Chung, *Chinese in the Woods*, 189.
[77] "Horticulture councils," *Daily Alta California*, January 27, 1888.
[78] Ibid.
[79] Char Miller, *Gifford Pinchot and the Making of Modern Environmentalism* (Island Press, 2013), 136–137.

Pinchot played a critical role in the scientific forest management. In 1896, Pinchot suggested the nation should develop a professional forest service that could properly utilize the national forests rather than arbitrarily close the forest reserves.[80] In his view, forests should be prevented from over-exploitation with a scientific management and regulation.

Secondly, river mining brought negative impacts on the riverscape by mining the sediment from the river bottoms. Miners scooped up the riverbeds by disrupting and diverting the natural watercourse that resulted oftentimes in potential flooding. In this process, the construction of wing dam was a common way to drain a part of the river or control the direction of the water current. The wing dam was a L-shaped dike usually built of rock and soil that extended into the river. As mentioned in earlier paragraphs, such dam was similar to the "natural barrier" made of woods and bushes to control water flow in ancient China. Gravels in the riverbeds were gradually removed, and the sediment loads in the rivers changed. As an example, the report of the state mining bureau in 1888 revealed that one Chinese mining company in the northern part of Sierra County removed 2.5 acres of gravel in a season.[81] As was often the case, Chinese miners carried away the gravels from riverbeds, mined the gold, or stacked them into archaeology-featured constructions such as dams and the so called "Chinese walls."[82]

Studies on the environmental impact of river mining were not yet formed at the time, besides, the awareness of natural resource conservation was still in its early stage. However, a similar study by the geomorphologist Kondolf on modern gravel mining points out that dams, channels and river sediment mining could change the alluvial water table by interrupting "the flow regime and sediment load," and in the end left negative effects on local environment and the riverscape.[83] Despite the fact that mining techniques and impacts in the Gold Rush epoch were not comparable with the modern ones, American river mining in the nineteenth century indeed increased risks of floods and altered river ecology in the mining regions.

Thirdly, with the boom of hydraulic mining in 1853, this new mining method molded the natural landscape in California and the surrounding mining states of Oregon and Nevada to a much greater extent. Contemporary photographs of the hydraulic mining sites offered a common scenery where trees in the mountains were washed down through the extensive and

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[80] Ibid.
[81] California State Mining Bureau, *Eighth Annual Report of the State Mineralogist*, 598.
[82] LaLande, "Sojourners in Search of Gold: Hydraulic Mining Techniques of the Chinese on the Oregon Frontier," 29-52; United States War Department, *Report of the Secretary of War*, 3045.
[83] G. Mathias Kondolf, "PROFILE: Hungry Water: Effects of Dams and Gravel Mining on River Channels," *Environmental management* 21, no. 4 (July 1, 1997): 533-51, https://doi.org/10.1007/s002679900048.

complex mining watercourse, and the woods lay in a haphazard manner on the downstream ground.[84] In early 1882, the *Sacramento Daily Union* publicly expressed concerns about soil erosion and floods caused by upstream mining activities and deforestation. The article denounced hydraulic mining for bringing down large number of debris and tailings; as a result, such mining wastes formed delta in the downstream, changed channels of rivers, and threatened agricultural activities at times.[85]

Hydraulic mining destroyed farmlands by producing large amounts of outwash on the downstream alluvial plains. The concerns about the encroachment of mining debris on the valley lands in the Sierras can be found in a 1917 geological survey written by Grove Karl Gilbert. The survey was initiated by the California Debris Commission with regard to primarily economic concern.[86] The commission was responsible for licensing hydraulic mining, inspecting and regulating the disposal of mining tailings.[87] Gilbert was appointed by the California Debris Commission to investigate the impacts of mining debris and changes in the condition of rivers, bays, valley lands. As the American geologist noted, the accumulation of mining tailings in the Great Valley by floods and rains often constituted a menace to the riparian dwellers and landowners.[88] In a more convincing way, the destructive fact of the mining debris can be found in a photo taken in 1908, which showed the many accumulated tailings in the lowland environments of the Sierra Nevada with an estimated thickness of 70 feet.[89]

Complaints about the drained debris into Sacramento and Central valleys centered on "the burial of alluvial farming lands," "the obstruction to navigation," "the raising of the flood levels," and the increase of "periodic inundation."[90] Historically, the tension between mining and farming groups in California lasted for a long time. At first, the tension rested in the prior right to work the alluvial plains deposited with fine gold, and such prior right usually helped miners justify their right over the lands.[91] Later, their conflict moved to the destructive power of mining tailings and debris flushed down to the downstream agricultural regions. Although the landowners of farmlands reported numerous complaints, the mining companies believed that the direct disposal of tailings in running water was necessary; otherwise, the "expensive

[84] "Debris," *Sacramento Daily Union*, January 19, 1882.
[85] Ibid.
[86] Grove Karl Gilbert, "Hydraulic-Mining Debris in the Sierra Nevada," *U.S. Geological Survey Professional Paper*, January 1, 1917, 7, https://doi.org/10.3133/pp105.
[87] Ibid., 12.
[88] Ibid., 11.
[89] Ibid., Plate 1 B.
[90] Ibid., 11.
[91] Turrill, *California Notes*, Chapter X.

ditches and other structures would (will) be useless."[92] On the other hand, it was true that the levee construction and the rivers overloaded with mining debris reduced the drainage function of rivers, and therefore greatly increased the risk of flooding in the valleys.[93] However, it was not until 1862 that hydraulic mining debris became a recognized issue that paved way for the injunction passed by Judge Sawyer in 1884. The injunction banned hydraulic mining and regulated the dumping of tailings into streams. In the Yuba region, for example, mining companies began to construct dams to store the sediment and tailings after that injunction.[94] As a result, some of the Chinese miners who only worked the discharged tailings were affected and decreased greatly in number.[95]

Furthermore, hydraulic mining manipulated water resource to a larger extent. The most popular impression of hydraulic mining was the high-pressure nozzle that sprayed large quantity of water against the hills. Rocks on the mountainsides were quickly water-blasted by "the united forces of water and powder," and this destructive scenery featured in California gold mining since its invention in 1852.[96] In hydraulic mining, water came from rivers miles away and was usually brought through ditches dug on the ground rather than through the flumes, although the latter were quite common in river mining practices. In *California Notes* published in 1876, the historian Charles B. Turrill explained the reason for not considering flumes to transport water as the much higher construction and maintenance costs and less durability of flumes made of lumber.[97] The water was then stored in reservoirs from which it was delivered through enclosed pipes to serve hydraulic mining activities.

Fourthly, mining used quicksilver to separate gold deposits at that time. This method inevitably posed a toxic threat to the neighbouring watersheds and the downstream agricultural lands where hydraulic mining tailings were deposited. Even today, research has revealed that there is still quite a high mercury concentration in the pre-mining sediment in the northern California mining district.[98] An important step of hydraulic mining was to fragment the auriferous deposits with high-pressure water, and then divert the rinsed sediment to sluices where gold was

[92] Ibid.
[93] Gilbert, "Hydraulic-Mining Debris in the Sierra Nevada," 25.
[94] L. Allan James, "Sediment from Hydraulic Mining Detained by Englebright and Small Dams in the Yuba Basin," *Geomorphology* 71, no. 1–2 (October 1, 2005): 202–26, https://doi.org/10.1016/j.geomorph.2004.02.016.
[95] United States War Department, *Report of the Secretary of War*, 3053.
[96] Turrill, *California Notes*, Chapter X.
[97] Ibid.
[98] Tyler K. Nakamura, Michael Bliss Singer, and Emmanuel J. Gabet, "Remains of the 19th Century: Deep Storage of Contaminated Hydraulic Mining Sediment along the Lower Yuba River, California," *Elementa*, November 23, 2018, https://doi.org/10.1525/elementa.333.

separated by gravity from the mixture.[99] To facilitate the separation, miners added the quicksilver into the mixture to increase the weight of gold by amalgamation, so that the heavier gravels remained for further operation.[100] In general, the hydraulic mining sluices reached several hundred feet long.[101] Miners added the quicksilver in the process of sluicing on a daily basis, and a large quantity of water was carried through pipes to wash the mixture.[102] Although the sluice boxes were made to prevent the leakage of quicksilver, and the miners processed and recollected the quicksilver before dumping the tailings into the streams, there was still a considerable amount of remaining quicksilver in the wastewater and the tailings drained into the lowlands.[103]

Despite the fact that the environmental law passed by Judge Sawyer regulated the pollution of hydraulic mining tailings in the case of *Woodruff v. North Bloomfield Mining and Gravel Company* in 1884, the previously discharged contaminated tailings had laid the groundwork for long-term environmental impacts. On the other hand, the history of mining in California left valuable experience and shaped today's legal frameworks regulating water use and discharge of mining wastes. In the historical mining regions, policies in relation to water management is more complicated than other parts; also, the regulations on the discharge of mining waste have become stricter.[104]

From the inception of the California Gold Rush, Chinese labor was highly involved in constructing waterworks in mining, agriculture, and reclamation.[105] American companies initially employed Chinese workers to build levees, dams, ditches, and flumes in northern California and the surrounding mining states of Nevada and Oregon.[106] They were also largely

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[99] Ibid.

[100] Charles Volney Averill, *Placer Mining for Gold in California*, 1st ed. (California State Printing Office, 1946), 29 and 135.

[101] Gilbert, "Hydraulic-Mining Debris in the Sierra Nevada," Plate 1 A.

[102] Averill, *Placer Mining for Gold in California*, 29; Bowie, *A Practical Treatise on Hydraulic Mining in California*, 244.

[103] Bowie, *A Practical Treatise on Hydraulic Mining in California*, 220, 244-245; Siskiyou County Historical Society, *The Siskiyou Pioneer*, vol. 2, no. 10 (1957), 28.

[104] Sophie Thomashausen, Nicolas Wolfram Maennling, and Tehtena Mebratu-Tsegaye, "A Comparative Overview of Legal Frameworks Governing Water Use and Waste Water Discharge in the Mining Sector," *Resources Policy* 55 (December 1, 2017): 143–151, https://doi.org/10.1016/j.resourpol.2017.11.012.

[105] California. Office Of State Engineer and William Hammond Hall, *Irrigation in California (Southern): The Field, Water-Supply, and Works, Organization and Operation in San Diego, San Bernardino, and Los Angeles Counties: The Second Part of the Report of the State Engineer of California on Irrigation and the Irrigation Question* (Sacramento: J. D. Young, Supt. State Printing, 1888), 354-355.

[106] Numerous archives have been preserved that detail the employment of Chinese workers in construction projects. See for example: Smith Jr. to V.G. Bell, July 4, 1876, Milton Mining and Water Company Records, California State Library, Sacramento; Julian Dana, *The Sacramento: River of Gold*, 1st ed. (New York: Farrar & Rinehart, 1939), 160; *Mining and Scientific Press*, September 12, 1868.

engaged in reclaiming swamps in the delta plain that benefited regional agricultural development.[107] Reclamation changed the landscape of cities and towns as well. For instance, the business center of Sacramento Valley was built on reclaimed land, and approximately 2000 acres were reclaimed from the original salt marsh lands and bay surface within the boundaries of San Francisco.[108] The California Gold Rush also witnessed knowledge transfer and acculturation of hydraulic techniques on American soil.[109] More importantly, water resources, location, natural and social environment interacted with each other and played a decisive role in ensuring the continuity of traditional Chinese devices. At the same time, the use of Chinese conventional tools showed the wisdom of Chinese miners in the face of conflict and undesirable conditions. On the other hand, Chinese miners were important participants in the extensive and large-scale mining operations in the nineteenth century that negatively impacted the local landscape and riverscape.

Cheap Chinese labor, crowded and dilapidated Chinatowns

Chinese laborers were a major source of labor during the labor shortage that followed the gold rush boom. In 1862, President Lincoln signed the Pacific Railroad Act, hoping to strengthen East-West links and maintain American unity at a time of Civil War. The construction of this railroad linking the east and west coasts of the United States required a substantial labor force, and Chinese workers coming out of the waning gold rush sector were the best choice for the federal government and Chinese workers were therefore heavily involved in the construction. In this context, the United States wanted to recruit more Chinese laborers from China, so Anson Burlingame was appointed by Lincoln as the American envoy to China to seek cooperation and eventually achieved diplomatic success. The year 1868 saw the signing of the famous Treaty of Burlingame between the Qing government of China and the United States, which established equal relations between the two sides.

Capitalists in manufacturing and production industries lacked a large supply of cheap and skilled labor due to the abolition of slavery in the United States at the end of 1865. Undoubtedly,

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[107] John McDougal, "Reclamation of 'Tule Lands,'" Annual Message, January 7, 1852, quoted in Gunther Paul Barth, *Bitter Strength: A History of the Chinese in the United States 1850-1870* (Cambridge: Harvard University Press, 1964), 136; Sherman Day, "Report," in Tide Land Reclamation Company, *Fresh Water Tide Lands of California* (San Francisco: M.D. Carr and Co., 1869), 25.

[108] Phillips, *Letters from California*, 138; Carl Ewald Grunsky, "The Sewer System of San Francisco and a Solution of the Storm-Water Flow Problem," *Transactions of the American Society of Civil Engineers*, Paper No. 1127 (1909), 299.

[109] See, for, reference, a photo of Chinese miners practiced hydraulic mining in the Hawkinsville area at the end of the nineteenth century. Siskiyou County Historical Society, *The Siskiyou Pioneer*, vol. 8, no. 4 (Yreka, CA: Siskiyou County Historical Society, 2005), 86.

Chinese workers became the best option. At the same time, the completion of the transcontinental railroad in 1869 led to the rapid growth of the urban population as well as industrialization in the following decades. As a result, migration of people to cities and towns led to a rapid deterioration of the urban environment and widely raised public health concerns. In the same time period, California's urban Chinatown began to absorb the influx of Chinese immigrants who had previously labored for their livelihood in the rural areas. According to the laws, the majority of Chinese immigrants were not allowed to obtain American citizenship and therefore did not own properties. Usually, they rented houses from white landlords who sought the "maximum profit."[110]

The answer to the question of whether the Chinese could choose to live outside Chinatown at that time was sad and disappointing. The social segregation of Chinatown from the rest of the city made it hard for Chinese to find lodging outside of Chinatown unless they were live-in servants or employees living in Chinese laundries.[111] Consequently, Chinatown was always overcrowded with the constant Chinese arrivals. The ethnic enclave was both culturally and spatially segregated from the rest of the American world, yet it was a spiritual resort where overseas Chinese lived, worked, obtained help from community organizations, found their cultural identities, and escaped from blatant discrimination and violent attacks. Familiar living and cultural environments play an important role in connecting diaspora networks, immigrant memories, and immigrant identities.[112] From the 1870s to 1880s, Chinatown became more self-sufficient as a direct outcome of growing manufacturing companies and a stable production and supply chains within the neighborhood.[113] With the rise of anti-Chinese sentiment and the Chinese Exclusion Act, the manufacturing sectors in the big Chinatowns in California became one of the few options for providing jobs for Chinese wage workers. However, this further deteriorated the living conditions in Chinatown.

Since the beginning of the gold rush, Chinese people met with structural racism. Many discriminatory state laws and tax policies against the Chinese were established prior to the 1882

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[110] Guenter B. Risse, *Plague, Fear, and Politics in San Francisco's Chinatown* (Baltimore: Johns Hopkins University Press, 2012), 6-7.

[111] "Fate of Chinese," *Los Angeles Sunday Times*, Jan 20, 1907; Roberta S. Greenwood, *Down by the Station: Los Angeles Chinatown, 1880-1933* (United States: Institute of Archaeology, University of California, Los Angeles, 1996), 11.

[112] Uwe Lübken, "Introduction: Chasing a Ghost? Environmental Change and Migration in History," *Global Environment* 5, no. 9 (2012): 4–24.

[113] John W. Stephens, "A Quantitative History of Chinatown, San Francisco, 1870 and 1880," in *The Life, Influence and the Role of the Chinese in the United States, 1776-1960*: *Proceedings of the National Conference Held at the University of San Francisco July 10, 11, 12, 1975* (San Francisco: Chinese Historical Society of America, 1975), distributed by ERIC Clearinghouse [Washington, D.C.], 117.

Chinese Exclusion Act passed by the U.S. Congress. The act was not only the first discriminatory act in U.S. history that suspended the entrance of a specific race into the United States, but it was also dismissive of the great contributions made by Chinese immigrants in the American West expansion and the early development of California.[114] The Act was enacted against the background of a long economic recession from 1873 to 1877 that resulted in the unemployment of the white working class. Over the next 60 years, the act was amended and extended several times until the U.S. Congress passed the Magnuson Act at the end of 1943, which appealed the Chinese Exclusion Act.

Chinese laundry has a long history, dating back to the Gold Rush. Archaeological findings indicate that Chinese miners of the time were already working part-time as laundry workers in mining camps.[115] The low capital investment, low English levels, and job skills required to open a laundry made it the major option for Chinese immigrants in the second half of the nineteenth century and into the early twentieth century.[116] However, with the anti-Chinese agitation that began in the 1870s, a large number of Chinese workers lost their jobs, with only the explosives industry, laundries, and domestic service surviving as viable employment options.[117] As Alexander Saxton points out, despite the discrimination and exclusion of Chinese laborers, whites generally accepted Chinese immigrants engaging in services of minimal prestige that whites were unwilling to do.[118]

From the mid-nineteenth century to the early twentieth century, recurrent epidemics shaped the history of California. The fate of the Chinese immigrant community was likewise deeply affected by these diseases. In addition to the white working class, the health officials raised a rallying cry against Chinese immigrants. Contemporary disease theories took the environmental conditions into consideration to justify the link between water, waste, and disease. Health officials had a set of health concepts that were formed in the classical period and were similar to traditional Chinese medicine. They believed that physical health was closely linked to the health of the surrounding environment (such as water, air, and land) and

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[114] The act aimed at prohibiting Chinese immigration to the United States did not apply to Chinese merchants, tourists, students, or teachers who were not laborers.
[115] Sarah Christine Heffner, *Archaeological Investigations of Weilijia Bu: Yreka's Chinese Community*, Issue 36 of Publications in cultural heritage (California Department of Parks and Recreation, Cultural Resources Division, 2019), 16.
[116] David I. Bernstein, "Lochner, Parity, and the Chinese Laundry Cases," *William and Mary Law Review* 41, no. 1 (1999): 211-294.
[117] Mary Praetzellis and Adrian Praetzellis, *Putting the "There" There: Historical Archaeologies of West Oakland: I-880 Cypress Freeway Replacement Project*, 2004, 242.
[118] Alexander Saxton, *The Indispensable Enemy: Labor and Anti-Chinese Movement in California* (Berkeley: University of California Press, 1995), 60.

the health of the nation. The gas from drains, open/broken sewers, privies, and stagnant water on roads was believed to disseminate poison and disease. The insanitary condition of the locality, as well as the bad sewers, were claimed as causes of epidemics. Therefore, human health was shaped by the environment in which one lived.

In addition, modern Western medicine of the time linked the notions of hygiene and health to identity, morality, and social class. Early public health reforms, while beautifying cities and improving public health to some extent, also exacerbated social inequality and racism. In this way, people living in ghettos and marginalized people were seen as even more of a threat to the health and morality of American people and culture. Beginning in the 1860s, California gradually took public health reform initiatives and began to (re)construct sanitation infrastructure and improve the public health environment, such as street paving, construction of separate piping systems for sewerage and water, and so forth. However, California Chinatowns were often neglected in the plans and still suffered from poor sanitation facilities and a deprived neighborhood environment until the turn of the century.

The image of Chinatown as a filthy and disease-infested area was widely embedded in medical reports, political and health officials' narratives, anti-Chinese political propaganda, and sensational press coverage, all of which eventually influenced immigration policies in the following decades. Persistent and systematic anti-Chinese accusations sparked widespread hostility in California. In this process, filth and disease have played an important role in interpreting racial difference and *otherness*, and justified the Chinese exclusion of the time. Moreover, the association of the disease with Chinese immigrants went beyond the medical dimension and touched on the social realm. In several epidemic outbreaks in California from 1870 to the turn of the twentieth century, while the labor union played the disease card to exclude Chinese competitors, merchants and politicians, driven by different interests, also used the epidemics to earn their political capitals.

The inherent stratification, educational level, and economic disparities within the Chinese population led to complex and diverse attitudes towards some of the government and health officials' ordinances. Yet, Chinese mutual aid organizations led by the Chinese elite and merchant classes have also played a significant part in the Chinese community's fight against racism and inequality. Traditional Chinese medicine and Chinese herbalists also struggled to protect the health of their community members and their traditional cultural practices. Moreover, the Chinese community's use of the constitutional laws and federal courts to

challenge local discriminatory ordinances and assert their rights also reflected the contradiction between federal and local authority.

Research Questions, State of Research and Inspirations

Numerous scholars have made extensive contributions to the study of Chinese immigrants and their experiences in the United States. One such scholar is Ling Huping, who has conducted a comprehensive study of the history of Chinese (American) women across the United States from a transnational and multicultural perspective. Given that restrictions on Chinese immigration persisted for approximately sixty years, Ling's research explores the changing experiences of Chinese women in various spheres, including family, education, career, social and political. In addition, Ling examines the emergence of the controversial "model minority" stereotype of Asian Americans since the 1960s. This stereotype has resulted in policymakers and government public affairs departments often failing to distinguish between class structures and wealth disparities within the Asian community. Consequently, this group has become invisible when it comes to accessing public assistance and other public benefits.[119] The image of the "model Chinese" is also addressed in *The Chinese in America: A History from Gold Mountain to the New Millennium*. However, as noted by Cassel et al., regardless of whether Chinese were marginalized as undesirable immigrants during the xenophobic era of the nineteenth century or sought after as "model" immigrants in the latter half of the twentieth century, Chinese Americans have always been seen as perpetual foreigners. This scholarly work offers a revisionist view of the social origins of early Chinese immigrants in the United States and critiques classical assimilationist theories of Chinese immigrants and their culture in American cultural history previously held by many scholars. Moreover, the book examines Chinese mining in the American West and acknowledges the transfer of knowledge in mining activities.[120] While influential works have provided broad insights into the social, cultural, and political dimensions of Chinese immigrants, they have given little attention to the important role of environmental factors in Chinese immigration history. Likewise, there is a notable absence of an environmental humanities perspective in fields such as Asian American studies and American immigration history.

[119] See Huping Ling, *Surviving on the Gold Mountain: A History of Chinese American Women and Their Lives* (SUNY Press, 1998).
[120] See Susie Lan Cassel, *The Chinese in America: A History from Gold Mountain to the New Millennium* (Rowman Altamira, 2002).

In contrast, scholars in the fields of urban history, public history, and environmental history have placed great emphasis on environmental thoughts when studying urban landscapes, particularly with regard to infrastructure and the built environment. Martin Melosi, a leading scholar in this field, has conducted extensive research on the relationship between urban water infrastructure and the development of medical and sanitary services, technological advances, and the evolution of the U.S. administrative system. For instance, in his book *The Sanitary City*, Melosi provides a national perspective on the modernization of sanitation technologies, infrastructure, regulations, practices, and services in the United States. His analysis highlights the important impact of environmental factors on urban sanitation infrastructure systems, particularly in the areas of water, sewerage, and waste disposal. Drawing on the development of disease theories and environmental theory, Melosi divides the development of urban sanitary infrastructure and its underlying socio-political context into three periods: the era of miasma theory, the era of bacteriology, and the era of new ecology. The scholar acknowledges that the construction of urban sanitary infrastructure and services has resulted in varying degrees of social inequality and discrimination.[121] However, the scholar does not offer in-depth case studies or analyses of these issues in relation to various races, classes, or marginalized groups. At the same time, the examination of the ideology and logic expressed by urban space and the built environment is also under-researched in this scholar's work.

Moreover, the causes of the Chinese exclusion movement have been discussed extensively in the academic community and are generally considered to be related to labor competition, diseases, crime, assimilation, and non-Christian religion. All these arguments can explain each specific situation, but they cannot be used to explain and uncover all the historical facts. Indeed, no single study exists which adequately investigates the role of environmental inequality and racism in the anti-Chinese movement in the post-gold rush era in California. Moreover, researchers rarely treat Asians as a minority or disadvantaged group, and studies on environmental racism are mostly concerned with African Americans and Hispanics. Therefore, this work revolves around two inherently intertwined dimensions — the environment and social justice — and tells stories of the neglect and marginalization of Chinese immigrants in California in the post-gold rush era.

This research explores how water, waste, and disease shaped environmental racism and inequality against the California Chinese communities, and their struggles in response to such

[121] See Martin V. Melosi, *The Sanitary City: Environmental Services in Urban America from Colonial Times to the Present* (University of Pittsburgh Pre, 2008).

racism. With more detailed insights, the study explores the roles of water, waste, disease in the modernization of water supply and sewage systems, sanitation facilities. It also briefly discusses the process by which the emerging concept of public health and hygiene created the "American race," citizenship, and the Chinese *other*. In fact, throughout history, Chinese immigrants were not the only population deemed a threat to American public health. Native Americans and immigrants from Mexico, Japan, and southern and eastern Europe were also legitimized as health risks during the nineteenth and early twentieth centuries.

This study focuses on the predominant ways in which the mainstream saw and interpreted the *other — here,* Chinese immigrants — and the ways in which water and wastewater were utilized symbolically, politically, and even spatially in the process of the anti-Chinese movement. This work also analyzes the prejudiced discourses of "filthy Chinatown" to explore connections between racial attitudes and environmental thought in late-nineteenth and early twentieth century California. The examination of Chinatown's physical environment and infrastructure serves to bring the question of environmental racism and injustice to the forefront of the nineteenth century's rampant anti-Chinese sentiment. Therefore, this new perspective showed the complexity of the Chinese exclusion movement intertwined with environmental racism, public health reform.

The urban environmental history is no longer a history of ecological change nor of modernization; it has become an entanglement of various factors involving migration, race, public health, architecture, and infrastructure. These factors "came together to form a powerful interpretation scheme for the co-construction of the body and the city." [122] This study complements the history of Chinese immigration and the history of public health reform in California for understanding issues that continue to stir American politics today, such as the definition of citizenship, environmental racism and injustice, the meaning of equality, and the relative power of national and state governments.

Sources

While this dissertation focuses on the intertwining of California environmental history and Chinese immigration history throughout the Gilded Age and Progressive Era, I also discuss the history of Spanish and Mexican rule in California as well as the Gold Rush. Since the study

[122] Jan Hansen, "Shaping the Modern Body: Water Infrastructures in Los Angeles (1870-1920)," *Body Politics* 6, Heft 9, S. (2018): 47–70.

subject is the Chinese immigrant group, the paper also addresses the history of Guangdong Province of China during the nineteenth century (from where the vast majority of Chinese immigrants during this period came) and explains the continuity of traditional Chinese culture and technology.

Water, waste, and disease are the main themes that run throughout this research topic and were the key factors affecting Chinese immigrants living and working in California in the historical context of this research. The interaction between these three factors also serves as a lens for interpreting the Chinese exclusion movement, environmental racism, and injustices against the Chinese population. Consequently, this study also explores water, waste, and disease within the cultural and political contexts of China and the United States at the given time of this study.

This study integrates both Chinese and English-language archival sources. The Chinese archive is mainly used to explore Chinese water culture and water-related technologies, philosophies, and medical thoughts. Based on the continuity of ancient Chinese culture and tradition, the Chinese archives include Confucian and Taoist thoughts, as well as agricultural and technical books from the seventeenth to the nineteenth centuries. On the other hand, the English primary sources are predominantly from the second half of the nineteenth century to the beginning of the twentieth century and are divided into six types. The first type includes local government, public health boards, and medical reports. The second type consists of contemporary leading newspapers, journals, and documents recorded in microfilms. The third group is made up of contemporary travelogues, literary works, illustrations, and photos. The fourth category involves correspondence from government officials, etc. The fifth category contains maps of San Francisco, Los Angeles, and Sacramento from the nineteenth century. The sixth type is notes, documents, meetings, etc. at the given historical time.

Since historical materials on Chinese immigrants in California are scarce in the United States and China, and existing literatures and archives center on limited aspects, I use secondary sources to explore the missing historical facts and to support my argument. This includes museum brochures, Him Mark Lai archives and research files, archaeological reports, books, and journals.

I undertook archival research at the Huntington Library in Los Angeles, the California State Library at Sacramento, the Bancroft Library, and the Ethnic Studies Library at UC Berkeley. I also went through certain archives scanned and emailed to me by staff from the National

Archives and Records Administration (NARA), the San Francisco Public Library, San Francisco History Center, Los Angeles City Archives, and the Siskiyou County Library.

Theories and Concepts

I employ "level of analysis" in social science to understand overseas Chinese communities and the anti-Chinese movement in California. In this study, the micro level consists of the Chinese community, Chinatown, and various Chinese organizations, whereas the meso level includes primarily Californian cities and towns, capitalists, the city and the health authorities. The macro level involves the nation, society, and international networks. During the researched historical period, Chinese organizations and immigrant groups led by the merchant and elite classes maintained strong ties to their home country. Various Chinese associations not only established a domestic network amongst Chinese residents in various regions of the United States, but also fostered the international network between overseas Chinese groups and China.

In analyzing prejudiced discourse that helped anti-Chinese forces to conceptualize the relationship between disease, filth, and Chinese, to instigate anti-Chinese agitation, and to justify the exclusion, I primarily use Teun A van Dijk's theory of prejudice in discourse and racism in media, the Foucauldian framework of the 'power-knowledge' and 'discipline' as an analytical devise to explore prejudiced discourse, Mary Douglas' theory of purity and dirt, the race theory proposed by Michael Omi and Howard Winant, and the attribution theory proposed by Heider. I apply the theoretical notion of *group labels* and *otherness*, as well as the *similarity* theory to examine group prejudice manifested in discourse. In Chapter 3, these theories are incorporated and applied in detail to analyze the prejudiced discourse in historical literatures.

Then, as the main theme of argument in this dissertation, this study explores the neglected intersection between Chinese exclusion and public health reform in California throughout the latter part of the nineteenth and the early twentieth centuries drawing on the concepts of environmental racism and injustice developed by Robert Bullard.

In addition, this study analyzes the spatial distribution of water infrastructure as a lens through which to view the environmental (in)justice of the Chinese American community. This approach is partly based on the theoretical grounding of urban hydrology and inspired by urban political ecology. Urban political ecology critically examines the practices of elite groups in controlling the construction and distribution of the urban material environment, often at the

expense of disadvantaged groups.[123] As Matt Gandy's case studies on water and modernity demonstrate, modern urban planning through uneven infrastructure development is the basis for the creation of spatial order with far-reaching social and political implications. Notably, Gandy exemplifies the various conceptualizations of water and the realization of modern hydrological systems in six cities at different periods and points out the exacerbated problems of social disparities and racism in the historical context of urban modernity.[124] Similarly, Nik Heynen, Maria Kaika, and Erik Swyngedouw recognize the intrinsic link between capitalist urbanization processes and the inequitable distribution of social and environmental resources, benefits, damages, and infrastructure. The scholars suggest that the study of social power relations and the networks of these relations is central to the examination of urban socio-environmental justice issues.[125]

Based on the natural, material, capital, and socio-political properties of water, Gandy, Hynen, Kaika, and Swyngedouw argue that water and its technological networks and infrastructure are fundamental to sustaining urban metabolism, regulating social power relations, and producing modern urban space. Historically, the construction of water technological networks and infrastructure has been closely linked with the concept of modernity. Modernity arose from nineteenth-century urban models based on ideologies of cleanliness and a progressive discourse emphasizing morality and social discipline.[126] By examining the relationship between the development of urban water infrastructure and urban space, this dissertation offers novel insights into the challenges of social and environmental inequality faced by Chinese immigrant groups in California during the late nineteenth and early twentieth centuries.

Structure of the Dissertation

The first chapter begins with a comparison of the nineteenth-century Chinese and American water cultures in terms of philosophies, metaphors, and material cultures. This section examines the various approaches to (waste) water management in Guangdong Province of

[123] See Erik Swyngedouw, *Social Power and the Urbanization of Water: Flows of Power* (Oxford University Press on Demand, 2004).
[124] See Matthew Gandy, *The Fabric of Space: Water, Modernity, and the Urban Imagination* (MIT Press, 2014).
[125] Heynen, Nik, Maria Kaika, Erik Swyngedouw, et al. *In the Nature of Cities: Urban political ecology and the politics of urban metabolism*. Routledge, Taylor and Francis Group, 2006, p. 9.
[126] Kaika, Maria, and Erik Swyngedouw. “Fetishizing the Modern City: The Phantasmagoria of Urban Technological Networks.” *International Journal of Urban and Regional Research*, vol. 24, no. 1, Wiley-Blackwell, March 2000, pp. 120-38; Matthew Gandy, “Rethinking Urban Metabolism: Water, Space and the Modern City,” *City* 8, no. 3 (December 1, 2004): 363–379.

China, Spanish and Mexican California, and American California. In California under the American rule, water resources underwent a transition from the public ownership of the previous Spanish and Mexican periods to privatization and commodification. Control over water became a key aspect of American modernity, and this control manifested itself in many forms, in particular, water facilities and water supply and drainage systems. Clean water not only symbolized social progress, but also underpinned the nineteenth century definition of the concept of the "modern body". By contrast, unsanitary living conditions were also increasingly seen as a sign of personal, moral, and political decadence and a potential source of disease. In this sense, the second section of the chapter examines the relationship between water, waste, and disease, placing the focus on theories of diseases in China and the United States throughout the nineteenth and early twentieth centuries.

The second chapter explores the various aspects of environmental injustice and racism manifested in major Chinese neighborhoods in nineteenth-century California. Based on contemporary disease theories closely associated with filth and water, this section focuses on environmental racism against Chinese immigrants built upon such pseudoscientific knowledge of disease in the context of the Chinese exclusion movement and the outbreak of epidemics from 1870 to 1910. Environmental racism against the general Chinese neighborhoods manifested itself in four ways: the built environment of Chinatown ghettos, the visible and invisible sanitary borders that separated Chinese neighborhoods from the rest of the city, the relocation of Chinatown, and the accessibility to water. Regarding the neighborhood environment in Chinatowns, I paid special attention to the commonalities in the geographic location and built environment of California Chinatowns. This chapter examines street conditions, drainage and sewage facilities, and building materials in these Chinese neighborhoods. Specific cities were selected for the study, including San Francisco, Sacramento, San Jose, Los Angeles Chinatowns, and other small Chinese neighborhoods in California, based on available archives. These cities had a sizeable Chinese population at that time, and therefore they are representative in this study. I then discuss the environmental racism and injustice faced by the Chinese community through historical facts related to water, waste, and disease, such as quarantines, Chinatown relocations, fires, laundries, and modern sewer and water systems.

Chapter three explores in detail how the local society's understanding of "filth" and "cleanliness" changed over time during this historical period and how the image of Chinese immigrants in mainstream American discourse changed based on this understanding. This section analyzes

how anti-Chinese voices established the "other" identity of Chinese immigrants through formal and informal prejudicial discourses about filth and disease. In the early days of Chinese immigration to California, Chinese immigrants were welcomed and appreciated as hard workers and "good citizens." However, the outbreak of various epidemics, the construction of "sanitary cities" (Melosi) advanced by the health reform movement, labor market competition, and the depressions of the 1870s led to a change in this perception. This was particularly evident in the increasing derogatory treatment of Chinese immigrants living in Chinatown, making them victims of environmental racism in both language and behavior.

Chapter four highlights the role of numerous Chinese organizations, community leaders, and traditional Chinese medicine in helping the Chinese community to fight external hostility in the face of public medical care limitations and social exclusion. In addition, I take into account the different attitudes and conflicts within the Chinese community when they were compelled to accept Western vaccinations to combat smallpox and bubonic plague.

Chapter 1: Waste, water, and disease in Chinese and American cultural identities

1.1 *Shui* and water: comparing Chinese and American cultures of water

1.1.1 Chinese water culture, metaphor, and philosophy

Water culture refers to the aggregate of cultural phenomena and practices shaped by the relationship between people and water in the development of society, in which water conveys cultural meanings and social representations of various ethnic groups.[127] Since (water) culture is developed by social practices and is associated with religious beliefs, people continuously created new understandings of it in given periods and regions.[128] As Greeley argued, "water was sacred before it was material."[129] Water culture first reflects spiritual and religious demands, in which it serves as the metaphor of sacred power in religious rituals and traditional treatment of disease.[130] As a subculture, water culture concerns the material culture that includes water landscaping, waterworks, and water engineering, among others. It also covers policies, laws, regulations, and institutions that rule water management, disposal, and protection.

Climate and geography played a relatively constant role in the formation of Chinese water culture. Chinese civilization originated from multiple centers located along the Yellow River

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[127] Dylan Kelby Rogers, *Water Culture in Roman Society* (Leiden: BRILL, 2018), 4; Huaichun Jin 靳怀埥, *Tushuo zhuzi lunshui* 图说诸子论水 [An Illustrated Book of Scholars' Argument on Water] (CNPeReading, 2015), eBook.

[128] T. S. Eliot, *Notes Towards the Definition of Culture* (HMH, 2014), 26–29.

[129] June-Ann Greeley, "Water in Native American spirituality: Liquid life-blood of the earth and life of the community," *Green Humanities: A Journal of Ecological Thought in Literature, Philosophy & the Arts* 2 (2017): 156-179.

[130] Jin, *Tushuo zhuzi lunshui*; Among the three main Chinese schools of thought, Taoism and Buddhism are actually mixtures of religions, philosophies, and folk cultures that practice sacred water rituals to expel evil, prevent disasters, and cure diseases. Water is also highly important in ritual washing and in prayers. In Christianity and Catholicism, for instance, holy water is primarily used for spiritual cleansing, such as in the practice of baptism, in which water represents carnal, spiritual, and moral purification as well as blessings. Native Americans also celebrate water in their folk culture; they endow water with a supernatural power that rules life and death as well as granting wisdom. See Greeley, "Water in Native American spirituality: Liquid life-blood of the earth and life of the community," 156-179.

and Yangtze River, where the ancestors of the Chinese people of today enjoyed relatively vast plains for settlement. While the two rivers provided fertile flood plains for agriculture, there were also recurrent water disasters. Therefore, agriculture remained at the core of Chinese culture from the beginning, and water engineering, including irrigation and flood control, was critical for the survival and development of early cultural centers. To a certain degree, the formation of Chinese water culture conforms to the traditional understanding of environmental determinism that underlines the role of geography, climate, and biological environment. However, the dominance of this theory is *only* limited to the early stages of civilization; cultural, social, and political factors and historical contingency also had a far-reaching influence on the development of Chinese water culture and philosophy throughout history.[131]

By the nineteenth century, Confucianism, Buddhism, and Taoism were acknowledged as the three leading schools of thought in Chinese society after thousand years of collision and assimilation of various ethnic populations, cultures, and knowledge. Confucianism, in particular, had served as the dominant imperial ideology in major Chinese-ruled empires since the Han dynasty (206 BC–AD 220).[132] The unification of China by the Qin Dynasty (221 BC–206 BC) started the tradition of centralized empires, and the First Qin Emperor pushed for a series of unifying measures, including the standardization of the writing system, which assured the unification, transmission, and continuity of Chinese culture and philosophies throughout China's long history. Despite the fact that China experienced several periods under multi-state conditions and barbarian regimes in its history, these states and empires became sinicized, and non-Han arrivals were largely assimilated into the inclusive Chinese culture after taking over Chinese lands.[133] Thus, the dominant culture, knowledge, and philosophies stood firmly on the

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[131] Jared Diamond, in his book *Guns, Germs, and Steel*, discusses the decisive role of environmental factors that shape the process of cultural, social, and economic development. His argument emphasizes geographical influence, including proximate and ultimate factors, on different societies and fates. However, he clarifies that geography does not decide everything, but it has great influence in history. See Jared Diamond, *Guns, Germs, and Steel: The Fates of Human Societies* (National Geographic Books, 2017).

[132] In general, the history of China can be divided into four periods: prehistory, ancient China, imperial China, and modern China. The Qin Dynasty (221–206 BC) marked the beginning of Imperial China and political and cultural unification. The Han people constitute the dominant ethnic group in China, and their culture forms the core of Chinese culture. However, China is a diverse nation that has absorbed other ethnic groups and cultures in its development through historical imperial expansion, wars, suzerain-vassal state relationships, immigration, contacts with neighboring states, and political asylum. Some of the immigrants gradually assimilated into the Han people in the course of history, while others retained their identities and customs and are known as Chinese ethnic minorities. The original Han Chinese population and culture derived from the Yellow River Basin and extended northward, eastward, southward, and westward throughout history. Through this process, the main Chinese culture became diversified through contact with and assimilation of other racial groups while maintaining its dominant status.

[133] An example of the continuation of Chinese culture and general customs can be seen in the Chinese immigrants and laborers in California in the late-nineteenth and early twentieth centuries. The majority of Chinese in California retained the same cultural customs as fellow Chinese from their hometown in China. Creed

foundation of Chinese intellectual heritage. This assured the continuity of Chinese culture, water culture, and philosophy discussed in my argument.

The formation of Chinese water philosophy is attributed to the Hundred Schools of Thought in the pre-Qin era. In the course of history, the three Chinese philosophies—Confucianism, Taoism, and Buddhism—have absorbed certain concepts from each other and have molded ancient Chinese culture and ideology, despite the fact that they promulgate different, sometimes even conflicting, principles. Early Chinese water philosophy centered more on individual and national ethics. In many instances, the three philosophies celebrated similar naturalistic interpretations and values of water. Taoism takes its name from *Tao*, which means "the way of life." It appreciates the cosmological view of the "Supreme Ultimate," known as *Taiji* in Chinese. This logic weighs into the process and laws of generation, integration, and alternation of the world from the primordial status of *Wuji* (literally meaning "not being") to *Taiji*.[134] Such a process also reveals the philosophical thinking of Taoism conveyed by water. Water—followed by fire, wood, metal, and earth in the Taoist *Five Phases*—starts and completes the Taoist circle that mirrors the cyclical continuity of nature.[135] As the origin of all living things, positive water features such as self-replenishment, a sense of inclusion, purity, and power are highly admired by Taoist philosophy as elements of self-cultivation and moral behavior.[136] In this formulation, water is thus believed to be the material form and the best manifestation of *Tao* and its philosophy in the real world.

The renowned philosopher Lao Tzu, the founder of Taoist thinking, applied the material values of water as a metaphor for the highest degree of morality and behavior. In his explanation, water benefits and nourishes everything in all humility, and its selfless devotion reflects the virtues of generosity, sincerity, and kindness.[137] Therefore, "water-like behavior" became the

Haymond, *Chinese Immigration: Its Social, Moral, and Political Effect* (United States: F. P. Thompson, Superintendent State Printing, 1878), 81.

[134] Shuren Wang, *Returning to Primordially Creative Thinking: Chinese Wisdom on the Horizon of "Xiang Thinking"* (Springer, 2018), 20 and 104.

[135] The *Five Phases* in Taoist cosmology are *Wood, Fire, Earth, Metal, and Water*. However, they did not originate in Taoism. The first appearance of the *Five Phases* was recorded in a conversation between Prince Jizi and King Wu (reign 1046–1043 BC) of the Zhou Dynasty. The conversation was compiled as an archive in "Book IV The book of Chow, Section V The Great Plan," in Shu Ching, *Ancient China. The Shoo King, or the Historical Classic, Illustrated by Later Commentators*, trans. W. H. Medhurst, Sen. (Shanghai: Mission Press, 1846), 197-208; Michael Loewe, *Dong Zhongshu, a 'Confucian' Heritage and the Chunqiu Fanlu* (BRILL, 2011), 268.

[136] "Taiyi Shengshui 太一生水 [The Great One Generates Water]," in *Guodian Chu Slips* 郭店楚墓竹简. The bamboo slips were excavated from Jingmen Guodian Tomb No. 1 in Hubei Province, China. The tomb belonged to a Chu aristocrat in the Warring States period (475 BC–221 BC).

[137] See, for reference, Tzu Lao, *Tao Te Ching*, trans. Arthur Waley (Wordsworth Editions, 1996).

fundamental moral ideal in Taoist thinking and Chinese culture afterward.[138] Again, water is believed to be the origin of all things in ancient Chinese philosophy. The two Taoist foundational texts written by Lao Tzu and Chuang Tzu thus placed a high value on the *Arche* of water that generates lives and infinite physical forms.[139] Water is a polymorphic substance in the natural world; it has a gaseous state of vapor and a solid form of ice; it can transform into clouds, rain, and snow and converge into a sea because of temperature and gravity.[140] These various forms are frequently recounted in Taoist writings as metaphoric expressions for the endless changes of *Tao*, in which the notion of infinity is linked with the cyclical nature of existence in Taoist eternity. Such a process clearly manifests Chinese "metaphysical meanings."[141] Water symbolizes the origin of Taoist belief known as the *Almighty One*. In this regard, water rules the laws of life, and *Tao* prescribes the principles for the universe.[142]

On the other hand, the Taoist comparison of different bodies of water also exemplifies the way to achieve self-cultivation. In the allegory of the *Autumn Floods*, the water of the Yellow River produced vapor high into the sky when the autumn floods came, and the Lord of the River thus vaunted himself for his power to create such a magnificent water scene. However, the scale of the Yellow River was still insignificant compared with the North Sea, which Chuang Tzu depicted as the world's supreme beauty by virtue of its vastness. Having seen the grandeur of the sea, the Lord of the River reflected on his parochial perspective and repented his arrogance and ignorance.[143] In this way, Taoist philosophy proposes the relative notions of limitation and infinity, instructing people to explore beyond the limit of knowledge and challenge the anthropocentric view. Meanwhile, the most valued metaphors of water are *clearness* and *stasis*, which constitute the core of Taoist self-cultivation.[144] While *clearness* pays attention to inner

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[138] Lao Tzu was the founder of philosophical Taoism, born at the end of the Spring and Autumn periods (approximately 771 BC–476 BC). The original text states "The highest good is like that of water. The goodness of water is that it benefits the ten thousand creatures; yet itself does not scramble, but is content with the places that all men disdain. It is this that makes water so near to the Way." Lao, *Tao Te Ching*, 8; Sarah Allan, *The Way of Water and Sprouts of Virtue* (Albany: State University of New York Press, 1997), 24.

[139] Guan Zi, also known as Guan Zhong, was a Chinese politician and philosopher living in the 7th century BC. The chapter of "Shui Di" discusses various ideas inspired by water, including the water of philosophy, the water of humanity, and the water of governance. See for example, Zhong Guan and W. Allyn Rickett, *Guanzi 1* (Cheng & Tsui, 2001).

[140] Nick Verouden and Frans J. Meijman, "Water, Health and the Body: The Tide, Undercurrent and Surge of Meanings," *Water History* 2, no. 1 (June 1, 2010): 19–33.

[141] Haiming Wen, *Confucian Pragmatism as the Art of Contextualizing Personal Experience and World* (Lexington Books, 2009), 135.

[142] Chenggui Huang 黄承贵, "Shui: Laozi daolun de benyu 水：老子道论的本喻 [Water: the original metaphor of Laozi's Taoism]," *Qinghai Shehui Kexue*, Issue 6 (2004): 71-74.

[143] Zhuangzi, *Zhuangzi: The Complete Writings* (Hackett Publishing, 2020), 134-135.

[144] See, for reference, "Constrained in Will," "The Way of Heaven," "The Sign of Virtue Complete," in Zhuangzi, *Zhuangzi: The Complete Writings*, 2020; Wenzel analyzed the concept of awareness within the context of Zhuangzi's selfless philosophy, drawing inspiration from water. Christian Helmut Wenzel, "Ethics and

purity, *stasis* indicates that an outside agency should not disturb inner life. However, water in the natural world tends to become turbid if it stays stagnant. Taoist philosophy borrows this natural phenomenon and emphasizes the indispensable role of an internal driving force (*Qi*) to maintain Taoist vitality.[145]

As in Taoist thinking, "water-like behavior" in Confucian ethical thought is a virtue and metaphor for wisdom, morality, self-cultivation, and disciplined life.[146] The Confucian school taught scholars the virtues conveyed by water by observing the features of various water bodies and the laws of nature. Flowing water was credited with aspects of goodness such as purity, will, courage, and law as a symbolic vehicle to express Confucian thoughts.[147] In the classical allusion of Confucianism, water – due to natural laws – always flows downhill (due to gravity) regardless of outside factors; this trait is taken as a metaphor for gentlemen's behavior, which should insist on rules, honesty, and justice at all times.[148] On the other hand, the spirit of running water draws attention to the persistent pursuit of "the value ideal of Confucianism" and never giving up, indicating a similar view to Taoist eternity. [149]

The socialization and moralization of water are firmly based on the traditional Chinese doctrine of "the unity of heaven and man," which underlines the interaction and balance between nature and individuals. This cosmological view clarifies the reciprocal influence, which is critical to self-cultivation and the feudal, patriarchal politics based mainly on Confucian teachings.[150] It is quite clear that the biggest beneficiary of this doctrine was the reigning class, particularly the emperors, who enjoyed absolute authority in ancient China.[151] Since the Supreme Heaven was believed to rule everything in the world, such "interaction between heaven and mankind"

Zhuangzi: Awareness, Freedom, and Autonomy," *Journal of Chinese Philosophy* 30, no. 1 (March 1, 2003): 115-126.

[145] Philip J. Ivanhoe, "Zhuangzi on Skepticism, Skill, and the Ineffable *Dao*," *Journal of the American Academy of Religion* LXI, no. 4 (December 1, 1993): 639–654.

[146] Robert Paul Kramers, *Kung Tzu Chia Yu. The School Sayings of Confucius* (Leiden: E. J. Brill, 1950), 241-242; Mencius, another famous Chinese Confucian philosopher, also proposed a strong argument about morality and human nature expressed through the metaphor of water. See "Book 6A [6A2]," in *Mencius*, ed. Philip J. Ivanhoe, trans. Irene Bloom (New York: Columbia University Press, 2011).

[147] Allan, *The Way of Water and Sprouts of Virtue*, 24; See also Xunzi, *Xunzi: The Complete Text*, ed. and trans. Eric L. Hutton (Princeton: Princeton University Press, 2016).

[148] Xunzi, *Xunzi: The Complete Text*; Confucian philosophy praised highly the self-cultivation of individuals who were known as *Junzi* 君子, this term is often translated as "gentlemen," "respectable men of high stature," or "Men of Quality" in English. *Junzi* indicates educated people who have proper conduct and high morality. Loewe, *Dong Zhongshu, a 'Confucian' Heritage and the Chunqiu Fanlu*, 97.

[149] Huaijin Nan 南怀瑾, *Laozi Ta Shuo* 老子他说 (Taipei: Nanhuaijin wenhua shiye youxian gongsi, 2014), 142; Xiangjun Li, "An Explanation of the Confucian Idea of Difference," *Frontiers of Philosophy in China* 2, no. 4 (December 5, 2007): 488–502.

[150] Yixia Wei, *The Chinese Philosophy of Fate* (Singapore: Springer, 2017), 150-187.

[151] Loewe, *Dong Zhongshu, a 'Confucian' Heritage and the Chunqiu Fanlu*, 170, 243, and 252-253.

transferred the divine right to the emperor, who claimed to be the son of heaven. Through this process, the reigning class was legitimatized by the "Mandate of Heaven" to rule the country, enact legislation, establish social order, and exercise power. In the meantime, however, the doctrine had a binding effect on the emperors' behavior and morality. Heaven was in charge of rewarding or punishing the fate of the nation on account of the emperor's conduct, morality, or political achievement.[152] Therefore, rulers enacted laws authorized by the will of heaven, and in turn, the "heavenly principle" became the standard by which to judge their performance.[153]

Either cosmic or secular laws played critical roles in the top-down governance in cultural and political arenas. It is noteworthy that an important metaphor of water in ancient Chinese culture is justice and fairness.[154] The Confucian school enriched its philosophy of water by looking into the similarity between water and law. Since water has its source, and laws rest on codes and evidence for reference, therefore, respectable men should always stick to moral and behavioral principles. In this context, still water served as "a standard of levelness," which mirrored the fairness of laws.[155] From an etymological point of view, the traditional Chinese logogram for the *law* is 灋 (Chinese pronunciation: fa). In the ancient Chinese dictionary, the word "灋" obtains its meaning from punishment: the left Chinese radical "氵" means water, and the right part "廌+去" implies expulsion and exile by a legendary creature called "廌."[156] In this formulation, "氵" derives from water with the connotation of *standard*, *fairness,* and *justice*, which constitute the essential qualities of law. Hence, in Chinese, water also implies the notion of law and justice from the perspective of linguistics and etymology.

In terms of cultural and religious practices, water has been used to expel bad luck and "negative karma" in rituals.[157] As folk medicines were initially associated with primitive witchcraft, bathing or drinking a special kind of water was always representative of curing diseases or accomplishing religious practices in ancient China; the cold water affusion that was used to

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[152] Dingxin Zhao, "The Mandate of Heaven and Performance Legitimation in Historical and Contemporary China," *American Behavioral Scientist* 53, no. 3 (October 12, 2009): 416–433. Interestingly, the concept of "Manifest Destiny" in nineteenth century America bears similar role to the one of "Mandate of Heaven" in ancient China.
[153] See, for reference, Yonglin Jiang, *The Mandate of Heaven and The Great Ming Code (Asian Law Series)* (University of Washington Press, 2011).
[154] The dictionary is one of the oldest Chinese dictionaries and a classical work on Chinese etymology, completed in 100 CE. Shen Xu 许慎 (jingbu Han), *Shuowen Jiezi* 说文解字 [Discussing graphs and explaining characters] (*Qinding Siku quanshu* edition), juan 11.
[155] Zhuangzi, *Zhuangzi: The Complete Writings*, 49 and 52.
[156] Xu, *Shuowen Jiezi*. "廌" is a righteous unicorn-like creature in Chinese mythology that can discern right from wrong. It was in charge of reaching a verdict when people had disputes with each other.
[157] Clive Alando Taylor, *The Philosophy of Water* (Bloomington: Author House, 2013), 58.

treat smallpox in ancient China is an example of this.[158] Water was thus applied spiritually to eliminate evils that caused illness like washing away dirt. Historically, local customs practiced water rituals to exorcise evil spirits from sick bodies and cure diseases. In order to make water sacred and more mysterious, witches or religious leaders needed to prepare it with a particular process, including casting spells, chanting scriptures, drawing a talisman, or cleansing the body or hands with holy water as in Buddhist and Christian religious rituals.[159]

Chinese water philosophy holds a holistic vision of nature and society in which humanity is situated at the core. However, Chinese water culture also encompasses realistic problems caused by historical water-related disasters, thereby inheriting traumatic memories created by the negative aspects of water as well as more positive and rich experiences dealing with water. As with all civilizations, the cradle of Chinese culture and subsequent early settlements were primarily located along rivers, making people more vulnerable to water disasters. Indeed, Chinese history has been engraved with frequent floods since ancient times, occurring once every two years on average.[160] As an agricultural society, knowledge of water engineering to prevent flooding and maintain the ecological health of water bodies and lands was developed by ancient Chinese central governments, who firmly believed that water management was the fundamental policy that would decide the fate of the nation and the ruling class. For example, the River Defense Order of 1202, the earliest relatively complete set of flood control laws and regulations in China in existence, regulated flood prevention, water resource allocation, protection, and township rules and folk conventions.[161]

As a natural force with relentless power, water is embodied negatively through its destructive and cleansing powers. Since the beginning of human history, floods have been much feared and were often followed by large-scale epidemics such as cholera, typhoid, and plague. As a

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[158] Durham Dunlop, *The Philosophy of the Bath: With a History of Hydro-Therapeutics and of the Hot-Air Bath from the Earliest Ages*, 3rd ed. (London: W. Kent & Co., 1873), 88; "Folk Medicine, Magic and Witchcraft," *Medical History* 10, no. 3 (1966): 295.

[159] Springs were often the places to practice water rituals in pre-Christian traditions. Evy Johanne Håland, "Water Sources and the Sacred in Modern and Ancient Greece and Beyond," *Water History* 1 (2009): 83-108; Guozhen Qiu 邱国珍, *Zhongguo minsu tongzhi: Yiyaozhi* 中国民俗通志: 医药志 [Chinese Folklore Studies: Medical Science], ed. Qi Tao (Jinan: Shandong jiaoyu chubanshe, 2005), 116; Baisong Xiang 向柏松, *Zhongguo shui chongbai* 中国水崇拜 [Chinese Water Worship] (Shanghai: Shanghai Sanlian Shudian, 1999), 36-37.

[160] Kezhen Zhu 竺可桢, "Zhongguo lishi shang qihou zhi bianqian 中国历史上气候之变迁 [Climate Change in Chinese History]," *Dongfang Zazhi (The Eastern Miscellany)*, issue 3 (1925); see also, for reference, Tuo Deng 邓拓, *Zhongguo jiuhuang shi* 中国救荒史 [The History of Disaster Relief in China] (Beijing: Beijing chubanshe, 1998).

[161] Regulations on the control of rivers and floods can be traced back to the pre-Qin period. *Guanzi* recorded various ways to prevent floods based on the seasons, including the preparation of materials for autumn and winter, the repair of levees in spring, the inspection and maintenance of levees after spring, annual dike heightening, and so on.

cultural "paradigm," floods were recorded recurrently in myths, legends, and historical archives worldwide. However, floods were understood as natural disasters rather than divine punishment in China.[162] In this aspect, Chinese water culture manifests itself as the taming and management of water, as narrated in the famous story of Gun-Yu. The legend centers on the life stories of both Gun and his son Yu in controlling the Yellow River flooding. Water disasters continuously occurred for decades and destroyed numerous homes, lives, and farmlands, resulting in social disorder, famine, and countless displaced people. As in the flood myths in other parts of the world in the early ages, water was portrayed as a powerful force to be feared. With the emperor's mandate, Yu, skilled in hydraulic engineering, improved the primary method of building dams and embankments used by his father Gun; however, he also emphasized the importance of dredging by cutting canals and ditches to control the floods successfully.[163] This story shaped a heroic image and linked flood control, water management, and saving people and land to the successful ability of leaders to govern; thereby, it naturally conveyed a message of the "sanctions of political authority" and paved the way for the formation of "state power."[164]

Discourse about rivers, flooding, and the ensuing famines and epidemics frequently appeared as the main theme and as a long-germinating problem in official chronicles, documents, and biographies, and sometimes as a motif in narratives and literature in ancient China. The intellectual text *Guanzi*, among others, listed floods as the most severe harm to both public lives and the social order. Water source pollution and the frequent transmission of infectious diseases after great floods placed a heavy public health burden on society. For example, covers for wells were necessary to preserve water purity and prevent the contamination of drinking water by insects and rats.[165] A letter submitted to the Chinese emperor by an official in the early decades of the nineteenth century revealed that the pollution of the Man River had turned it green, which was probably caused by algae blooms, and resulted in pungent odors and the

[162] Anthony Christie, *Chinese Mythology* (London: Hamlyn Publ Group Ltd, 1968), 85 and 88.
[163] Mark Edward Lewis, *The Flood Myths of Early China* (State University of New York Press, 2012), 44.
[164] Ibid., 16–17; Yu became the next emperor since he successfully controlled the endless trouble brought by recurrent floods. Ge Jianxiong pointed out that "the clan chiefs of the late primitive society and the early state power were all linked to water control and conservancy." Jianxiong Ge and Yunsheng Hu, *A Historical Survey of the Yellow River and the River Civilizations* (Springer Nature, 2021), 12; Donald Worster, "The Flow of Empire: Comparing Water Control in the United States and China," *RCC Perspectives* no 5, 2011.
[165] The original documentation was in the agricultural book *Meng Xi Wang Huai Lu* 梦溪忘怀录 [Record of longings forgotten at Dream Brook] written by Shen Kuo 沈括 at the end of the 11th century. This work has been lost in history, but some scattered texts were compiled in the later written work of *Shuo Fu* 说郛 by Tao Zongyi 陶宗仪 around the mid-14th century. Zongyi Tao 陶宗仪, *Shuofu* 說郛, ed. Zongxiang Zhang, juan 3 (Taipei: Taiwan shangwu yinshuguan, 1972), 1400.

outbreak of endemic disease.[166] The displacement of refugees by floods often led to the spread of pestilence to other regions as well. In such cases, malnutrition and traveling long distances made displaced people more susceptible to infection, as did the terrible living conditions of the temporary shelters where they gathered seeking asylum, which were infested with fleas and lice that could transmit disease.[167]

Natural disasters such as floods and famines aggravated the competition for food and water between refugees and rodents; the latter often carried fleas with the potential to transmit the pathogens that would finally result in the outbreak of plagues.[168] According to county records and medical books from the Ming and Qing Dynasties of Imperial China, water pollution by dead mice carrying pathogens caused the spread of plagues and killed a large number of people. Dead mice were frequently found near water vats, ditches, and open wells since plague-induced fever drove the diseased mice to drink a lot of water.[169] Furthermore, early Chinese classics, such as *Zuo Zhuan* and *Lüshi Chunqiu*, documented numerous water-borne disease outbreaks after floods. The historical records evidently established a preliminary understanding of the association of infectious diseases with water.

1.1.2 Wastewater and waterworks in Guangdong, China, in the nineteenth century

In the nineteenth century, almost all Chinese immigrants and laborers in California came from China's Guangdong province. The Chinese Six Companies were founded by six influential district organizations, whose leaders and members came from six towns in Guangdong. It is noteworthy that the Chinese laborers working in California mining, constructing dams, and reclaiming waste swamp lands broadly made use of their traditional agricultural knowledge of

[166] Guogang Zhang 张国刚, ed., *Zhongguo shehui lishi pinglun* 中国社会历史评论, vol. 3 (Tianjin: Tianjin guji chubanshe, 2001), 250.
[167] Zhi Yu 余治, *De yi lu* 得一录, juan 4 and juan 5 (Harbin: Beifang wenyi chubanshe, 2022). This collection of local rules and regulations for townships was compiled from a large number of historical records, archives, and local documents by the philanthropist Yu Zhi in 1849. The local regulations showed autonomy in the local administrative and legal systems in ancient Chinese rural districts. The compilation embraces life experiences, charitable organizations and behaviors, local customs, and civil affairs and management.
[168] Ibid., juan 4.
[169] Shuji Cao 曹树基 and Yushang Li 李玉尚, *Shuyi: zhanzheng yu heping: zhongguo de huanjing yu shehui bianqian (1230-1960)* 鼠疫: 战争与和平: 中国的环境与社会变迁 (1230-1960 年) [The Plague: War and Peace: Environmental and Social Changes in China (1230-1960)] (Jinan: Shandong huabao chubanshe, 2006), 53.

dealing with water. To understand Chinese (waste)water management and examine if there was knowledge transfer in the past, my study traced waterworks back to the homeland of Chinese immigrants in California in the nineteenth century.

Historically, the continuous military expansion of Chinese civilization from the central plains to surrounding regions allowed it to absorb, integrate, and develop local water cultures and technologies based on the natural environments that varied from region to region and from time to time. This territorial and political expansion gave rise to the question of national water resources management, the enactment of guidelines, legal systems, and water source protection. Historically, the modern Guangdong area was ruled by the Chinese central government after the unification under the Qin Dynasty. Since then, it has embraced numerous waves of Han Chinese immigrants who married local people and brought Chinese culture from the Central Plain.[170] With the introduction of the advanced agricultural technology and knowledge from the central plains of the day, people living in the area took advantage of the abundant local water resources to promote the development of agriculture, water engineering, and canals.[171]

The nature of Chinese agricultural civilization drew on the importance of its relationship with land and water utilization. By the nineteenth century, Guangdong enjoyed a complicated water network, both natural and artificial, including waterways for transportation, hydraulic works, water supply, drainage systems, and wells for domestic purposes. The agricultural waterworks in Guangdong were shaped significantly by its special geographical conditions. The typical natural scene of "seven mountains, one water body, and three fields" paved the way for the construction of weirs in mountain areas and embankments in plains for the purpose of water conservation and agricultural irrigation.[172] When abandoned pools or reservoirs were silted up, Guangdong peasants often reclaimed them to grow vegetables and crops.[173] Water wheels were widely applied in Chinese agriculture, especially in Guangdong where there were numerous

[170] The Central Plain is culturally and geographically acknowledged as the birthplace of Chinese people and civilization. In relation to ancient China, the word refers generally to the areas dominated by Han Chinese people, culture, and governance. Jianxiong Ge, *Zhongguo yiminshi* 中国移民史 [Chinese immigration history] (Taipei: Wunan tuhua chuban gongsi, 2005), 75-76.
[171] Rongfang Zhang 张荣芳 and Niaozhang Huang 黄淼章, *Nanyueguo shi* 南越国史 [History of Nanyue] (Guangzhou: Guangdong renmin chubanshe, 1995), 187-188 and 195.
[172] Jianxin Wu 吴建新, "Mingqing shiqi guangdong de potang shuili yu shengtai huanjing 明清时期广东的陂塘水利与生态环境 [Water conservation project and ecological environment in Guangdong province in Ming and Qing Dynasties]," *Agricultural history of China*, Issue 2 (2011): 83-92; see also, for reference, The First Historical Archives of China 中国第一历史档案馆, *Guangzhou lishi ditu jingcui* 广州历史地图精粹 [Selected historical maps of Guangzhou] (Beijing: Zhongguo dabaike quanshu chubanshe, 2003).
[173] Wu, "Mingqing shiqi guangdong de potang shuili yu shengtai huanjing," 83-92.

mountains. The crop fields on mountains could be irrigated with water lifted by such wheels.[174] At the same time, water wheels and water machinery were efficient tools to solve drainage and irrigation problems caused by floods and droughts.[175]

The book *Tiangong Kaiwu* was compiled and published in the mid-17th century, and it incorporates agricultural and engineering technologies in existence before the mid-Ming Dynasty. This intellectual heritage was passed down and improved from generation to generation in the Chinese territory. The illustrated hydraulic works, including means of drawing water, draining, channeling, and irrigation, were still used in the nineteenth century. As shown in the following illustrations, Chinese waterwheels were used to drain and lift water from channels or rivers. These waterwheels came in various types depending on the driving force, including the hydro-powered Chinese Noria with tube-shaped objects used for irrigation and water supply, the manpower-driven chain pump equipped with foot pedals on the bank to lift and pump water, and wind-powered small water wheels for water drainage.

The transfer of hydraulic knowledge to Californian Chinese mining camps could be traced back to the above-mentioned agricultural techniques in ancient China. For example, the keel waterwheel was used to lift water from channels or rivers for irrigation, and Chinese miners used this technique in the California mining camps. According to the ancient Chinese book *Complete Treatise on Agriculture*, there were four pedals, respectively, at both ends of the upper shaft of the *keel waterwheel*, and the shaft was placed between the wooden stands on the shore. A man stood on the rack, stepped on the pedals, and drove the keel to turn; the wooden boards on the keel then brought water from the channels or rivers.[176]

Geographically, Guangdong is located on the Pearl River Delta and enjoys a subtropical climate that brings warm weather, abundant precipitation, and fertile lands. Mountains and numerous rivers on the plains together create large and complicated water networks. However, this abundance of water has brought persistent problems throughout recorded history. Due to the particular climate and hydrological conditions, frequent flooding in summer contrasts with the droughts that generally occur in winter. From the 14th century, frequent floods were recorded in this area, and therefore local residents accumulated a rich experience in hydraulic skills for

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[174] Ibid.

[175] Genpan Li 李根蟠, "*Shuiche qiyuan he fazhan congtan* 水车起源和发展丛谈 [The origin and development of waterwheel]," *Agricultural history of China*, Issue 2 (2011): 3-18.

[176] Guangqi Xu 徐光启 (Zibu Ming), *Nongzheng quanshu* 农政全书 [Complete Treatise on Agriculture] (*Qinding Siku quanshu* edition), juan 17.

controlling water.[177] The construction of dams and storage ponds protected both villages and farmlands from being destroyed by floods; at the same time, the hydraulic works shaped local crop growing and developed pluralistic pond agriculture, thus formulating early sustainable practices.[178]

Furthermore, with the fast population growth, the need for more land for habitation and agriculture reached a new height. The river delta provided the opportunity for large-scale land reclamation for agricultural use, which laid the foundation for the imported Chinese skilled labor to reclaim swamps and wastelands in California. Historically, Chinese irrigation mainly employed warping. The silt in the river water enriched the soil in the fields and improved the saline-alkali soils; on the other hand, farmers also used this method to reclaim marshland in the Pearl River Delta.[179] Chinese farmers dug tunnels in the swamps to drain the water and later used these tunnels as water supply systems to irrigate the land. Irrigation in the Guangdong region included "a combination of channels, storage ponds, and waterwheels based on different spatial conditions."[180] Also, the agricultural tools and techniques in ancient China generally remained unchanged since the 14th century.[181]

On the other hand, the layout of towns and cities was made based on local natural conditions, including geography, topography, and water sources.[182] Specifically, road drainage was an important consideration and component in the planning and designing of streets in ancient cities and towns. Drinking water was obtained from special canals and ditches going through the towns and cities; springs, wells, and water carts also provided water for domestic use. Professional water carriers walked through streets, selling water carried in buckets suspended

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[177] Zhou, *Qingdai liangguang nongye dili*, 11 and 16; see also, for reference, China Institute of Water Resources and Hydropower Research, ed., *Qingdai zhujiang hanjiang honglao dangan shiliao* 清代珠江寒江洪涝档案史料 [Archival Materials on Floods and Waterloggings along the Zhujiang and Hanjiang Rivers during the Qing Dynasty] (Beijing: Zhonghua shuju,1988).

[178] The local pluralistic pond agriculture included mulberry fishponds, fruit fishponds, and rice aquaculture. Maps of the towns and counties at that time showed large numbers of ponds. See, for example, Local Annals Compilation Committee of Jiangmen, ed., "Map of Jiangmen, 1840," in *Jiangmen shi zhi* 江门市志 [Jiangmen City Annals] (Guangzhou: Guangdong renmin chubanshe, 1998); Jiaxi Lu 卢嘉锡 and Kuiyi Zhou 周魁一, *Zhongguo kexue jishu shi shuili juan* 中国科学技术史水利卷 [History of Science and Technology in China, Water Resources] (Beijing: Kexue chubanshe, 2017), 214.

[179] Kuiyi Zhou 周魁一, *Shui de lishi shenshi: Yao Hanyuan xiansheng shuilishi yanjiu lunwenji* 水的历史审视: 姚汉源先生水利史研究论文集 [Historical Review of Water: A Collection of Essays on the History of Water Resources by Mr. Yao Hanyuan] (Beijing: Zhongguo shuji chubanshe, 2016), 20-28.

[180] Shuanglei Wu et al., "The Development of Ancient Chinese Agricultural and Water Technology from 8000 BC to 1911 AD," *Palgrave Communications* 5, no. 1 (July 9, 2019).

[181] Examination of the ancient Chinese agricultural books, such as Xu, *Nongzheng quanshu*, and Song, *Tiangong Kaiwu*, shows that instructions for hydraulic works and techniques with illustrations remained almost unchanged for centuries, starting in the 14th century.

[182] Andreas N. Angelakis et al., *Evolution of Water Supply Through the Millennia* (IWA Publishing, 2012), 170.

on a pole or loaded onto wheelbarrows and wagons.[183] In order to keep well water clean, people needed to follow water laws, and those who violated the rules would face punishment. At the same time, there were regulations, or rather customs, to clean the silt in the wells every year before summer to keep the water clean and prevent endemics in the summertime.[184] Making a cover or building a pavilion over the wells also prevented dirt from falling into the water and polluting it.[185] Other standard measures such as replacing the inside walls of the wells with ceramic tiles also helped avoid the impurities in the soil from polluting the well water.[186] The capital city Guangzhou suffered from the problem of salty well water due to the sea tide until a "tap water" system was developed that diverted spring water through bamboo tubes from the mountain outside the city at the end of the 11th century.[187]

According to the districts from which members of the Chinese Six Companies came, most of the Chinese living and working in California in the late nineteenth century were originally from Guangzhou and its surrounding cities, towns, and villages. To explain the waterworks in Guangdong province, I primarily use the archives of the capital city Guangzhou as an example.

In late Imperial China, the sewage system of Guangzhou functioned simultaneously as the drainage system, which was a complicated network due to the abundance of precipitation and frequent typhoon floods. This drainage system consisted of five parts: street gutters, the Six Canals (六脉渠) in the city, the moats surrounding the city, the Pearl River, and the South Sea. The famous Six Canals were masonry works built underground with a sluice to adjust the water level.[188] Given the local topography, the wastewater of the city ran through the Six Canals from north to south by gravity and was discharged into the moats outside Guangzhou; the sewage then flowed into the Pearl River and the South Sea.[189]

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[183] Ibid., 209.

[184] Zhong Guan 管仲 (Zibu Zhou), *Guanzi* 管子 [Works of Master Guan] (*Qinding Siku quanshu* edition), juan 16-juan19, "Jincang 禁藏."

[185] Xu, *Nongzheng quanshu*, juan 17.

[186] Dingzuo Li 李鼎祚 (jingbu Tang), *Zhouyi jijie* 周易集解 [The Collected Interpretation of Zhou Yi] (*Qinding Siku quanshu* edition), juan 10.

[187] Guangzhou Codification Committee, ed., *Guangzhoushi shuili zhi* 广州市水利志 [Local History of Water Resources in Guangzhou] (Guangzhou: Guangdong keji chubanshe, 1991), 69 and 149; Shi Su 苏轼 (Jibu Song), "Yu Wang Minzhong bashou zhi san 与王敏仲八首之三 [The third of eight letters with Wang Minzhong]," in *Dongpo quanji* 东坡全集 [The Complete Works of Dongpo] (*Qinding Siku quanshu* edition), juan 77.

[188] Zhengqing Zhou 周正庆, "Qingmo minchu Guangzhou chengshi de huanwei zhidu yu huanjing zhengzhi 清末民初广州城市的环卫制度与环境整治 [Sanitation System and Environmental Improvement in Guangzhou City in the Late Qing and Early Republican Periods]," *Journal of Historical Science*, Issue 3 (2010): 37-42.

[189] Guangzhou Codification Committee, ed., *Guangzhoushi shuili zhi*, 106-107.

According to the local gazettes, residents generally disposed of domestic sewage by constructing seepage wells or pits in courtyards or at the rear of houses. Another method was to dig open gutters with stone covers on the street; rainwater and sewage could be channeled to the Six Canals that connected with the street gutters. The local government was responsible for dredging the state-owned canals; in contrast, the cleaning of privately constructed sewerage depended on the owners themselves, who often paid specialized workers to perform the cleanup.[190]

1.1.3 Water as a common good: *zanjas* in Spanish and Mexican California

When Spanish Mission Fathers arrived in southern California, they selected their place of settlement in accordance with the location of a reliable water source.[191] California under Spanish and Mexican rule entitled residents to use water resources communally for agricultural and domestic uses. In this sense, the water of a pueblo was a common good that belonged to its inhabitants, with the exception of those privately owned water sources previously licensed by the king/council or acquired by "prescriptive" right.[192] The pueblo water right was developed from the Spanish water laws and customs rooted partly in the ancient Roman water law of *aqua currit et debet currere ut currere solebat* ("Water runs *and* ought to run as it used to run"), and

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[190] Zhou, "Qingmo minchu Guangzhou chengshi de huanwei zhidu yu huanjing zhengzhi," 37-42; "Carrying Ditch Water," Shijian Huang, *Customs and Conditions of Chinese City Streets in the 19th Century: 360 Professions in China*, ed. William Sargent (Shanghai: Shanghai guji chubanshe, 2002), 182.

[191] Board of Water and Power Commissioners of the City of Los Angeles, Los Angeles Board of Public Service Commissioners, and Los Angeles Board of Water Commissioners, *Annual Report of the Board of Water Commissioners of the Domestic Water Works System of the City of Los Angeles, for the Fiscal Year Ending November 30, 1902* (Los Angeles: City of Los Angeles Board of Water and Power Commissioners, 1902), 12; Since the California missions sought to convert the native Americans and support the political rule of the territories, the padres also considered proximity to Native American villages while choosing the locations. Box 4 (1), Los Angeles Water Rights Collection 1775–1974 (hereafter LAWRC), Huntington Library, Los Angeles; J. N. Bowman, "The Birthdays of the California Missions," *The Americas* 20, no. 03 (1964): 289–308.

[192] "Conclusions of John Caughey re Existence and Water Right of the Pueblo of Los Angeles," Box 2 (1), LAWRC; "The water rights of the Pueblos of Los Angeles, written history of William B. Stern, 1966," Box 2 (12), Manuscript Collections, Huntington Library, Los Angeles; The "prescriptive" right meant that a person enjoyed the right to the property of someone else after keeping it for 5 years, even though he or she may have encroached on such property without permission at the beginning. "Addenda to memorandum decision by Judge Edmund M. Moor in the city of Los Angeles," Box 4 (2), LAWRC; In fact, the Law of Colonization and land grants had begun to invest water with a changing value of economic property since the Mexican era. Kate A. Berry, "Water Use and Cultural Conflict in 19th Century Northwestern New Spain and Mexico," *Natural Resources Journal* 40, no. 4 (2000): 759-781.

this water right represented an "overall fairness" in the distribution of water.[193] The inhabitants of the pueblos (settlements) through which the river passed enjoyed free access to its water for domestic purposes. They were also allowed to construct ditches for irrigation and engage in production activities. Such industrial or agricultural practices were legally entitled by the King and later by the Mexican government, provided the users did not prejudice the interests of the community.[194] In addition, the pueblo water right was not tradable nor transferable, and it belonged to the riparian rights system.[195]

Water infrastructure in those days featured three mechanisms, including "conduction, utilization, and conservation, with the latter of primary importance."[196] Featuring open trenches, the *zanjas* channeled water from the Los Angeles River and served as irrigation, domestic water supply, and sewer systems.[197] According to their riparian water rights, farmers irrigated their vineyards, orchards, and farmlands directly with the water from the *zanjas* or rivers. Indeed, *zanjas* also reflected a bodily interaction of humans with water. Other everyday activities at these early watercourses could be witnessed: women obtained domestic water from the Mother Ditch with clay *ollas* carried upon their heads and did laundry at the *zanjas*.[198] In addition, water carriers who delivered water following a daily quota system with wheelbarrows and water carts were an everyday sight in the Mexican era.[199]

The early Spanish settlers inherited their agricultural knowledge and preserved the tradition of distributing water communally in their new settlements in America.[200] As a common good that

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[193] "Conclusions of John Caughey re Existence and Water Right of the Pueblo of Los Angeles"; Charles R. Porter, *Spanish Water, Anglo Water: Early Development in San Antonio* (Texas A&M University Press, 2009), 51.

[194] Box 2 (12), LAWRC; "Memorandum Decision by Judge Edmund M. Moor in the city of Los Angeles, 1967," Box 4 (1), LAWRC.

[195] "Conclusions of John Caughey re Existence and Water Right of the Pueblo of Los Angeles."

[196] Berry, "Water Use and Cultural Conflict," 767.

[197] David Samuel Torres-Rouff, "Water Use, Ethnic Conflict, and Infrastructure in Nineteenth-Century Los Angeles," *Pacific Historical Review* 75, no. 1 (February 1, 2006): 119-140.

[198] "Sketches and Maps," DWP photo collection, Historical Photo Collection of the Department of Water and Power, City of Los Angeles, Digital Collections of the Los Angeles Public Library, http://tessa.lapl.org/cdm/ref/collection/dwp/id/1823; "Washing Clothes at the Zanja Madre," Security Pacific National Bank Photo Collection, circa 1900, Digital Collections of the Los Angeles Public Library, http://tessa.lapl.org/cdm/ref/collection/photos/id/109601; "Early Municipal Water and Power Advertisements," April 1929, Los Angeles daily newspapers, Water and Power Associates, https://waterandpower.org/museum/Early_Municipal_Water_and_Power_Advertisements.html; Christine Sterling, *Olvera Street: El Pueblo de Nuestra Señora La Reina de Los Angeles, Its History and Restoration* (United States of America: M. Valadez, 1947), 19; Blake Gumprecht, *The Los Angeles River: Its Life, Death, and Possible Rebirth* (JHU Press, 2001), 62; Elisabeth Spriggs, "The History of the Domestic Water Supply of Los Angeles" (master's thesis, University of Southern California, 1931), 21–22.

[199] "Sketches and maps"; Don Jackson Kinsey, *The Romance of Water and Power: A Brief Narrative, Revealing how the Magic Touch of Water and Hydro-electric Power Transformed a Sleepy, Semi-arid Western Village into the Metropolis of the Pacific* (United States: Department of Water and Power, 1926), 6.

[200] Porter, *Spanish Water, Anglo Water*, 31.

benefited all inhabitants and the entire community, the *zanjas* and the *zanjero*—the water overseer—remained crucial in the Spanish and Mexican administrations.[201] The Spanish and Mexican rules associated water management with social obligations and highlighted "collective responsibility"; meanwhile, communal water laws required all property owners to provide the labor force for the maintenance and improvement of the *zanjas*, and a *zanjero* in charge of the work was appointed by the community and the landholders.[202] After California was incorporated into the Union, some of the *zanjas* were gradually replaced by enclosed iron or stone pipes and were converted into part of the municipal sewer systems; however, some *zanjas* continued providing water for domestic and agricultural needs until the early years of the twentieth century.[203]

Indeed, *zanjas* did not only have the function of supplying water, but they were also used as preliminary sewer systems, dumping sites, and places for washing as early as the Spanish and Mexican eras.[204] In consequence, water contamination and epidemics frequently afflicted local communities. Although the Mexican administration and the succeeding American government imposed fines and enacted ordinances to prevent water pollution in the *zanjas*, sanitary and health concerns persisted.[205] On this account, the American government launched a campaign to replace open ditches with enclosed pipes in separate waterworks, which reflected the advancement of the modern science of public health in the second half of the nineteenth century. However, this change in the water usage pattern marked the beginning of the commodification of water in California and the accompanying issue of environmental injustice.

1.1.4 The monopoly of water in American California

While the abstract Chinese water philosophy centered on ethics and relationships within society, the Chinese water culture concerning flood control, transportation, and hydraulic engineering

[201] Torres-Rouff, "Water Use, Ethnic Conflict, and Infrastructure in Nineteenth-Century Los Angeles," 119-140.
[202] David Samuel Torres-Rouff, *Before L.A.: Race, Space, and Municipal Power in Los Angeles, 1781-1894* (New Haven: Yale University Press, 2013), 48 and 72; Catherine Mulholland, *William Mulholland and the Rise of Los Angeles* (Berkeley: University of California Press, 2002), 30.
[203] "Washing Clothes at the Zanja Madre"; Torres-Rouff, *Before L.A.: Race, Space, and Municipal Power in Los Angeles, 1781-1894*, 220-221.
[204] Abraham Hoffman and Teena Stern, "The Zanjas and the Pioneer Water Systems for Los Angeles," *Southern California Quarterly* 89, no. 1 (April 1, 2007): 1-22.
[205] Ibid.; "The statutes of California, 1877–1878, Chap. CCCXL. Article II. Grants of Rights, Powers, etc," 24 April 1847, vol. 4, folder 1, Los Angeles City Archives, 300.

was closely related to actual needs. Likewise, American water culture dealt with practical issues but paid more attention to the exploitation of water resources in California. When California was admitted to the American territory, almost simultaneously, the Gold Rush began to attract both national and international immigrants, bringing significant changes to California's natural and cultural landscapes. Due to the rising population, the establishment and expansion of cities and towns marked a shift in water infrastructure and water usage patterns. The American story concerning water in California could be reflected in how rivers were managed. The intrusion of human habitation into rivers creates both opportunities and risks: rivers benefit society by supplying water, disposing of waste, and providing hydraulic power; however, the artificial transformation of waterways, the expansion of hydropower, and the often-concomitant floods make lives more vulnerable to natural disasters.[206]

Indeed, rivers have always been of high value when selecting places to settle and developing the economy and society. The need for controlling water had a significant emphasis in American water culture, and this belief was expressed through artificial hydraulic works and the built environment of the riverscape with a focus on functionality, aesthetics, and ecology.[207] Moreover, the appropriation of water resources revealed the awareness of property in American culture and common laws. Clearly, the common law riparian rights established during the Spanish and Mexican periods were unable to effectively meet the needs for water in gold mining and the rapid development of agricultural districts, and therefore the court recognized the prior appropriation of water rights in the meantime.[208] The latter rights applied the rule of "first-in-time, first-in-right", which was developed from mining customs that required significant water resources.[209] The appropriation of water rights was based on seniority, which meant that whoever first occupied water resources had the priority to obtain the rights to control and use that water. In contrast to riparian water rights, the appropriation doctrine allowed for the land receiving the benefit not to be adjacent to the water source. Given the frequent conflicts between those whose land was adjacent to watercourses and those who wished to appropriate

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[206] Uwe Lübken, "Rivers and Risk in The City: The Urban Floodplain as a Contested Space," in *Urban Rivers: Remaking Rivers, Cities, and Space in Europe and North America*, ed. Stéphane Castonguay and Matthew Evenden (Pittsburgh, PA: University of Pittsburgh Press, 2012), 130-144.
[207] See scholar works on river history: Donald Worster, *Rivers of Empire: Water, Aridity, and the Growth of the American West* (Oxford University Press, 1992); Christof Mauch and Thomas Zeller, eds, *Rivers in History: Perspectives on Waterways in Europe and North America* (Pittsburgh, PA: University of Pittsburgh Press, 2008); Martin Knoll, Uwe Lübken, and Dieter Schott, *Rivers Lost, Rivers Regained: Rethinking City-River Relations* (University of Pittsburgh Press, 2017).
[208] Ellen Hanak, *Managing California's Water: From Conflict to Reconciliation* (Public Policy Instit. of CA, 2011), 22-23 and 27.
[209] Ibid., 22.

the water, California incorporated both principles into its water rights system, and the state acknowledged that riparian water rights were superior to prior appropriation water rights.[210]

More importantly, the water empire ruled over by Americans defined water as a merchantable commodity. Water companies often accumulated initial capital from mining camps, controlled water resources, and obtained rights and privileges to set rules and water rates. They had other ways to expand their water empires as well. For example, water companies rented the franchise of water rights from city and town councils such as Los Angeles and profited from the sale of hydroelectric power through the control of rivers. These water companies were predominantly privately owned until the first decades of the twentieth century.[211] In order to meet the demands of large-scale hydraulics construction, water companies hired foreign laborers, including Chinese workers recruited by their agents in China and in California, to construct dams, reservoirs, ditches, levees, and canals.[212]

The Incorporation Laws of the State of California and the act passed by the United States Congress in 1866 entitled water companies to the right of use and the ownership of water sources and waterways.[213] In addition, the granted water rights usually included reservoir rights; water-storage rights; the rights to use dams, canals, flumes, ditches, and tunnels; flowage rights; diversion rights; and rights of way and power stations.[214] As observed by a contemporary traveler in California, water companies claimed the water rights of nearly all the streams and altered the original watercourses to facilitate water delivery as well.[215] The previous open *zanja* systems used for irrigation and dumping sites belonged to the municipality before the city council replaced and enclosed them with pipes in 1873; the council then passed an ordinance regulating water rates and distribution and giving legitimacy to payment for water from *zanjas*

[210] Ibid., 21, 23 and 39.
[211] Scott E. Masten, "Public Utility Ownership in 19th-century America: The 'Aberrant' Case of Water," *Journal of Law, Economics, & Organization* 27, no. 3 (2011): 604-654.
[212] California. Office Of State Engineer and Hall, *Irrigation in California (Southern)*, 354-355; L. Eve Armentrout Ma, *Hometown Chinatown: A History of Oakland's Chinese Community, 1852-1995* (Routledge, 2014), 20.
[213] "Act Granting Right of Way to Ditch and Canal Owners over Public Land," 14 Stat. 251 (July 26, 1866), in *US Government Legislation and Statutes*, 13 (2016), https://digitalcommons.csumb.edu/hornbeck_usa_2_d/13.
[214] See William S. Tevis, *A Complete and Exact Copy of the Proposition Made by the Bay Cities Water Company to the Board of Supervisors on April 9 and May 21, 1906* (California: Bay Cities Water Company, 1906); Edwin Duryea, *The Facts about the Bay Cities Water Company's Water Supply for San Francisco: An Address Before the Commonwealth Club on March 13, 1907* (California: Bay Cities Water Company, 1907), 10.
[215] Phillips, *Letters from California*, 127.

as well.[216] In this way, water companies, fortified by law, controlled water resources and established water monopolies in California.[217]

In rural areas, farms, orchards, and rural estates of the era were generally furnished with water sources or water rights. Water was so important that advertisements for the sale of real estate would specify whether the property had a good well or access to a large amount of water. In the early days, water was pumped from a nearby river or well. The water rights formerly belonged to private landowners but were later transferred to and controlled by water companies.[218] The water companies sold stock or shares to finance the building, maintenance, and cleaning of rural water systems. Vineyards, citrus trees, alfalfa, and garden crops could use irrigators that were run by the water system, and landowners paid water rates based on how many acres they farmed each year.[219]

Water companies could sell stock shares. The revenue of water companies came from mining camps, industrial enterprises, irrigation, the municipal water supply, and the rentals of hydrants.[220] Unlike the open ditches of the Mexican era, the private water companies laid and operated piped mains sending water to households in towns and cities. However, the first closed piped water supply served only middle- and upper-class dwellings.[221]

Residents could obtain domestic water from private and public wells, water plants, and water carts. In the Bay Area, since the wells were generally shallow and provided good quality water, it was quite convenient to obtain domestic water there.[222] An Oakland Citizen's Committee report also confirmed the extensive use of private wells until the turn of the twentieth century, with an estimate of two families per well on average.[223] Commercial water users such as laundries often possessed larger private water plants furnished with a number of wells.

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[216] Thomas Brooks and Laurance E. Goit, *Notes on Los Angeles Water Supply* (California: Bureau of Water Works and Supply Los Angeles, 1938); Hansen, "Shaping the Modern Body: Water Infrastructures in Los Angeles (1870-1920)," 63.

[217] "Although the idea of pueblo rights remained operational in a legal sense, it did so under a new set of rules that privileged hygiene and revenue over communal use, changing the meaning of pueblo rights on the ground," quoted in Torres-Rouff, *Before L.A.: Race, Space, and Municipal Power in Los Angeles, 1781-1894*, chap. 6, note 62.

[218] "To stop a leak," *Los Angeles Daily Times*, June 28, 1902.

[219] California. Office Of State Engineer and Hall, *Irrigation in California (Southern),* 174-175.

[220] See Alexis Waldemar Von Schmidt, *Report to the Lake Tahoe and San Francisco Water Works Company on its Sources of Supply: Proposed Line of Works: Estimated Cost and Income* (San Francisco: Alta California Printing House, 1871).

[221] "The Beaudry Water Works," *Los Angeles Herald*, May 19, 1882.

[222] Oakland Citizens' Committee et al., *Municipal Ownership of Water and Available Sources of Supply for Oakland, California: Report of Citizens' Committee, January 10, 1903* (Oakland Enquirer, 1903), 43-44.

[223] Ibid., 32, 44, and 49.

In certain circumstances, the water companies were owned by several proprietors, and the proportion of ownership was based on their tracts of land.[224] More commonly, farmlands and vineyards were irrigated by the water ditches built by water companies. Landowners paid annual water rates according to the acreage of irrigated land; meanwhile, wells were also used to water small orchards and gardens.[225] The water rates set by private companies were often higher than that of the municipal supply. For example, by issuing municipal bonds, the City and County of Los Angeles regained the water supply system and the Los Angeles City Water Company from private hands in 1902.[226] After Los Angeles regained ownership, the Board of Water Commissioners declared a 10% cut to flat rates and a 50% reduction on meter rates.[227]

However, water companies saw the previous water use pattern in the Spanish and Mexican eras as a waste of water that needed to be corrected. In cities, the water companies built separate piped water delivery systems. With the installation of meters to prevent wasteful water consumption, early conservation initiatives were launched. In 1902, the Los Angeles Board of Water Commission began its metering program in the business center, where prior reports and surveys revealed patterns of high water consumption. After the installation of meters, the findings demonstrated conclusively that there was "an absolute waste" of water in the area.[228] Despite the restricted extent of service provided by the metered water supply system, the Los Angeles Water Commission placed a high priority on the installation of water meters and water conservation. The commission employed water meters to calculate the amount of water used by residents and billed them appropriately.[229] As exemplified by the above-mentioned facts, water under the "capitalist state mode" was framed as "a commercial instrument."[230]

The maintenance of water delivery systems involved multiple challenges. Storms, floods, and other natural forces frequently resulted in ruptured pipelines and contaminated water. Historically, a succession of private water companies was responsible for Los Angeles' water supply, and competition among private companies for the franchise to develop and operate the

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[224] "Ownership of water," *The Rural Californian, A Journal for the Suburban and Country Home* 16, no. 10 (October 1893): 503.
[225] California. Office Of State Engineer and Hall, *Irrigation in California (Southern),* 174-175.
[226] Stephanie Pincetl, Erik Porse, and Deborah Cheng, "Fragmented Flows: Water Supply in Los Angeles County," *Environmental Management* 58, no. 2 (May 12, 2016): 208–22.
[227] "IV - Under Municipal Ownership," in Brooks and Goit, *Notes on Los Angeles Water Supply*.
[228] Board of Water and Power Commissioners of the City of Los Angeles, Los Angeles Board of Public Service Commissioners, and Los Angeles Board of Water Commissioners, *Annual Report of the Board of Water Commissioners of the Domestic Water Works System of the City of Los Angeles, for the Fiscal Year Ending November 30, 1902*, 22.
[229] Ibid., 6-7.
[230] Worster, *Rivers of Empire: Water, Aridity, and the Growth of the American West*, 48 and 52.

city's water system was spurred by high operating expenses and costly water rates. During the 1896 local elections, both parties lobbied strongly for the termination of the current leases with the private water companies and the establishment of a municipally run water system. The city finally gained ownership of the municipal water system in 1902.

On the other hand, the commodification of water still guaranteed water sanitation through the piped supply systems. When proposing municipal supply plans, engineers first took into account the safety of the watershed. For instance, San Francisco protected water sources by diverting surface impurities, vegetable decay, and other solutions from flowing into and polluting the watershed.[231] Likewise, the Statutes of California 1877–8 Chap. CCCXL made rules to protect public *zanjas* and the waters flowing therein, and to prevent the pollution of water by the throwing/discharging into it of filth, matter detrimental to the public health, contents of drain, sewer, or sink, or in any other manner whatsoever, and to provide for the prosecution and punishment in the proper Courts of all persons offending against said rules and regulations.[232]

The idea of American modernity was deeply embedded in this sanitary perspective. The American water culture was manifested in the large-scale construction of hydraulic engineering and municipal water infrastructure. Separate water systems and the rise of modern sanitation thus became symbols of modernity and "human progress" promoted by American culture. In this way, the American water culture created a contrast with the previous Spanish and Mexican water culture, "in either a physical or ideological sense."[233] As a San Francisco water supply report of the time pointed out:

> The civilized world has awakened to the fact that a bountiful supply of pure water is an essential factor in man's existence … It is to be hoped that some efficient ways and means may be found to overcome this great obstacle to human progress and longevity.[234]

As with the American conquest of the "wild" West, the myth of American modernity was manifested as control over water. In detail, the explicit association of pure water with civilized society and social progress reflected the notion of the "modern body," which was shaped upon

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[231] See, for reference, Charles N. Ellinwood, "San Francisco's Water Supply and Sewerage" (lecture, Cooper Medical College and Lane Hospital, February 16, 1900).
[232] "The Statutes of California, 1877–8, Chap. CCCXL. Article II. Grants of rights, powers, etc."
[233] Torres-Rouff, "Water Use, Ethnic Conflict, and Infrastructure in Nineteenth-Century Los Angeles," 119-140.
[234] Ellinwood, "San Francisco's Water Supply and Sewerage," 3–7.

separate waterworks of sewerage, drainage, potable water supply systems, as well as modern technology.[235] This justification for modernization had roots reaching back to imperial colonization in other parts of the world, where European colonizers claimed to have brought local "backward" societies into the civilized and healthy world.[236] While the sewer system depended mainly on municipal effort, private contractors predominated in the water supply sector in California. Only at the beginning of the twentieth century did the majority of waterworks become municipally owned.

In a similar vein, water represented the notion of cleansing in American water culture. However, the idea conveyed "the theory of the self-purification" of running water that prevailed in the nineteenth century, which often sparked conflicts about municipal sewage disposal between water companies, municipalities, and downstream users at that time.[237] This theory held that "running water purified (purifies) itself," and this belief rested on the reasoning that polluted water became diluted and pure again after flowing a certain distance in rivers and streams.[238] Since not all residents were provided with water through enclosed pipelines built by the water companies, water from wells, ditches, and rivers still met the great majority of domestic demand, naturally in return for payment.[239] Interestingly, a newspaper advertisement in 1891 California promoted the purification of water by "distilled water ice," which could protect the drinking water from disease-bearing germs.[240] Although this controversial theory was publicly doubted by scientists, voices supporting "the gospel of river water" were still heard at the end of the nineteenth century.[241]

Apart from being a natural substance, water also embodies cultural concepts. A related point was made by Bernard Nietschmann, who pointed out that:

[235] Hansen, "Shaping the Modern Body: Water Infrastructures in Los Angeles (1870-1920)," 47-70.

[236] Frederick Cooper, *Colonialism in Question: Theory, Knowledge, History* (Berkeley: University of California Press, 2005), 115.

[237] Jouni Paavola, "Reprint of: Sewage Pollution and Institutional and Technological Change in the United States, 1830-1915," *Ecological Economics* 70, no. 7 (May 15, 2011): 1289–1296.

[238] Edwin Oakes Jordan, *The Self-Purification of Streams* (Chicago: University of Chicago Press, 1903), 81; William Thompson Sedgwick, Samuel Cate Prescott, and Murray Philip Horwood, *Sedgwick's Principles of Sanitary Science and Public Health* (United States of America: Macmillan, 1940), 84-87.

[239] *The Record-Union*, February 24, 1893, 4; *The Record*-Union, Aug 19, 1893, 4.

[240] *The Record-Union*, June 11, 1898, 2.

[241] Ibid.

> For a specific society and place, culture is a resource in itself because through culture, environments are conceptually constituted, the means and controls of exploitation are organized, and cumulative resource knowledge stored, taught, and used.[242]

By the same token, the philosophical knowledge of water was formulated in the ancient Chinese cultural context; in the meantime, the different approaches to the management, exploitation, and control of water resources were constituted through varied cultural traits. However, both Chinese and American water cultures conveyed an anthropocentric idea, in which water was conformed, ideologically and physically, to meet political and social demands. The Californian water culture was highly informed by utilitarian principles from the Mission era to the American age. The Spanish and Mexican laws underlined communal water responsibility, where water was a common good for all inhabitants. In comparison, the large-scale American construction of waterworks led to the control of water resources, land, and people. At the same time, the new water culture saw water as a measurable commodity based on meter readings or duration of supply.[243] Water was generally quantified and measured based on miner's inch, irrigated acres, or time; in addition, water was categorized through the introduction of separate waterworks. From the end of the nineteenth century, the municipalization of the water infrastructure, first the sewer systems and then the piped water supply systems, marked a shift in water use patterns, politics, and technologies while strengthening the role of authority and the legitimacy of the government in the public health campaigns against epidemics.

1.2 Waste and disease, morals and vice

1.2.1 The miasma theory in ancient China and California

Historical archives and gazetteers have documented frequent outbreaks of plague and epidemic in Chinese history. For too long, the miasma theory was a prevailing disease theory held by traditional Chinese medical practitioners. The link between acute infectious disease and

[242] Bernard Nietschmann, "Indigenous Island Peoples, Living Resources, and Protected Areas," in *National Parks, Conservation, and Development: The Role of Protected Areas in Sustaining Society, Proceedings of the World Congress on National Parks, Bali, Indonesia, 11–22 October 1982*, ed. Jeffery A. McNeely and Kenton R. Miller (Washington, D.C.: Smithsonian Institution Press, 1984), 344, quoted in J. Baird Callicott and Michael P. Nelson, *The Great New Wilderness Debate* (University of Georgia Press, 1998), note 8, 220.
[243] Los Angeles City Archives (hereafter LACA), Council Minutes, vol. 10 (Los Angeles, 3 May 1873): 292-295.

poisonous air formulated the miasma theory in ancient Chinese medicine, which coexisted with another popular folk belief that ghosts could intrude into the body and cause illness.

In ancient times, Chinese people believed that ghosts caused diseases; therefore, people practiced sacrificial rituals to pray for health and exorcise ghosts and illnesses. Later, with the development of traditional Chinese medicine, people began to understand abnormal weather, special environments, and post-disaster and post-war conditions as potential causes of diseases, especially epidemics. The earliest notion of miasmas in China referred to the bad air that emanated from filthy places, sick people, decayed corpses, and particularly the mist that existed in tropical and subtropical mountains.[244] Such air was poisonous or carried a large number of mosquitos and insects, and diseases would be caused by exposure to it. For this reason, the early understanding of miasmas also had a relationship with poisonous or mosquito-breeding waters in underdeveloped areas, as documented in many ancient Chinese archives. Many diseases were named after miasmas with additional prefixes according to the symptoms, toxic sources, odors, and climatic and geographical phenomena.[245] However, most of these diseases were not caused by or not directly related to the miasma. The concept of miasma thus remained rather vague and involved seasonal epidemics, influenza, malaria, enteric infection, non-acclimatization symptoms, poisoning, and others.[246]

In the mid-17th century, the epidemiologist Wu Youxing proposed and formally created a new miasma theory that claimed diseases were spread through the air. Probably influenced by the Taoist idea of *Qi* (literally translated as ”air”), the physician believed that a miasma—a hostile and unusual air—could transmit diseases and infect people, thus becoming the culprit of epidemics and plagues.[247] Epidemics were explained by the medicine of the time as the result of improperly mixed air emanating from sick people or corpses and stirred up by natural disasters and abnormal climate conditions.[248] Therefore, the concept of miasma was narrowed to the idea of disease-breeding air in traditional Chinese medicine and among the general public. Moreover, the concept of miasma involved another element, foul air generated in populated

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[244] Zhonghua yixuehui 中华医学会 [Chinese Medical Association], *Chinese Medical Journal*, Vols. 13-15 (Beijing: Zhonghua yixuehui, 1983), 195.
[245] Zhonghang Mou 牟重行 and Caiping Wang 王彩萍, “Textual Researches and Explanation of Miasma in Chinese History,” *Geographical Research*, no. 38 (May 2003): 13-30.
[246] Ibid., 13-30.
[247] Tianzhang Dai 戴天章, *Guang wenyi lun* 广瘟疫论 [Augmented Warm Epidemics], juan 1, “Bianqi 辨气” (Shanghai: Shanghai guji chubanshe, 2002).
[248] Yu, *De yi lu*, juan 1.

places, which was also considered a cause of the spread of disease.[249] According to the medical classics, epidemics prevailed in densely populated areas, where a miasma with a foul and filthy smell wafted in the air. The miasma theory explained how such hostile air made people sick: people got sick or died when they were exposed to such a miasma, which in turn intensified the poisonous air and multiplied the vulnerability to an expanding epidemic.[250]

In addition to the understanding of airborne transmission, ancient Chinese medicine recognized another aspect of miasmas associated with water. Historical records frequently documented miasmas as hostile air emanating from waters, such as the hot and moist mist experienced in summers and in the mountains, and the heavy and filthy vapors rising from water bodies during flooding disasters. Moreover, the meaning of miasma was often associated with mosquito-breeding and insect-breeding waters in underdeveloped regions, dirty places, or flood-stricken areas.[251] However, ancient Chinese medicine tended to understate the role of insects as the cause of diseases but valued the misty air coming out of these waters as the leading cause by describing it as a miasma. In fact, the greater issue was water safety rather than water vapor, as poisoning, mosquitos, fleas, and water-borne diseases became a menace to public health.[252]

The diseases resulting from miasmas were understood as environmental diseases influenced by outside environmental factors. In this regard, the Chinese disease theory accentuated the role of preventive measures and individual responsibility in keeping healthy. Since miasmas were related to external environmental problems involving air and water, preventive measures mainly embraced two aspects. During the outbreaks of epidemics and plagues, the fumigation of dwellings and elimination of mosquitoes, flies, and lice through burning herbs were considered efficient measures to prevent miasma contagion; moreover, medical books made an explicit explanation of steaming patients' clothes to prevent the miasmas from infecting others.[253] Second, ancient Chinese people paid particular attention to the protection of water sources. Preventive measures for protecting water safety required both individual and collective efforts. Households could put special plants in the water vats to reduce the moist miasma that

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[249] Xinhua Wang 王新华 and Qiuxiang Pan 潘秋翔, eds., *Zhongyi lidai yihua xuan* 中医历代医话选 [Selected Readings of Chinese Medical Works through History] (Beijing: Zhongguo zhongyiyao chubanshe, 2014), 594; Yu, *De yi lu*, juan 4.

[250] Yangjun Zhou 周扬俊, *Wenre shuyi quanshu* 温热暑疫全书 [The complete book of epidemic warm diseases] (Shanghai: Shanghai zhongyi xueyuan chubanshe, 1992), 76-77.

[251] See, for reference, Xinzhong Yu 余新忠, *Qingdai Jiangnan de wenyi yu shehui* 清代江南的瘟疫与社会: 一项医疗社会史的研究 [The Epidemic and Society in Jiangnan Region in Qing Dynasty: A Study of the Social History of Medicine] (Beijing: Zhongguo renmin daxue chubanshe, 2003).

[252] Yu, *De yi lu*, juan 4 and juan 7.

[253] Zhihan Lin 林之翰, *Wenyi cuiyan* 温疫萃言 [Warm epidemic extracts], ed. Liren Song 宋立人, vol. 5 (Shanghai: Shanghai kexue jishu chubanshe, 1989), 156; Yu, *De yi lu*, juan 3.

was supposed to contribute to the spread of plagues.[254] The guarantee of clean waters, including dredging channels and regular cleaning of wells, was of great importance in preventing and mitigating the effects of miasmas and finally eliminated epidemics.[255] A few examples regarding the rules for wells include strict water laws and punishments set by governments to protect against water pollution in wells; the custom of cleaning the silt in wells every year to ensure clean water and prevent endemics such as cholera; the inside walls of the wells were replaced with tiles to avoid water pollution by impurities in the soil; and local authorities built covers or pavilions over the wells to prevent dirt from falling into the water.[256]

At the same time, Chinese disease theory put forward the importance of personal health maintenance. Chinese medicine held a naturalistic attitude to disease. Rooted in Chinese medicine, Taoist philosophy, and Qigong practices, the Chinese belief of *Qi*—vital flowing energy—was highly recognized for its ability to promote health and build inner balance.[257] Whether a miasma caused disease depended on the status of internal *Qi* that existed in the body. From a modern perspective, this internal *Qi* denotes one's personal health condition, particularly the condition of the immune system. According to the ancient Chinese miasma theory, when the internal *Qi* was insufficient to support the body, the miasma would invade the health system through breathing and make people sick.[258]

Therefore, the cultivation of internal *Qi* to avoid intrusion by a miasma was acknowledged and promoted as another preventive method in ancient Chinese medical classics. The internal *Qi* harmonized the internal and external environment and was a source of potential energy in the human body.[259] Proper dietary habits contributed to the cultivation of the inner flowing energy.[260] From a modern scientific point of view, this vital flowing energy is concerned with human immunity. In addition, as indicated in medical classics, the inner *Qi* also referred to spiritual power, which underlined the maintenance of emotional stability and balance.[261]

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[254] Yu, *De yi lu*, juan 3.
[255] Shixiong Wang 王士雄 (Qing Dynasty), *Suixiju chongding huoluan lun* 随息居重订霍乱论, juan 1, "zhifa dier 治法第二," Beijing University Library.
[256] Li, *Zhouyi jijie*, juan 10; Guan, "Jincang 禁藏."
[257] See definitions of *Qi* and its operational mode in the body in Wang and Pan, *Zhongyi lidai yihua xuan*, 42-51.
[258] Dai, *Guang wenyi Lun*, juan 1, "Bianqi."
[259] Ibid.; Shangshan Yang 杨上善, *Huangdi neijing taisu* 黄帝内经太素, juan 29, "Qilun," Beijing University Library.
[260] Song Shi 史崧 (Zibu Song), *Huangdi neijing lingjiu* 黄帝内经灵枢 (*Qinding Siku quanshu* edition), juan 11, "Cijie zhenxie lun 刺节真邪论."
[261] Bingzhu Wang 王冰注 (Tang Dynasty), *Chongguang buzhu Huangdi neijing suwen* 重广补注黄帝内经素问 (*Sibu congkan chubian edition*), ce 357-ce 361, "Shanggu tianzhen lun 上古天真论."

Therefore, the possession of sufficient internal *Qi* would keep out the invasion of the disease-causing miasma.[262]

Likewise, the dominant attitude in California showed that the filth theory was well embedded in American sanitary discourse even after the later general acceptance of germ theory:

> It was taught by medical men and health officials that filth and decay in every form were a serious menace to health, both from the disease germs which they contain and the poisonous gases which they give off; and this teaching is received and accepted, even today, by a large portion of the medical profession, health officers and the public at large.[263]

This relationship between environment and disease suggested the spread of pathogens through miasmas caused epidemics. The difference between American and Chinese miasma theories in those days rested upon the understanding and components of the miasma. While the characteristic of atomism in Western philosophy and medical science suggested the existence of a particular form of matter in the miasma and verified it in later days, Chinese philosophy "remained invariably faithful to a prototypic wave theory, the rises and falls of *Yin* and *Yang*."[264] The latter informed the Chinese miasma theory while not recognizing the "infectious particles" that prevailed in the contemporary United States.[265]

Apart from putrefied air from fermentation and decomposition, the early understanding of miasmatic contagion also considered crowded environments and atmospheric changes to be primary causes. Crowded places created heat and moist air, whereas changes in temperature brought shifts in the air.[266] Such corrupted air, known as a miasma, therefore affected blood and was pernicious to the health when people breathed it in:

> I conceive that the miasma or septic ferment (consisting of the effluvia from putrid substances) received into the blood has a power of corrupting the whole mass. Its resolution and sometimes even

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[262] Gengdao Chen 陈耕道 (Qing Dynasty), *Yi sha cao* 疫痧草, "Bianlun yidu ganran 辩论疫毒感染," Beijing University Library.

[263] Charles V. Chapin, "The End of the Filth Theory of Disease," *Popular Science Monthly* 60 (January 1902): 234–239.

[264] Joseph Needham, China and the Origins of Immunology (Hong Kong: Centre of Asian Studies, University of Hong Kong, 1980), 11.

[265] Ibid.

[266] John Pringle, *Observations on the Diseases of the Army in Camp and Garrison: In Three Parts: With an Appendix Containing Some Papers of Experiments Read at Several Meetings of the Royal Society* (London: Printed for A. Millar D. Wilson and T. Durham … and T. Payne, 1752), 72–78.

> its smell in the advanced state of a malignant fever, the offensiveness of the sweats and other excretions, the livid spots, blotches, and mortifications incident to this distemper, are proofs of what is here advanced.[267]

By the nineteenth century, California's widely adopted miasma theory believed that such effluvia poisoned the air and transferred diseases. This atmospheric hypothesis supposed the existence of special substances in the air of infected areas, and that these substances would cause diseases through airborne transmission.[268] Before the formulation of the germ theory, miasma was considered more dangerous than waterborne transmission in the eyes of sanitarians and the general public.[269] In response to the miasma theory, California health experts confirmed that the foul vapors from sewers were a menace to public health.[270] Therefore, the miasma theory again explained the spread of diseases in non-expected areas outside Chinatown through putrefying miasma and sewage. For example, public health officers inferred that the plague cases discovered in a Japanese family outside the plague-stricken zone were caused by sewer gas.[271]

The explanation of miasmatic diseases was also concerned with other environmental factors such as water and soil. In the early days, the sanitary commission believed that bodies of water absorbed the air saturated with disease-carrying matter from infected places and then transmitted the disease over long distances through water networks.[272] Based on the miasma theory, foul and putrid odors created by stagnant water in the streets due to poor drainage were deemed the source of diseases, and measures such as filling-in, the sanitary construction of sewers, and improved drainage achieved significant results in improving public health.[273] At the same time, health experts at the time understood miasmas to be poisonous air that emanated

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[267] Ibid., 298.
[268] "Report P: Report of a Committee of the Associate Members of the Sanitary Commission on the Subject of the Nature and Treatment of Miasmatic Fevers," 1862, Reports from New York Chapter: No. 566 [A-S], Records of the American National Red Cross, 1881–2008, National Archives and Records Administration (NARA).
[269] Charles Nelson Glaab and Andrew Theodore Brown, *A History of Urban America* (New York: Macmillan Company, 1967), 87.
[270] San Francisco Board of Supervisors, *San Francisco Municipal Reports Fiscal Year 1879-80, Ending June 30, 1880* (San Francisco: Published by order of the Board of Supervisors, W. M. Hinton & Co., Printers, 1880) (hereafter SFMR), 414–415.
[271] "The Plague Active Again," *OMT*, August 1902, 343; *San Francisco Call*, July 10, 1901.
[272] "Report P," 1862, Reports from New York Chapter: No. 566 [A-S], Records of the American National Red Cross, 6.
[273] "A notable decrease in the number of deaths," *Daily Alta California*, September 14, 1879.

from the soil and the dust, and this idea helped to interpret the susceptibility of rodents to plague.[274]

Aside from the old miasma understanding, germ and bacteriology theories developed by Koch and Pasteur provided new insight into disease communication.[275] The misapprehension of miasmatic infection was clarified later by the new medical approach that took the lead in the last decades of the nineteenth century, which interpreted infection as the transmission of causative pathogens through interpersonal contact and contaminated objects.[276] In other words, germs existed everywhere other than in the miasma, and this new doctrine paved the way for another reproach against Chinese laundry works during the anti-Chinese movement. Nevertheless, germ theory and bacteriological science introduced a new understanding of plague and water-borne diseases, including cholera, which killed many lives in the American West.

In brief, germ theory held that disease could be traced to singular and discrete etiologic agents that penetrated the body rather than to the much vaguer and more nuanced concept of imbalance. However, nineteenth-century medicine was intellectually capacious, and most physicians had no difficulty mixing germ theories with long-standing environmentalist beliefs.[277]

Despite the growing faith in germ theory and bacteriology in late nineteenth century California, the public still got into a panic about the "noxious" gas that emanated from open and broken sewers, waste, privies, stagnant water on roads, and the so-called filthy parts of the city. In this regard, American sanitarians and public health authorities called for a growing awareness of cleanliness and public health and promoted the sanitation movement in California. However, the sanitary reform was characterized by an equation of cleanliness with the notion of *white* and its moral purification.[278] Based on the disease theories mentioned above, the sanitary movement weighed into constructing healthy cities and bodies that complied with the American spirit. This included the modernization and renovation of water infrastructures and street conditions, the change of water usage patterns, and the formulation of sanitary standards shaped

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[274] Frank M. Snowden, *Epidemics and Society: From the Black Death to the Present* (Yale University Press, 2019), 44-45.
[275] J. K. Crellin, "The Dawn of the Germ Theory: Particles Infection and Biology," in *Medicine and Science in the 1860s: Proceedings of the Sixth British Congress on the History of Medicine, University of Sussex, 6-9 September 1967*, ed. Frederick Noël Lawrence Poynter (London: Wellcome Institute of History of Medicine, 1968), 57–76.
[276] E. H. Ackerknecht, "Anticontagionism between 1821 and 1867," *Bulletin of the History of Medicine* 22 (1948): 562-93.
[277] Linda Lorraine Nash, *Inescapable Ecologies: A History of Environment, Disease, and Knowledge* (Berkeley: University of California Press, 2006), 49–50.
[278] *SFMR 1879-80,* 835–836.

by the white American middle- and higher-class values. For instance, the ventilation of buildings was highly valued, and the Cubic Air Ordinance was introduced, which regulated 500 cubic feet of space per person living in boarding houses in San Francisco. Although the ordinance was introduced to prevent future outbreaks of virulent diseases, the law also acted as a racial project aimed to drive the Chinese out of the city.[279]

1.2.2 Conceptualizing filth and disease

After the peak of the Gold Rush and the completion of the transnational railroad, the growing influx of immigrants into urban areas aggravated the capacity of the urban environment to cope and increased concerns about public health issues. The disease theories that prevailed in California at the time regarded filth, stench, nuisances, and waste as the causes of diseases. Nevertheless, as the sanitary reform proceeded, racial exclusion became ever more severe. The new hygienic rules conceptualized cleanliness with morality and white racial identity, resulting in growing discrimination against targeted immigrants. At the same time, conceptualizing diseases as the consequence of vice and God's punishment paved the way for rebuking "filthy" and "disease-breeding" immigrants, and therefore driving out the undesired immigrants such as Chinese laborers.

This filth-centered and anticontagionist theory prioritized the role of the corrupted environment and the presence of miasmas in causing diseases and risks. The link between filth and disease has long been deeply inscribed in our memory. Daily and ritual practices such as washing and staying away from waste and putrefying matter are the best demonstrations of that awareness. As the historian Tarr argued, medical men and health officials mainly believed that "filthy conditions accelerated the spread of contagious disease."[280] American medical thought and sanitary regulations at that time strongly embraced this theory and its binary notion of filth and disease:

[279] Ibid., 414.
[280] Joel Arthur Tarr, *The Search for the Ultimate Sink: Urban Pollution in Historical Perspective*, 1st ed. (Akron, OH: University of Akron Press, 1996), 184.

> By the Civil War, sanitary reformers were insisting on the removal of filth from towns and cities because they believed that these wastes either generated epidemic disease or threw off "exhalations" that promoted disease.[281]

At the same time, the concept of corruption incorporated both the physical, social, and moral spheres. The nature of filth was conceived as the opposite of cleanliness and sanitation. In addition, filth contrasted with the notion of purity, which manifested itself as a form of white supremacy that associated filth with unwanted immigrants, vice, and danger. The nineteenth century was an epoch that connected the early modern period with the modern era of scientific exploration. Therefore, the filth theory at the time partly inherited a primitive religious perspective that was "inspired by fear," and thus saw some cultures and new immigrants as polluting racial, moral, social, and environmental purity.[282]

Despite filth initially meaning dirty things, the notion instead reflected cultural habits as well. In the second half of the nineteenth century, the language used by white Americans in California to depict impoverished people, marginalized groups, and foreign immigrants included the terms "filthy," "inferior," "depraved," "a sink of corruption," and suchlike. At the same time, these three groups of people often overlapped with each other. However, mainstream society adopted different attitudes toward different groups based on the remoteness of their culture and race in the cultural spectrum.[283] Thus, some racial communities, such as Chinese and Mexican immigrants in California, suffered intensely from discrimination and exclusion.

The relationship between dirt and disease explored in the intellectual work of the anthropologist Mary Douglas provides a theoretical basis for analyzing how white American culture conceptualized filth and disease and associated them with anomalies or *otherness*. Douglas explains the essential concept of dirt as the "by-product of a systematic ordering and classification of matter."[284] Within the context of a social system, dirt could be understood as a violation of social norms and order.[285] Such violations and the implication of disorder caused

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[281] Ibid., 294.
[282] Mary Douglas, *Purity and Danger: An Analysis of Concept of Pollution and Taboo* (New York: Routledge Classics, 2002), 1; John Higham, *Strangers in the Land: Patterns of American Nativism, 1860-1925* (Rutgers University Press, 2002), 109.
[283] Higham, *Strangers in the Land: Patterns of American Nativism, 1860-1925*, 24-27.
[284] Douglas, *Purity and Danger: An Analysis of Concept of Pollution and Taboo*, 35.
[285] Ibid.

by transgressing boundaries and blurring the established classification provoke risk and fear.[286] The removal of dirt, therefore, reestablished social order and structure.

To a certain extent, the practices of hygiene and stigmatization of the Chinese community as a disease-ridden spot could be perceived as a symbolic pattern that resembled the religious ritual of cleaning dirt, disorder, and the pursuit of purity. According to Douglas, dirt called forth fears of pollution and disorder that threatened the social structure. Many contemporary novelists, journalists, health officials, politicians, and labor union figures described immigrants as social others in racial tones, supposing they were born filthy and symbolically impure. By this means, coupled with a growing nativist sentiment, categorizing dangerous others as disease carriers justified their racial segregation from white Americans.

Moreover, these filthy *others* bore the brunt of social blame and constantly underwent medical inspections during the epidemics in this period. In addition to this racial discourse, the practice of quarantining, isolating, and fumigating Chinese neighborhoods was believed to solve public health crises and deal with epidemics. The fixed dichotomy between filth and cleanliness, which was used metaphorically to define the racial difference between undesired immigrants and white Americans, was a weapon used by public health officials in response to out-of-control epidemics and to further "negotiate social affiliations and categories of citizenship."[287] In this sense, the rules on hygiene and quarantine practices enabled participation in or exclusion from the American identity. Simultaneously, the sanitary reform at that point demarcated and separated the diseased *others* from "clean" American society on a basis of a classification system framed by white Americans.[288]

The filthy living environment was considered to be the result of behavioral deviation. Filth was therefore responsible for immorality and poverty in the eyes of many contemporary observers, who took it for granted that the subsequent disease was a "divine retribution."[289] For instance, filth caused by improperly constructed waterworks in Chinese neighborhoods was immediately linked to the characteristics of "depraved" Chinese, and discourse on the smallpox epidemics was accordingly framed in similar racial and cultural tones. Codes of morality were deeply

[286] Ibid., 36 and 39.
[287] Hansen, "Shaping the Modern Body: Water Infrastructures in Los Angeles (1870-1920)," 65.
[288] I borrow the theoretical work of Mary Douglas to analyze the conceptualization of filth, disease, and hygienic rules in California from the second half of the nineteenth century to the turn of the twentieth century. See Douglas, *Purity and Danger: An Analysis of Concept of Pollution and Taboo*.
[289] Willard B. Farwell and John E. Kunkler, *The Chinese in San Francisco* (San Francisco: San Francisco Board of Supervisors, 1885), 165–166; Dorceta E. Taylor, *The Environment and the People in American Cities, 1600s-1900s: Disorder, Inequality, and Social Change* (Duke University Press, 2009), 92; Susan Craddock, *City of Plagues: Disease, Poverty, and Deviance in San Francisco* (U of Minnesota Press, 2000), 50.

embedded in lifestyles and were associated with cleanliness defined by white American society. The sanitary reformers advocated a living condition framed by the white middle-class standard, and this new standard linked the notion of cleanliness with whiteness, progress, and order.[290] More importantly, the white middle class represented a nuclear family ideal that embraced decent housing and the critical role of housewives in domestic conduct and sanitary education.[291]

By contrast, new immigrants and marginalized people, without other viable choices, crowded into urban ghettos with a poor living environment, making the neighborhoods more susceptible to depraved businesses related to vice and sex. Health and municipal officers publicly criticized these unsanitary places as "hotspot[s] of stench and vice" that had a "moral stench."[292] Many prejudiced press articles at the time echoed this popular viewpoint and claimed that disease in Chinatown was "primarily caused by vice and filth."[293] During the plague outbreak in San Francisco, for another example, some medical men attributed the filth-related disease to the "vile habits and customs of utter abomination" of the Chinese residents, and the proposal to "clean out Chinatown" became a metaphorical way to clean dirt and achieve purity.[294]

Cleaning out Chinatown and excluding Chinese immigrants reflected the cultural framing of risk and diseases. The malignant San Francisco *Wasp* magazine published visual representations that provoked the social imagination of fear and risk posed by Chinese immigrants. As Russell and Babrow have argued, "risk takes shape through the forms of narrative we construct."[295] In addition, the selective descriptive words such as "filth," "uncleanliness," and "disease carrier" in travelogues, newspaper articles, municipal reports, and the exclusionists' propaganda further supported the exclusion and stigmatization. In all the descriptions, immigrants and the cultures behind them were particularly classified as *otherness* or—borrowing from Mary Douglas—an *anomaly*. The stereotype of filthy immigrants included Chinese, Mexicans, Japanese, Filipinos, and many others. Therefore, the undesired immigrants

[290] Torres-Rouff, *Before L.A.: Race, Space, and Municipal Power in Los Angeles, 1781-1894*, 249.
[291] See, for reference, Nayan Shah, *Contagious Divides: Epidemics and Race in San Francisco's Chinatown* (Univ of California Press, 2001).
[292] "Bad Sewerage and Bad Smells," *The Los Angeles Times*, Sep 14, 1882.
[293] *Sacramento Daily Record-Union*, August 22, 1884.
[294] "Chinatown and the Chances," *The San Francisco Call*, June 1, 1900.
[295] Laura D. Russell and Austin S. Babrow, "Risk in the Making: Narrative, Problematic Integration, and the Social Construction of Risk," *Communication Theory* 21, no. 3 (August 1, 2011): 239-260.

were believed to be transgressing boundaries and polluting American culture and civilization.[296]

To some extent, these illustrations acted as the public and political responses to contagious diseases. This cultural framing of risk expressed the notion of moral *accountability* that praised *self/us* while blaming *the other/them*.[297] Such construction of foreign risk helped to enlarge the public fear that whipped up anti-Chinese sentiment. The fearful imagination of Chinatown ghettoes as places of vice, disease, and immorality was mainly framed by two groups: public health officers and the labor unions of the working class. During the outbreaks of smallpox and plagues, the constant quarantine of Chinatown reinforced the imagination that linked their dangerous *otherness* with risk and disease. In some ways, the sanitary cordon was a material emblem of racial and medical segregation. It engaged in constructing a physical and imaginary Chinatown border, fencing off it from mainstream American society.

[296] K. Scott Wong, "Chinatown: Conflicting Images, Contested Terrain," *MELUS* 20, no. 1 (March 1, 1995): 3–15.
[297] Mary Douglas and Aaron Wildavsky, *Risk and Culture: An Essay on the Selection of Technological and Environmental Dangers* (Univ of California Press, 1983), 20.

Chapter 2 Environmental racism and the anti-Chinese Movement

2.1 Chinatown ghettos: the built environment and environmental injustice

"Environmental racism is not just racism with an ecologist twist; rather it reveals to us the great depths of racism itself."[298]

Beginning in the 1850s and with the dream of creating wealth, the Chinese diaspora departed from Guangdong province of China and flooded into California. As the place of the Gold Rush and the main entry port on the Pacific coast, California held the highest concentration of Chinese people in the United States. Most of the Chinese immigrants were sojourners who mined gold or became transient workers travelling between workplaces and Chinatown; others included merchants, artisans, physicians, laboring men, service-oriented people, and various organization members who earned their livelihood in the urban Chinese neighborhoods.[299] Therefore, Chinatown – as a built and cultural enclave in California – became a spiritual resort where Chinese immigrants lived, worked, obtained help from community organizations, found their cultural identities, and escaped from blatant discrimination and violent attacks. From this perspective, Chinatown was always overcrowded with the constant Chinese arrivals from across the Pacific Ocean. In the narratives of the day, Chinatown acted as a transplanted oriental area into the United States, connecting and exchanging different sets of values, interests, and experiences across the Pacific.[300]

Using an alternative framework of environmental racism and injustice, as well as race, cultural and narrative theories as analytic methods, this chapter primarily assesses patterns of environmental injustice with respect to the built environment of the representative Chinatowns

[298] Lisa E. Park and David N. Pellow, "Racial Formation, Environmental Racism, and the Emergence of Silicon Valley," *Ethnicities* 4, no. 3 (September 1, 2004): 403-424.
[299] Allen G. Pastron and Archeo-Tec for the San Francisco Clean Water Program, *Behind the Seawall: Historical Archaeology Along the San Francisco Waterfront*, vol. 2, 1981, 365.
[300] California State Nurses' Association, *Nurses' Journal of the Pacific Coast*, vol. 1 (California State Nurses' Association, 1904), 177-178.

in California as new lenses to understand the causes, process, and consequences of Chinese exclusion. Environmental justice developed as a social movement in the 1980s in the United States in response to the exposure of people of color, low-income communities, and minority groups to toxic waste and environmental risks that generated health concerns. In the academic field, environmental justice and racism theories underly rationales for the unequal distribution of environmental hazards and benefits based according to race and class.[301] The above theories also illuminate the history of marginalized people's struggles for equal rights and the infancy of environmental justice within the context of the California sanitary movement and social transformation.

I do not intend to imply definite and conscious racist behaviors or policies when I use the terms "environmental racism" and "environmental injustice" to describe the living environments and the housing conditions of Chinese communities in California from the second half of the nineteenth century to the turn of the twentieth century. Rather, I use the phrase to refer to the geographic, environmental, and social consequences of the intertwined policies and discriminatory ideas that have resulted in such a proven connection. Some of these racial projects and policies have included conscious environmental racism and injustice, while others have not. Yet, their cumulative effect reinforced the "vicious cycle" of environmental injustice and racism.

Environmental health, housing conditions, street utilities, and sewer systems were closely tied with public health concerns. Human health, as explained by the WHO in 1993, is determined by "physical, chemical, biological, social and psychological factors in the environment."[302] Environmental factors that greatly impact public health are usually manifested in overcrowding, poor state of housing, poor air and water quality, inadequate drinking water supply, lack of food security, inappropriate runoff and waste disposal, deterioration of essential infrastructures, lack of healthcare and so forth.

The crux of racial prejudice and environmental racism lies first in the poor state of housing in nineteenth-century Chinatown. This research primarily provides regional studies of the major historical Chinese quarters in California, including but not limited to Sacramento, San Francisco, San Jose, and Los Angeles Chinatowns. An important premise to be taken into

[301] Paul Mohai, David N. Pellow, and Jay Roberts, "Environmental Justice," *Annual Review of Environment and Resources*34, no. 1 (November 1, 2009): 405-430.
[302] World Health Organization (WHO), draft definition developed at a WHO consultation in Sofia, Bulgaria, 1993.

consideration is that Chinese people – both sojourners and immigrants – frequently rented the buildings due to property ownership restrictions.[303] Since the majority of Chinese immigrants were denied citizenship, this restriction legally deprived these people of property ownership. The most popular image of the Chinese quarter that appeared in nineteenth-century American narratives was that of the numerous shanties, sheds, and barracks that were densely built and connected to existing buildings in Chinatown. The densely populated boarding houses also marked the poverty condition of the vast majority of the Chinese people working and living in California. As the environmental historian Andrew C. Isenberg has concluded, the fact that Chinese employees were paid lower wages and lived on a tighter budget than other workers were as a result of systemic discrimination in job and housing options.[304] For those who lived in boarding houses, there was very limited space for each individual, and the living conditions were even worse due to the lack of sanitation, air circulation and enough sunshine.

According to the San Francisco Municipal Reports in the fiscal year 1872-1873, the Fourth Ward where Chinatown was located was extremely crowded, and there were about two to three times more residents per house in the Chinese portion than in other parts.[305] Moreover, houseowners, mostly white businessmen and capitalists, refused or neglected to maintain and improve their house facilities to a general standard; however, it was obligatory in other parts of San Francisco.[306] At times, tenements and boarding houses had improperly constructed or connected sewers that violated the new sanitary principles. As a result, sewage leaked and noxious gases discharged by sewers and open cesspools penetrated the houses.[307] In view of the miasma and filth theories in contemporary California, the poor sanitary environment of Chinese neighborhoods meant that Chinese immigrants became medical scapegoats for many specters of epidemics, including cholera, smallpox, leprosy, and bubonic plague.

Secondly, the perishable canvas, involving wooden buildings and the high-density housing construction in Chinatown increased risk of fires and reduced ventilation. At the same time, the Chinese quarter often underwent a series of racial and arson attacks that burnt a significant part of its area. Due to building materials of canvas and woods and usually a lack of sufficient water from the hydrants at the early stage, fire companies were often unable to stop the spread of

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[303] Greenwood, *Down by the Station*, 13.
[304] Isenberg, *Mining California: An Ecological History*, 91.
[305] *SFMR 1872-1873*, 329-332
[306] Alexander Graf Von Hübner, *A Ramble Round the World, 1871* (London: Macmillan, 1874), 155.
[307] "A notable decrease in the number of deaths," September 14, 1879.

fires.[308] In Los Angeles, the Chinese quarter can be traced back to the 1860s when only a few Chinese residents lived in the old adobe houses of the Sonora Town. From the 1880s, the Chinese neighborhood expanded to form the "Greater Chinatown" that encompassed blocks reaching both sides of Alameda Street.[309] The newly Chinese settlement extended from Alameda to Sanchez streets with its north side and east side of the Marchessault and Alameda streets respectively, which was previously mainly inhabited by Hispanic families.[310] As noted by the archaeologist Roberta S. Greenwood, Los Angeles Chinatown was not "a homogeneous planned community"; rather, the buildings were constructed in different periods.[311] Due to the law that restricted Chinese ownership of property, the Chinese immigrants moved into vacant adobes left by other residents, or rented one-story and two-story adobes or wooden structures, usually lacking in ventilation and proper maintenance, that were once inhabited by Spanish-Mexican elites in the past. The living condition did not improve until the 1890s when frequent fires burnt down most wooden buildings in Chinatown, and residents rebuilt the destroyed houses with better materials.[312]

Compared with the more expensive brick buildings, wooden structures were likely to harbor insects and rodents that generated health concerns. Besides, wood was more susceptible to moisture decay. The lack of pavement streets and courtyards also aggravated the problems of drainage and sanitation in the rainy seasons. With the increased emphasis on public health and the sanitary reform in California by the latter half of the nineteenth century, the street conditions, public utilities, the built structures, and the sewer system in the areas outside of Chinatown had been largely improved, whereas the Chinese neighborhoods normally experienced institutional neglect. The improved street utilities were well-paved and effectively drained in other districts occupied primarily by white Americans. By the early 1890s, "Los Angeles stretched roughly 30 square miles, with 100 miles of streets graded and graveled, 11 miles paved, and 90 miles of sidewalks set in cement."[313] However, photographs from the 1870s to the 1910s show that there were almost no paved or graveled roads in Los Angeles Chinatown.[314] When it rained,

[308] Although there was a hydrant at the corner of I and Fifth Street, one fireman stated that they could not obtain a supply of water from there. "The City," *Sacramento Daily Union*, July 4, 1855.
[309] Greenwood, *Down by the Station*, 13.
[310] Ibid., 10.
[311] Ibid., 16.
[312] Ibid.
[313] Harry Ellington Brook, *Land of Sunshine: Southern California: An Authentic Description of Its Natural Features, Resources and Prospects* (Los Angeles: World's Fair Association and Bureau of Information Print, 1893), 63.
[314] Historical photos of Los Angeles Chinatown are archived and digitalized by the Huntington Library. See, for references: "Chinatown & Orange Grove, Los Angeles, Cal. (recto)," 1875, Call Number photCL_555_03_274, Stereographs, Box 46, Ernest Marquez Collection, Series 03, Huntington Library; "Los Angeles, Cal. The Chinese

the narrow dirt road along the Calle de los Negros soon became rutted and muddy. Regardless of the recurrent epidemics and plagues at the time, the problem of street infrastructure within Los Angeles Chinatown persisted until the end of 1910s, when the Chinese residents strongly appealed to the municipal institution for an improvement of the street conditions such as widening and paving.[315] However, a Chinese American who grew up in the old Chinatown recalled in an interview that many streets of Chinatown were still dirt streets in the 1920s.[316]

Thirdly, the deprived environment of Chinese neighborhoods was a direct consequence of the geographical position. Typically, California Chinatowns were formed near waterbodies such as sloughs and newly reclaimed lands, gas plants, lumber yards, railroad station, and in lower parts of the town or city.[317] Such location therefore made the residents highly susceptible to flooding, drainage and environmental pollution. Since the inception of the social movement of environmental racism and injustice in the 1980s, numerous studies have indicated that people of color, new immigrants and other marginalized people are more likely to live near unfavorable environments affected by potential toxic and natural hazards.[318] This framework also applies to the Chinese community living in California in the second half of the nineteenth century. Apart from the economic disempowerment and employment considerations, residential restrictions, discriminatory policies, and anti-Chinese sentiment limited Chinese people's access to better houses and neighborhoods beyond their own community.

In the countryside and farmlands, Chinese peasants usually "lived in the unhealthy, newly reclaimed areas."[319] This was certainly true in the case of the Delta region of northern California, where Chinese workers were hired during the early reclamation activities and later

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Quarter," approximately 1880s, Call Number photCL_555_01_115, Photographs, Box 02, Ernest Marquez Collection, Series 01, Huntington Library; "Chinatown, Los Angeles," approximately 1884, Call Number photCL_555_03_1076, Stereographs, Box 52, Ernest Marquez Collection, Series 03, Huntington Library; "Street in Old Chinatown," 1898, Call Number photCL Pierce 09898, C.C. Pierce Collection of Photographs; "Apablasa Street, Old Chinatown, Los Angeles," 1915, Call Number photCL_555_01_119, Photographs, Box 02, Ernest Marquez Collection, Series 01.

[315] "Guests at theater," *Los Angeles Daily Times*, April 11, 1912.

[316] Eleanor Soo Hoo, interview by William Gow, October 7, 2007, CHSSC Chinatown Remembered Community History Project, Chinese Historical Society of Southern California.

[317] Greenwood, *Down by the Station*, 140; Siskiyou County Historical Society, *The Siskiyou Pioneer*, vol. 6, no. 3 (1990), 39 and 42-43.

[318] Uwe Lübken, *"Historia Magistra Vitae*, as the Saying Goes. Why Societies Do not Necessarily Learn from Past Disasters," in Heike Egner, Marén Schorch, and Martin Voss, *Learning and Calamities: Practices, Interpretations, Patterns* (Routledge, 2014), 112-122; Lori M. Hunter, "The Spatial Association between U.S. Immigrant Residential Concentration and Environmental Hazards," *International Migration Review* 34, no. 2 (2000): 460-488.

[319] George Chu, "Chinatowns in the Delta: The Chinese in the Sacramento-San Joaquin Delta, 1870-1960," *Calif Hist Q J Calif Hist Soc* 49, no. 1 (1970): 21–37.

worked in the agricultural sector under the farm tenancy system.[320] There were no sizeable Chinatowns in these rural places, but the squalid Chinese houses situated along the Sacramento River showed an obvious residential separation.[321] From 1850, Chinese merchants, workers, and miners centered on many mining claims and towns near the Yreka Creek in the Siskiyou region. A sizeable Yreka Chinatown was thereby gradually formed over time, but it was burned down in the great fire of 1886. After that, the Chinese population was required to move to a new place in the lower part of the town, where the new Chinese quarter was separated from the local white communities. In the years that followed, the new Chinatown was extensively inundated, and the Chinese community in Yreka moved out and became less noticeable around the turn of the century.[322]

Figure 1: Winter of 1889-1890. Main Street of Chinatown in Yreka flooded by the heavy rain.[323]

[320] Ibid.
[321] *San Francisco Call* article, in *Bancroft Library Scrapbook*, no. 21 (Berkeley: Bancroft Library).
[322] Siskiyou County Historical Society, *The Siskiyou Pioneer*, vol. 6, no. 3 (1990), 42-43.
[323] "Main St. of China Town," February 4, 1890, Northeastern California Historical Photograph Collection, California State University, Chico, Meriam Library Special Collections, *Calisphere*, accessed August 14, 2022, https://calisphere.org/item/4ddbd46f864ca03e3664ffbe491b36d3/.

Figure 2: Winter of 1889-1890. Yreka Chinatown flooded by the heavy rain.[324]

Chinatowns in cities and towns were likewise troubled by the disadvantaged living and housing conditions. In Sacramento, the Chinatown was built in an environmentally unfavorable location. Archaeological research has pointed out the shortcomings of Sacramento Chinatown's geographical location as the primary reason for its suffering from a series of natural disasters. Situated on I Street from the 2nd to the 6th Street, the Chinese quarter appeared in official records for the first time in 1854. In the early days, the location was the central business district that met the demands of residents and temporary Chinese manual laborers.[325] However, I Street was initially regarded as undesirable and unfit for living by white Americans as a result of its location "bordering the slough on the north side of town and the site of the 1852 levee."[326] The slough, therefore, was identified with the Chinese community and was known as China Slough. Furthermore, natural hazards often aggravated the living and sanitary conditions in Chinese neighborhoods, as they were built on low ground that frequently suffered from water damage, including flooding and drainage problems.[327]

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[324] "China Town in Yreka," February 4, 1890, Northeastern California Historical Photograph Collection, California State University, Chico, Meriam Library Special Collections, *Calisphere*, accessed August 14, 2022, https://calisphere.org/item/aacb8626ad7184a725f96285dbd7fb44/.
[325] Mary Praetzellis and Adrian Praetzellis, *Archaeological and Historical Studies of the IJ 56 Block, Sacramento, California: An Early Chinese Community* (1982), tDAR id: 29061, 13.
[326] Ibid., 9.
[327] "California's Chinese Heritage: A Legacy of Places," California's Chinese Heritage, June 2017, accessed October 6, 2020, https://www.californiaschineseheritage.com/2017/06/central-valley.html; "1850, The Beginnings of Sacramento's Chinatown at China Slough," Friends of the Yee Fow Museum, accessed October 6, 2020, https://www.yeefow.com/past/1850.html; Praetzellis and Praetzellis, *Archaeological and Historical Studies of the IJ 56 Block*, 9, 16, and 21.

In a similar vein, the Chinese tenements in Georgetown – a rich gold mining town to the northeast of Sacramento – were situated on one side of the slough.[328] By the 1880s, California had experienced several outbreaks of epidemics. Though lack of scientific support, the miasma theory was still prevailing among the public and was considered the main cause of contagious diseases. The theory had a close link with swamps, sloughs, or stagnant water, from which the poisonous and disease-breeding air was deemed to waft in the air and cause environmental diseases. From the perspective of environmental health, the polluted slough indeed affected the local Chinese community. The Biennial Health Report in 1888-1890 stated that the slough next to the Chinese settlement emanated odors of "great offensiveness," and the stagnant water saturated with algae and decomposing wastes was a long-germinating problem that threatened the health of Chinese neighborhoods.[329] However, although offensive miasma was seen as a threat and cause of public health disasters and outbreaks of epidemics, no one cared about the long-neglected living conditions of the Chinese quarter and why they had to live in such a dilapidated environment.

This was also true in the Oakland Chinese community. The early immigrants settled at the foot of Castro Street that was adjacent to the swamp in the early 1850s. As shown by a line drawing of the early Oakland Chinatown, the Chinese community lived in adobes and shanties built on the edge of marshes.[330] Another challenge that the Oakland Chinatown experienced was its frequent displacement. The Chinese residents had to move several times in about 20 years before settling down around the 8th and Webster Streets intersection.[331] As described here, housing instability may result in general neglect of adequate living environment by the residents per se, and the poor-quality housing condition, overcrowding, and the disadvantaged location have a close link with both individual and community health issues.

More importantly, patterns of environmental racism and injustice were manifested in the planning, mapping, and distribution of modern sanitary waterworks and infrastructure in a time of public health reform. In the last decades of the nineteenth century, sanitary waterworks primarily involved piped water supply systems, and modern sewer networks. Clean water was transferred through newly built metal pipe mains free from contamination, while sewer systems

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[328] California Department of Public Health, *Eleventh Biennial Report of the Department of Public Health of California for the Fiscal Years from June 30, 1888, to June 30, 1890* (Sacramento: J. D. Young, Supt. State Printing, 1890), 20.
[329] Ibid.
[330] William Wong, *Oakland's Chinatown* (Arcadia Publishing, 2004), 9.
[331] Hayward Historical Society, "Chinatown Heritage Beneficial" (January 9, 1966), Internet Archive, https://archive.org/details/5669760-Oakland-Chinatown-139/mode/2up.

with the functions of draining water and discharging municipal wastes were gradually renovated with separate piped iron or cement pipes.[332] In this progressive setting, the planning and the construction of modern sanitary waterworks exerted a decisive influence over the health of community members and the sanitary environment of residential areas. For the Chinese quarters in California, the (re)construction of water systems – especially the sewer networks – were practically neglected or refused by local authorities during the sanitary reform. In the following subchapters, detailed case studies are provided to support the historical facts and my arguments. These findings of the disproportionate distribution of modern waterworks suggest that environmental injustice enlarged the public health gap between Chinatown and the white neighborhoods, and, at the same time, such injustice served to construct the prejudiced imagery of Chinese immigrants and provided insights into the processes of environmental racism.

2.2 Sanitary border: quarantine and sanitation infrastructure

Cultural difference and public health concerns have been incorporated into the legitimization of social and racial isolation of the Chinese immigrant group in California. Filthy Chinatown, as an ethnic enclave, had become both a "spatial entity" and a distorted image of the immigrants' identity. In this part of my argument, the sanitary border has two dimensions. Firstly, it refers to the quarantine of Chinatown during the outbreaks of epidemics. The quarantine that spatially separated Chinatown from other parts of the city with ropes showed a landscape of disease in the metaphoric sense – in other words, a diseased Chinese enclave co-existed within the American city. Secondly, it indicates the invisible sanitary border that "cordons off" the residents of Chinatown, a border that leaves Chinatown without proper basic sanitation facilities and services including modern water and sewer systems, garbage disposal, street pavemenst, housing conditions, and so forth. Of particular importance is the sewer system, which, for purposes of this study, includes the channeling of waste and the drainage of rainwater. The sewerage system was of great importance in urban development, public health, and the contemporary understanding of disease transmission. The sanitary border delineates an ideological boundary in the classification system that separate *others* from the in-group members. The quarantine of Chinatown during the bubonic plagues provided an appropriate

[332] "The Beaudry Water Works," May 19, 1882; *SFMR 1871-72*, 623.

justification for limiting work opportunities for Chinese competitors and eventually pushing them away from the United States.

California experienced recurrent outbreaks of epidemics, especially after the arrival of vast influx of immigrants worldwide. In response to the uncontrolled spread of plagues at the turn of the century, public health officials and politicians ordered quarantine of the whole Chinatown for several times. The word quarantine derives from the Medieval Venetian word *quarantena* which means forty days, and it first appeared in the Republic of Venice to prevent the spread of contagious diseases from incoming ships and passengers in Europe.[333] Since then, quarantine became the primary anti-epidemic method in Europe. After the introduction of modern sanitation in California, public health officials began to accentuate the importance of both clean environments and "the attentive management of bodies."[334] Similar to the American Environmental Movement of the same period, sanitary reform in California was also driven primarily by the white American middle- and upper-classes. Therefore, the emphasis of clean environments and bodies certainly conformed with the American middle-class cultural norms, conduct, domestic habits, and standards. On another level, the new hygienic norms and culture symbolized white purity, morality, and eventually American citizenship.[335]

According to Mark A. Rothstein, quarantine is the avoidance of disease transmission by limiting the mobility of asymptomatic persons who may have been exposed to an infectious disease.[336] The history of quarantine in colonial America can be traced back to the mid-seventeenth century, but the first federal law on quarantine – An Act Relative to Quarantine – was only passed on May 27, 1796.[337] A system of quarantine stations and Marine Hospital Services were built on the American ports to inspect and quarantine the incoming people, ships, and goods. During several smallpox epidemics from the late 1860s to the late 1880s, health authorities would hang yellow flags on infected premises as a sign of quarantine and warning.[338]

However, the first quarantine of San Francisco Chinatown was rather different from the previous quarantine measures that centered on the entire towns, ports, ships, and so forth. This quarantine only targeted and cordoned off the specific immigrant group and their living

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[333] Philip A. Mackowiak and Paul S. Sehdev, "The Origin of Quarantine," *Clinical Infectious Diseases* 35, no. 9 (November 1, 2002): 1071-1072.
[334] Nash, *Inescapable Ecologies: A History of Environment, Disease, and Knowledge*, 93.
[335] See, for reference, Shah, *Contagious Divides: Epidemics and Race in San Francisco's Chinatown*.
[336] Mark A. Rothstein, "From SARS to Ebola: Legal and Ethical Considerations for Modern Quarantine," *Indiana Health Law Review* 12, no. 1 (2015): 227-280.
[337] "An Act relative to Quarantine", May 27, 1796, Fourth Congress, Session I, Ch. 31, 32.
[338] "The Yellow Flag," *California Medical Gazette*, October 1868.

spaces.[339] It is important to note that plague referred to epidemics in broad terms at the time, and the highly contagious and lethal one was the bubonic plague. On 6 March, 1900, shortly after the first supposed plague case of Chinatown was examined by the city physician and the bacteriologist, Dr. Joseph J. Kinyoun made a further inspection and immediately required the Board of Health to quarantine the entire Chinatown of about twenty blocks.[340] Once again, white supremacy and racial prejudice against *others* as the source of disease were manifested in the quarantine. The Board of Health removed white residents from Chinatown before the armed guards of the police sealed off Chinatown and all Chinese people on the next day.[341] A cordon sanitaire was established and police were assigned to ensure that no one passed the ropes stretched across the streets on the borders of Chinatown.[342]

Two months later, another quarantine of Chinatown was placed by the Board of Supervisors and the Health Board at the end of May in 1900. San Francisco Chinatown was again surrounded by a cordon of police, and no visitors or vehicles was permitted to enter or exit the district without authorization.[343] This time, the sanitary ropes were placed around the blocks bounded by California, Kearney, Montgomery Avenue, Broadway, and Stockton streets. Still, the public health authorities only allowed white American in the blockade to pass out the cordon. At the same time, the houses of white residents confronting California and Kearney streets were not included in the quarantine zone.[344]

Quarantine ropes became the direct embodiment of hygienic border that enforced racialized segregation in the pretext of protecting white Americans from contagion by Chinese residents (*others*). By delineating a dichotomy between a threatening Chinese realm and a safe white American world, the ropes helped solidify the preconceived notion that the *other* group was the cause of disease. When taking into consideration the miasma theory of disease transmission that was widely accepted by the contemporary public health authority, the decision to quarantine Chinese residents while allowing the white residents of Chinatown to leave seemed to be paradoxical. Yet, such approaches confirmed the perception of *others* as inherently different and negative based on race theories. On the surface, the sanitary border drew a line between ingroup and outgroup members, whites and unwelcome Chinese immigrants, healthy

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[339] Charles J. McClain, "Of Medicine, Race, and American Law: The Bubonic Plague Outbreak of 1900," *Law and Social Inquiry-Journal of the American Bar Foundation* 13, no. 03 (1988): 447-513.
[340] Shah, *Contagious Divides: Epidemics and Race in San Francisco's Chinatown*, 120.
[341] Ibid.
[342] "Topics in California," *New-York tribune*, Mar 11, 1900.
[343] "Plague Quarantine in San Francisco," *New-York tribune*, May 30, 1900.
[344] "Chinatown closed," *The Topeka state journal*, May 30, 1900.

and diseased, clean citizens, and filthy outsiders. In fact, it bore the underlying logic of ingroup favoritism and outgroup rejection. Again, as Susan Craddock states, "the Chinese immigrants and their habitat represented the most 'Other' of all others."[345] On the other hand, the police quarantine of Chinatown unveiled the surveillance power that served to maintain social categorization boundaries by excluding anomalies/*others*.[346] Likewise, the sanitary inspection and segregation of Chinatown by the Board of Health contributed to identify Chinatown as a civic problem and empowered institutional officials to enforce American middle-class norms and sanitary rules.[347]

Until 1920, the bubonic plague was still a national health problem, causing widespread anxiety and requiring massive governmental spending to combat the epidemics. There were other quarantines of California Chinatowns during the recurrent outbreaks of plague at the turn of the century. The two above mentioned quarantine examples were made simply as a precautionary measure. In both cases, no definite experimental test findings were confirmed before the quarantine orders were issued.[348] In the meantime, the understanding of disease transmission routes and the cordon sanitaire were made along racial lines and went well beyond the geographical space. Although serious plague epidemic such as the Black Death in Medieval Europe had weakened the leadership and authority of the Church, many still believed that plague was a form of penalty by God as late as the nineteenth century. In many respects, the squalid environment and the imagined depravity of the Chinatown slums were blamed for decades for posing health threats to the city. Bearing in mind the generally believed association between filth and disease at that time, the imagery of the disease-breeding Chinatown was inevitably responsible for the origin of epidemics.

The board's handling led to continuous challenges, doubts, and critics from Chinese community members and some American newspapers as well. On March 9, 1900, the influential Chinese daily newspaper *Chung Sai Yat Po* published a critical article accusing the Board of Health of claiming plague in Chinatown and quarantining it without verified experimental results. The article further complained that the unfairly treatment confirmed the sinophobic sentiment, and, at the same time, the warning yellow fabric flying in Chinatown was once again consistent with

[345] Susan Craddock, "Sewers and Scapegoats: Spatial Metaphors of Smallpox in Nineteenth Century San Francisco," *Social Science & Medicine* 41, no. 7 (1995): 957-968.
[346] David G. Armstrong, "Public Health Spaces and the Fabrication of Identity," *Sociology* 27, no. 3 (August 1, 1993): 393–410.
[347] Shah, *Contagious Divides: Epidemics and Race in San Francisco's Chinatown*, 44 and 75.
[348] "The Plague in San Francisco," *The Watchman and Southron* (Sumter, SC), Mar 14, 1900; "Chinatown closed," May 30, 1900.

the deep-rooted stereotype about Chinese immigrants as a health threat. To seek justice and protect the business interests in Chinatown, the Chinese Consolidated Benevolent Association and the consulate hired lawyers to apply for an injunction to lift the quarantine order in the federal courts.[349]

Likewise, many American mainstream journalists, politicians, physicians, and business associations questioned the rationality of the imposed quarantine of Chinatown in public debates. The works of Shah Nayan and Charles McClain on race and epidemics have thoroughly discussed the perennial challenges and critics received by the San Francisco public health and municipal authorities during the plague epidemics. In total, there were four major issues in the wave of public doubt and criticism on Chinatown quarantines according to their research. Firstly, the quarantine of Chinatown upon bacteriologically untested suspicion would trigger national panic; secondly, the quarantine would have negative impact on the national and international economy; thirdly, there were doubts on the reliability and the legitimacy of the Chinatown quarantine measures and medical logic; fourthly, the Chinatown quarantine prompted thinking and debates on power, suppression, and discrimination.[350]

However, at least one aspect of the crux of the long-standing poor Chinatown sanitary environment as reflected by the quarantines has not been well-researched in the literature. Sanitary infrastructure, especially the sewer and drainage systems, were of considerable importance to public health and municipal sanitation. Yet, the improvement of the Chinatown built environment was often neglected by municipal and public health departments. With the completion of the transcontinental railroad and booming urban population from the 1870s, California launched its sanitary reform that necessitated infrastructural renovation. However, California Chinatowns still suffered from poor state of sanitation facilities until the turn of the century. Did the discourse of disease, filth, and *others* also reflect the environmental injustice experienced by the Chinese immigrant groups?

In fact, a reasonable answer, or solution, to the Chinatown sanitary problem can be found in a contemporary news report. A few days after the second quarantine order of Chinatown at the end of May in 1900, the *San Francisco Call* published an article with medical proofs and investigation from Dr. George F. Shrady, editorializing that bubonic plague – as an *epidemic* –

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[349] *Chung Sai Yat Po*, March 9, 1900, Chung Sai Yat Po Newspaper Collection, Ethnic Studies Library, UC Berkeley.

[350] Shah, *Contagious Divides: Epidemics and Race in San Francisco's Chinatown*, 121-125; McClain, "Of Medicine, Race, and American Law: The Bubonic Plague Outbreak of 1900," 447-513.

never existed in San Francisco Chinatown. This New York physician evaluated the sanitary environment of Chinatown, and concluded that some important preventive measures needed to be carried out by the local public health and municipal institutions. Notably, he pointed out that it was the municipal duty to clean Chinatown and always keep it in a sanitary manner:

> "You must not make an excuse to clean the spot because there is plague here," he said, "but you must act solely on the ground that the district is in a filthy condition." That is the sum and substance, the pith and point of the issue. The movement for the cleansing of Chinatown is not called for by any menace of bubonic plague nor should it be undertaken as a temporary remedy applied to a temporary evil. It must be planned and directed toward the eradication of everything that is pestilential or foul in the Chinese quarter, and it must be maintained as a permanent part of the health regulations of the city. In other words, Chinatown must be first thoroughly disinfected, the underground burrows closed up, the buildings put into good sanitary conditions and then the health and fire regulations of the city must be enforced there with firmness and with thorough ness from this time on."[351]

For many years, California Chinatown was known as a filthy ethnic enclave. The neighborhood was fiercely denounced as socially and morally depraved, and Chinatown was treated as the "constantly menacing causes of disease" to be removed.[352] Given the nineteenth- century epidemiological emphasis on the transmission routes of filthy water and foul air, sewer systems, as carriers of both, played a key role in urban sanitation. At that time, water carriage technology was widely used to drain the waste and sewage in the sewers by running water.[353] The city and county of San Francisco began officially to construct public sewers in 1858, and the materials included redwood, cement, and brick.[354] However, the public sewers were constructed at different time periods and were not proportioned in dimension. In light of the sanitary movement, redwood sewers were gradually taken up and replaced by the "hygienic" cement ones because it was difficult and expensive to repair and maintain the wooden material. The cement-pipe sewers were recommended by the City and County Surveyors because of their small diameter and ease of self-cleansing.[355] Until 1875, the majority of public sewers were made of brick. These sewers were usually used as main lines in urban drainage systems

[351] "The End of the Bubonic Plague Scare," *The San Francisco Call*, June 3, 1900.
[352] *SFMR 1879-80*, 413-414.
[353] *SFMR 1875-76*, 598.
[354] Ibid., 597.
[355] *SFMR 1875-76*, 598-599.

connected with pipes from house drains and street gutters.[356] Known as a combined sewerage system, the brick sewer was characterized by its large diameter that discharged storm water and sewage through a single pipe. This type of sewer required the sewer man or a large quantity of running water to clean out the deposited filth. In this way, brick sewers were more likely to accumulate waste, which in turn impeded the flow of sewage.

The lack of adequate sewer systems was a common challenge faced by most California Chinatowns. City growth and the influx of immigrants had outstripped the urban infrastructure carrying capacity since the beginning of the Gold Rush in California. By the end of the nineteenth century, not all boarding houses in California Chinatown were connected to public sewers and street gutters through privately built drains or overflow pipes. These private and public drains were often made of substandard materials.[357] The majority of urban dwellers at this time still utilized privy-vaults, cesspools, or private sewers rather than the recently introduced water closet, which was deemed hygienic by contemporaneous health authorities.[358] In the opinion of health experts, these unhygienic waste and sewage disposal facilities posed menace to the public health of the city through dilapidated sewers or overflowed wastewater. In 1878, when the Chinese Mission rented a building from the proprietor in San Francisco, the sewer system of that building was already in bad service. As a result of the improperly constructed sewers, "foul gases were forced back into the crowded buildings, endangering disease and pestilence."[359] The building's sewer connection to the main sewer was clogged, and the entire property was in a filthy state.[360] The following year, the health officer Dr. J. L. Meares made a thorough investigation of San Francisco Chinatown and observed that the Chinese neighborhood had a higher morality ratio compared with any other nationalities due to its lack of modern sanitary sewers and well-ventilated accommodation.[361]

Meanwhile, the capacity of the public drainage systems – particularly in unpaved streets – to remove storm water, sewage, and wastewater was usually insufficient.[362] As a result of the special climate in California, the amount of water could not effectively discharge waste in dry seasons, resulting in the accumulation of filth in the sewer pipes. In rainy seasons, urban

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[356] Ibid., 581.
[357] "The Year's Mortality, the Annual Reports of the Health Officer," *Daily Alta California*, September 14, 1879.
[358] L. P. Cain, "An Economic History of Urban Location and Sanitation," *PubMed* 2 (January 1, 1977), 340.
[359] "Chinatown," *Daily Alta California*, August 29, 1878.
[360] Ibid.
[361] *SFMR 1879-80*, 413-414.
[362] United States Census Office, *Census Reports Tenth Census: Report on the Social Statistics of Cities: Part II*, comp., George E. Waring (Washington: U.S. Government Printing Office, 1887), 289.

drainage systems often came to a standstill. Since the brick sewers often combined sewage with multifunctional uses, excessive storm water would overfill the sewers, further aggravating the deficient urban sewer systems. As a physician observed, "the backwater, loaded with infection, would have risen through the cesspools and overflowed that part of the city."[363] In a health officer's report in 1872, stagnant foul water was linked with propagating diseases such as cholera, fever, diarrhea, and dysentery in San Francisco.[364] Improperly constructed sewer pipes lack of maintenance, repair and replacement led to leaks, filth blockage, and drainage problems in the Chinese neighborhood.

On the other hand, the long-standing consensus on the relationship between rats and plagues drew increased attention on the unhealthy environment caused by sewer problems, waste disposal, and urban filth crisis. Notably, there were few places with rat-proofing construction prior to 1906 when the great earthquake and the subsequent fires struck San Francisco.[365] At that time, most residential premises, backyards, gardens, domestic chicken yards, sidewalks, markets, restaurants, stores, lodging houses, warehouses, slaughterhouses, garbage disposal sites, waterfront, substandard sewers and plumbing were made of wood. Defective wooden floors, pavements and sewer pipes, walls of infected houses, and dark and damp places lacking ventilation were believed to be the ideal harboring sites for rats.[366]

The built environment of contemporary Chinatown faced most of the above-mentioned sanitary problems. Contaminated water and sewerage were persistent problems especially during the public health crisis. In particular, the scarcity or the worse condition of public drainage system caused great concerns about the sanitary environment. In the San Francisco Chinese quarter, the primitive planking in the area without a public sewer system had to drain the surrounding premises to the middle of the Bull Run Alley within Chinatown, where the waste and water accumulated without a sewer to carry them off.[367] Some places had defective or wrongly connected sewer pipes that caused the retention of filth or decomposed material, thus generating filthy environment and public nuisance as well. In 1877, an inspection of San Francisco sewers and cesspools by the Board of Health stated that all the section west of Kearny Street was "in

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[363] Arthur B. Stout, "Hygiene, and the Sewerage of San Francisco," *California Medical Gazette*, March 1869.
[364] *SFMR 1872-73*, 344-345.
[365] San Francisco Citizens' Health Committee and Frank Morton Todd, *Eradicating Plague from San Francisco: Report of the Citizens' Health Committee and an Account of Its Work with Brief Descriptions of the Measures Taken, Copies of Ordinances in Aid of Sanitation, Articles by Sanitarians on the Nature of Plague and the Best Means of Getting Rid of It: Facsimiles of Circulars Issued by the Committee and a List of Subscribers to the Health Fund, March 31, 1909* (San Francisco: Press of C.A. Murdock & Co., 1909), 291-292.
[366] Ibid., 250.
[367] "San Francisco Correspondence," *Placer Herald*, October 14, 1876.

a very neglected and foul condition."[368] Chinatown was located within the boundaries of this area. The report additionally noted that cesspools in the area were overflowing and not being cleaned, and that the main sewers were in poor condition.[369] By 1890, there were still complaints about the bad drainage and open sewage in San Francisco Chinatown.[370] During the bubonic plagues in the first years of the twentieth century, health departments who organized a campaign to sanitize Chinatown observed the unpleasant living environment in San Francisco Chinatown, noting that its "rotting wooden floors" and the "broken sewer pipes and cesspools" were a medical menace.[371] Drawing on the miasma and filth theories, many contemporary health officers believed that sickening exhalations and filth from improperly constructed sewers poisoned the atmosphere and would cause diseases.[372] In addition, the noxious miasma generated from the defective street gutters therefore sparked public worries about stagnant and putrid water, waste, and the spread of diseases to other districts.[373]

In the 1860s, the historic district of El Pueblo Plaza was comprised of a diverse mix of ethnic groups and flat-roofed one-story adobe houses.[374] From the 1870s, the small Chinese neighborhood in Los Angeles developed on the site of the previous Calle de Los Negros, and was centered between Los Angeles and Alameda Streets near the Plaza. The old Chinatown featured a slight incline from Los Angeles Street to Alameda Street that easily led to the accumulation of drainage and sewerage flowing from uphill buildings on the other side of Los Angeles Street. The relative low-lying location and the lack of proper public sewer and plumbing systems aggravated the squalid neighborhood environment. Inevitably, many Chinese buildings towards Los Angeles Street suffered from the foul smelling of stagnant water and leaking sewage.[375] Since the drainage of rainwater, domestic and urban waste was in bad service, rooms, yards, and wooden floors facing Los Angeles Street were more vulnerable to corrosion from filthy waste and water. Likewise, the Marchessault and Juan streets in

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[368] "Cleaning the sewers," *Daily Alta California*, March 31, 1877.
[369] Ibid.
[370] "The Chinatown inspection," *Daily Alta California*, March 1, 1890.
[371] *San Francisco Chronicle*, February 3, 1903; United States Public Health and Marine Hospital Service, *Annual Report of the Surgeon-General of the Public Health and Marine-Hospital Service of the United States for the Fiscal Year 1903* (Washington: Government Printing Office, 1904), 226-228, and 242-245.
[372] *SFMR 1879-80*, 414-415; J. Campbell Shorb, "The miasmatic diseases of California," *California Medical Gazette*, November 1868.
[373] Census and Office, *Census Reports Tenth Census. June 1, 1880: Social Statistics of Cities*, 289.
[374] "National Register of Historic Places and National Historic Landmarks Program Records: California," file unit. 1/1/1964 - 12/31/2013, National Register of Historic Places and National Historic Landmarks Program Records, 2013 – 2017, Record Group 79: Records of the National Park Service, 1785 – 2006. National Archives Identifier: 123859289.
[375] "They will soon clean it," *Los Angeles Herald*, April 28, 1893.

Chinatown were left without drainage sewers.[376] When the rainy season set in, the area was heavily waterlogged, creating a public nuisance.

In 1882, health inspectors made a tour of Chinatown and deemed it as the "plague-spot of corruption" and "miasmal swamp." In their claims, the Chinese adobes and lodging houses were too crowded to meet the sanitary standard defined by the cubic air act. On the other hand, the drainage and sewer systems in Chinatown were open ditches that drained domestic waste from neighboring areas and accumulated into a vault. In light of the prevalent miasma theory, the stagnant pools were believed to exhale the malarious air to the rest of the city.[377] Although Los Angeles Chinatown benefited from the zanjas built during the Spanish and Mexican eras, the zanja sewers were rather primitive and lacked improvement when the Chinese moved there after the 1870s. It was not until 1899 that two Chinatown property owners, who owned about nine-tenths of the property, finally laid a sewer in the area, partially alleviating the drainage issues.[378] By 1904, the old zanja ditches were still made of wood, with less exception of iron.[379] Still, the wooden zanjas were more susceptible to leaks and corrosion that would harbor insects and rats. As the population grew denser and larger, severe deficiency became unavoidable.

The same was true for San Jose's Chinese neighborhood that was located at the corner of Market and San Fernando streets. By 1877, local newspaper articles hinted that there was still no main sewer around the Market Plaza near Chinatown.[380] In 1880, the *San Jose Herald* published an article, blaming the dilapidated and defective sewer connection in Chinatown for spreading disease. The wooden sewer systems in Chinatown were built years earlier and were at first used for temporary service. Yet, the wooden pipes were out of maintenance for years.[381] The majority of Chinatown sewers were disconnected from the city system, and, as a result, the wooden floors and sidewalks were saturated and deteriorated by leaking domestic waste and sewage that threatened to breed diseases. In April 1882, the city finally issued an ordinance requiring the agents and owners of San Jose Chinatown property to connect the Chinatown branch sewers with the main city sewer on San Fernando Street.[382] In the following years,

[376] "Unsanitary Chinatown," *Los Angeles Herald*, June 27, 1899.
[377] "Hell's Half Acre, A report of a tour through Chinatown yesterday," *Los Angeles Daily Times*, April 14, 1882.
[378] "Unsanitary Chinatown," June 27, 1899.
[379] Board of Water and Power Commissioners of the City of Los Angeles, Los Angeles Board of Public Service Commissioners, and Los Angeles Board of Water Commissioners, *Annual Report of the Board of Water Commissioners of the Domestic Water Works System of the City of Los Angeles, for the Fiscal Year Ending November 30, 1902,* 4.
[380] "The Market Plaza," *San Jose herald*, July 25, 1877.
[381] "Chinatown," *San Jose Herald*, December 30, 1880.
[382] "The Chinese Evil," *The Morning Times*, April 23, 1882; "Chinatown condemned by the council," *San Jose Herald*, March 9, 1887.

Chinatown was gradually connected to the permanent city sewers in five locations, and its sanitary condition greatly improved.[383] Although fires in the 1880s pushed for a new brick Chinatown, and the sanitary condition had improved within years, the remaining wooden buildings still faced drainage problem.[384]

The branch sewers faced other challenges that engendered the San Jose Chinatown sanitary landscape, such as the insufficient grade of sewers and water supply for sanitary purposes. In 1887, a city engineer reported to the City Common Council that the grade of the Chinatown main branch sewer linking three or four additional branch sewers was insufficient for effective operation.[385] In particular, when there was not enough water for sanitary use, the draining of water and waste was rather difficult. In April 1908, the Joint Sanitary Committee appointed a Special Agent to inspect the sanitary condition of Chinatown. The result of the inspection confirmed that the unsanitary neighborhood environment posed a threat to the health of the city. Frequent lack of water supply for sanitation throughout the Chinese quarter made it impossible to flush the filth accumulated in branch sewers to the main city sewer on San Fernando Street. Many wooden branch pipes were thus clogged up by waste that overflowed gradually through some former manholes.[386] In particular, the report highlighted the Chinese community's strong desire to have an adequate water supply as other districts. The residents readily allowed sanitary inspection from the Joint Sanitary Committee and wished to comply with hygienic regulations in order to make their neighborhood environment clean and healthy.

Contemporary health officers believed that stagnant water, filth, foul air, and poor drainage of sewers generated and spread diseases. Since "the great sanitary awakening" (Winslow, 1923), cities and towns in California made efforts to improve and construct modern sanitary infrastructure. Measures such as filling-in, ventilation, street pavement, and the construction of modern sewer and drainage systems have achieved success in improving the general urban sanitation.[387] Effective waste disposal and prevention of sewage pollution to the living environment and water source became the key to the management of the filth crisis. Therefore, the most important sanitation projects were the ones that modernized the sewer systems and street pavements. These projects proceeded in fits from around the 1870s to the first half of the twentieth century. As early as 1868, the physician Arthur Stout called for San Francisco's

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[383] "A doomed quarter," *San Jose Herald*, March 9, 1887.
[384] "The Chinese Evil," April 23, 1882; "Chinatown condemned by the council," March 9, 1887.
[385] "A doomed quarter," March 9, 1887.
[386] "Says that conditions are bad in Chinatown," *San Jose Mercury and Herald*, April 19, 1908.
[387] "A notable decrease in the number of deaths," September 14, 1879.

attention to create "a thoroughly organized system of sewage."[388] In 1879, San Francisco City health officer Dr. Meares acknowledged in his annual report the urgency of (re)constructing new and old sewers and home drainage under the supervision of an experienced sanitary engineer.[389] Despite the fact that some health officers had noticed that the crux of Chinatown's sanitary problems was its poor environment and lack of proper sanitary infrastructure, there was little effort to improve the unpleasant conditions over several decades. The promotion and (re)construction of sanitary water systems and pavements in neighborhoods beyond Chinatown marked an unequal distribution of sanitary resources and services, signifying an early emergence of environmental racism.

In general, there were two factors that resulted in the infrastructural asymmetry of water systems in California that kept Chinatown out of urban sanitation planning. Intervention by private property owners who needed to pay for the costs might have hindered municipal efforts to improve sanitary infrastructure of California Chinatowns. Since few Chinese residents at that time owned properties, it was difficult for them to petition for better sewer systems. Due to the neglect by the city councils, the Board of Supervisors and other relevant authorities, deplorable sanitation infrastructure had plagued Chinese quarters in California for a long time. Although some health and municipal officials repeatedly pointed out the issues with Chinatown's poor drainage and suggested installing or improving sewers that complied with sanitation regulations in Chinese neighborhoods, drainage and sanitation problems persisted for years due to the neglect of policymakers and a lack of code enforcement.

Los Angeles Chinatown encountered both challenges from water supply and drainage systems. From around 1870s, the settlement of immigrants and the growth of the city overloaded the existing water system of Los Angeles, which consisted primarily of zanjas. These zanja ditches had multiple functions including providing water for domestic and irrigation uses, and channeling waste and wastewater. Without proper piped sewer system, a zanja on Los Angeles street was still used as a public sewer by nearby premises and laundries in 1882.[390] From the 1870s to the 1930s, the City Council, the Board of Health (created in 1872), and the Board of Public Works (formally created in 1909) approved a series of renovation plans concerning sanitary street infrastructure and piped water systems, yet few of these plans

[388] Arthur B. Stout, "Hygiene as Regards the Sewage of San Francisco," *California Medical Gazette*, October 1868.
[389] "A notable decrease in the number of deaths," September 14, 1879.
[390] "Council proceedings," *Los Angeles Herald*, July 9, 1882.

benefited Chinatown.[391] The mass construction not only beautified many districts but also sanitized them. Streets were graded, widened, and paved; zanjas were gradually replaced with piped water lines. Refuse collection and wastewater management became the primary tasks of the city and the responsible boards. Although municipalities could build public sewers by using the sewer bonds or public funds, decision makers usually neglected to meliorate the sanitary environment of Chinatown.[392]

Dominated by European American politicians, the Los Angeles city government constructed modern sewer lines while rarely considering Chinatown in its planning and decisions.[393] The City Council approved a resolution that the City Surveyor had proposed in 1882 calling for the building of a main sewer on Los Angeles Street.[394] Until 1907, only one water line was piped through Chinatown, and the lack of proper sewer systems in the Chinese blocks persisted into the early decades of the twentieth century.[395] Given that Chinatown of the time was home to the great majority of overseas Chinese communities, the existing water and waste systems could not accommodate the dense population compared to other residential districts in the city. As David S. Torres-Rouff pointed out, “few of the forty-seven miles of pipes in the sewer network by 1891 served neighborhoods where Mexican or Chinese Angelenos lived, and those that did were built of shoddy materials and broke frequently.”[396] Health reform in nineteenth-century California also changed patterns of waste disposal. While the city enforced garbage collection services in other districts, Chinatown residents were left to dispose of their household solid waste on their own.[397] Trash pits, privies, and trenches of multi-stratum with organic and cultural material deposits were excavated in backyards in the old Chinatown site.[398] Likewise, Los Angeles Chinatown did not benefit from the many modern flush tanks constructed by the city over the years. Until 1909, many Chinatown residents still used privy vaults in the rear of their houses or the closets far south of the Plaza.[399]

[391] Greenwood, *Down by the Station*, 13 and 17.
[392] Torres-Rouff, *Before L.A.: Race, Space, and Municipal Power in Los Angeles, 1781-1894*, 224-225.
[393] Torres-Rouff, “Water Use, Ethnic Conflict, and Infrastructure in Nineteenth-Century Los Angeles,” 119-140.
[394] “Council Proceedings,” July 9, 1882.
[395] “Housing officers inspect Chinatown sewer system,” *Los Angeles Herald*, February 24, 1911.
[396] Torres-Rouff, “Water Use, Ethnic Conflict, and Infrastructure in Nineteenth-Century Los Angeles,” 119-140.
[397] Greenwood, *Down by the Station*, 140.
[398] Ibid., 44-66.
[399] Ibid., 18; Board of Water and Power Commissioners of the City of Los Angeles, Los Angeles Board of Public Service Commissioners, and Los Angeles Board of Water Commissioners, *Annual Report of the Board of Water Commissioners of the Domestic Water Works System of the City of Los Angeles, for the Fiscal Year Ending November 30, 1902*, 14.

The construction of new sewer pipelines required consent from property owners who would benefit from the hygienic infrastructure and pay their shares.[400] Due to the fact that nine-tenths of Los Angeles Chinatown housing and streets were privately held by American landlords, the numerous poor Chinese tenants in Los Angeles usually crowded into dilapidated housing units. Meanwhile, the city council and responsible committees such as the Sewer Committee, would decide where to put sewers using sewer funds or bonds.[401] On 7 February, 1903, a newspaper editorial in the *Los Angeles Herald* stated that the proposition from some health and municipal officers to introduce a sewer system in Chinatown, with all the incidental features necessary to cleanliness and health, could not be accomplished in the near future.[402] In fact, it was not until 1911 that the Housing Committee and Health Department of Los Angeles finally installed some public sewers in the Chinese blocks after a long dispute between private and public interests.[403] Yet, sewer and drainage systems still constituted the biggest health concerns in Chinatown well into 1914. Wastewater leaked or overflowed from the rotten and improperly connected sewer pipes posed serious risk of infection.[404] Despite the improvement plans proposed by sanitary engineers and some officials, as well as the many public health regulations and sanitation laws, the "lack of code enforcement, inadequate municipal services or utilities, and absentee ownership" allowed sanitation problems in Chinatown to persist into the early twentieth century.[405] In other words, the unequal distribution and delayed construction of piped sewers, paved streets, and other sanitary facilities led to the increasing segregation of racial neighborhoods. In the evolution of modern sanitation and epidemiology, the idea of white supremacy was embedded in the infrastructure landscape of municipal public health.

In San Francisco, sewer and street construction was generally subcontracted to private builders by the City's Street Superintendent through bidding, with the cost borne primarily by the property owners who would benefit from the improvements. The dimensions of the sewers were decided by the preferred contractor, who would make a suggestion and get official approval. At times, the Superintendent of Streets and Sewers planned uniform public sewer dimensions for a district of the city.[406] In addition, there was a street fund that offered grants

[400] "Housing officers inspect Chinatown sewer system," February 24, 1911.
[401] "The City Council," *Los Angeles Herald*, April 30, 1889.
[402] "Chinese and rodents," *Los Angeles Herald*, February 7, 1903.
[403] "Housing officers inspect Chinatown sewer system," February 24, 1911.
[404] California Commission of Immigration and Housing and Simon Julius Lubin, *Report on Relief of Destitute Unemployed, 1914-1915: To His Excellency, Governor Hiram W. Johnson* (Sacramento: California State Printing Office, 1915), 263-264.
[405] Greenwood, *Down by the Station*, 19.
[406] Grunsky, "The Sewer System of San Francisco and a Solution of the Storm-Water Flow Problem," 309.

for street maintenance, street sweeping, sewer cleaning, public sewer repair, and repaving.[407] The first sewers that the city built since 1858 had many downsides. They were usually improperly connected and lacked the slope needed for successful drainage. Prior to 1900, the Board of Supervisors appointed the office of City Engineer from the office of the City and County Surveyor to approve proposed construction plans and issue certificates. And, from 1900, the Board of Public Works and the Bureau of Engineering began to take charge of the construction works.[408]

By then, it was widely believed that there was a close relationship between putrefactive waste and disease, and that the germs of many epidemic diseases of the time were also associated with filth and sewer emanation.[409] This understanding of contagious diseases had driven new measures in public health and municipal efforts to eradicate potential and ongoing plagues. Sanitation efforts were aimed at places with rats, sewage, and waste. The municipality had turned to paying greater attention to effective sewer flushing and cleansing. Under the new hygienic standards influenced by the new medical science and the law regulating the propagation of disease, physicians and health officers reasoned that water, ventilation, and chlorination were disinfectants to sewers. In this sense, they maintained that the sewer conduits should be "well-flushed and well-ventilated."[410] Leading voices highly appraised water as "the only radical disinfectant" to remove the substances in sewers that generated miasma.[411] In 1867, the Board of Supervisors amended the Sewer Order with an emphasis on proper sewer connection:

> Sec.4. No person shall construct or maintain, upon his premises, or premises under his control, any privy or privy-vault, cesspool, sink or drain, without connecting the same with the street sewer in such a manner that it shall be effectually drained and purified, if there be a sewer in the street on which said premises may be situated with which the same can be connected; and every drain which shall communicate with a dwelling house shall be constructed with a trap or apparatus which will effectually prevent the escape of gases from the sewer into such dwelling house. Any person who shall violate any of the provisions of this section shall be deemed guilty of [a] misdemeanor; and

[407] See, for reference, *SFMR 1874-75*.
[408] Grunsky, "The Sewer System of San Francisco and a Solution of the Storm-Water Flow Problem," 309-310.
[409] "Sewer gas and disease germs escaped and contaminated the atmosphere in the neighbourhood," in California Department of Public Health, *Twelfth Biennial Report of the State Board of Health of California, for the Fiscal Years from June 30, 1890, to June 30, 1892* (Sacramento: A. J. Johnston, Supt. State Printing, 1892), 45.
[410] Joshua Harrison Stallard, *The Problem of the Sewerage of San Francisco: A Polyclinic Lecture* (San Francisco: H.S. Crocker Company, 1892), 19.
[411] Stout, "Hygiene as Regards the Sewage of San Francisco."

> upon conviction thereof, shall be punished by a fine of not more than one hundred dollars, or by imprisonment in the county jail not more than fifty days.[412]

Public brick sewers were not always connected with house drainage pipes, street gutters, privy vaults or cesspools. For premises that were not connected to the public brick sewers, the sewage was emptied into wooden boxes or cesspools in the basement of the buildings.[413] Contractors would be responsible for the regular cleaning and emptying of privy vaults and cesspools in residential areas.[414] In the early 1870s, San Francisco had hundreds of privy vaults that were not linked to public sewers because of three main reasons. Firstly, many roads lacked street sewers. Secondly, the street sewers were often higher than privy vaults, which could only be emptied with carts.[415] Thirdly, residents were allowed to connect their privy-vaults, cesspools or private sewers to the main sewers *only* after receiving permission from "the Superintendent of Public Streets, Highways and Squares, which permit shall designate the kind of material to be used in the construction of said branch or drain."[416] This regulation limited the possibility of connecting private drains and cesspools with the street sewers to effectively and promptly discharge domestic waste and water. By 1868, large-diameter brick sewers with manholes for cleaning were laid on almost all the principal streets in San Francisco.[417] A sewer man would enter the large brick sewers to clean out the deposited filth. Alternatively, storm water during the rainy seasons or the sewage itself flushed out the sewers.

The combined brick sewers served as public street sewers for the drainage of surface water, storm water, and domestic sewage. However, they were not as efficient as smaller piped sewers with the same grade.[418] Firstly, insufficient flushing (waste) water would make brick sewers more susceptible to filth retention, which in turn impeded the flow of sewage and harbored rats and pests along burrowed sewer lines. Secondly, since the sewers constructed in the early days were usually not of the right dimension and grade, it was harder for self-cleansing and resulted in frequent drainage failures and leakage problems.[419] Besides, the structure of masonry sewers was not watertight and was particularly prone to leakage due to mortar that washed away over

[412] "Amended January 7, 1867, Order 746," *SFMR 1871-1872*, 509.
[413] *SFMR 1875-76*, 392.
[414] Lionel Frost, "Water Technology and the Urban Environment: Water, Sewerage, and Disease in San Francisco and Melbourne before 1920," *Journal of Urban History* 46, no. 1 (2020): 15–32.
[415] *SFMR 1871-72*, 216.
[416] *SFMR 1871-72*, 522.
[417] Stout, "Hygiene as Regards the Sewage of San Francisco."
[418] *SFMR 1875-76*, 598-599.
[419] Grunsky, "The Sewer System of San Francisco and a Solution of the Storm-Water Flow Problem," 307-308.

time, thus arousing worries regarding pollution from sewage leaks. Thirdly, large amounts of sand from unpaved dirt roads and macadamized streets accumulated in the street gutters. When the rainy seasons arrived, sand was washed into these public drains through cesspools and culverts, causing the sewers to break and endangering the health of the surrounding residential communities.[420]

As one of the most crucial aspects of their sanitation improvement efforts, the San Francisco Board of Supervisors advocated constructing piped sewers made of iron or cement to carry sewage from buildings to the city's main sewers. Compared with the old open gutters and wooden branch drains, the new materials were believed to be "better and healthier."[421] The much smaller diameter of the enclosed cement and iron pipes allowed for adequate cleansing through flushing, effectively avoiding the accumulation of filth. At the same time, the new materials solved the problems of leakage and corrosion, making it less likely that rodents and other pests would inhabit inside. Cement and iron pipes were not put into service until 1871, prior to which brick sewers and redwood sewers were widely used in the city's public drainage systems. By the fiscal year 1873-1874, the city had laid approximately 66 miles of sewers, with brick sewers costing about five times as much as redwood sewers.[422]

With the introduction of new sanitation ideas in 1870, the Board of Supervisors required that side sewers connecting tenements be made preferably of cement or iron pipes. If wood had to be used, those side sewers were subject to multiple inspections. By contrast, new street sewers could only be made of brick.[423] In this context, the average number of redwood pipes built each year dropped to about one-tenth of what it had been.[424] Following the furious smallpox outbreaks from 1876 to 1877, the city devoted itself to building new sewer lines on a large scale in line with the new sanitation concept. In 1878, the Board of Supervisors had amended Section 4 of the Sewer Order to make it clear that cement, iron, or ironstone should be used to build or replace branch sewers that drained waste from premises to public street sewers:

> Sec. 4. No person shall construct or maintain, or suffer to be or remain upon his or her premises, or premises under his or her control, any privy or privy vault, cesspool, sink or drain, without connecting the same, by means of cement, ironstone, or iron pipe, with the street sewer, in such a

420 *SFMR 1877-78*, 126.
421 *SFMR 1871-72*, 623.
422 *SFMR 1873-74*, 167-169.
423 *SFMR 1871-72*, 623.
424 *SFMR 1873-74*, 168.

manner that it shall be effectually drained and purified, if there be a sewer in the street, on which said premises may be situated, with which the same can be connected. Every drain or branch sewer which shall connect with a dwellinghouse or building, or with any privy, privy-vault or cesspool, shall be constructed of cement, ironstone or iron, with a trap or apparatus which will effectually prevent the escape of gases from the sewer into such dwellinghouse, building, privy, privy-vault or cesspool.[425]

From the late 1860s, urban planners and health departments made a series of infrastructural changes to the urban landscape that significantly altered the above-and under-ground appearances of residential neighborhoods. However, citywide sanitation improvements were not uniformly distributed. Situated in the city's business center, street sewers had been built in Chinatown by 1876 (Map 1). In this district, brick made up about 97% of the constructed sewers, with the only section of piped sewer being laid on California Street from Stockton Street to Dupont Street. Stockton Street from Pacific Street to Jackson Street and from Clay Street to Sacramento Street, and Kearney Street from Washington Street to Clay Street were not paved with street sewers. In 1876, at the request of the Board of Supervisors, the City and County Surveyor Humphreys completed a plan of city sewerage after a thorough survey in which streets without public sewers in Chinese blocks were recommended for piped sewers. Besides, the plan considered the efficient discharge of house sewerage by constructing house drains and connecting houses' cesspools to the street sewers.

However, the city's (re)construction of private and side sewers that drained sewage from premises to the street sewers did not materialize in Chinatown for the next few years.[426] In February, 1800, the Special Health Inspector for Chinatown reported to the Health Officer Dr. Meares that the construction of 1885 feet of iron-stone sewer pipes was necessary in order to abate the nuisances.[427] On November 15, 1880, the issue was raised once more.[428] However, the suggestion of sanitary improvement was not immediately adopted, and the construction of proposed drainage facilities in Chinatown was not documented in the municipal report of the same year. In contrast, reports from sanitary inspectors in other districts detailed the different types and feet of drains that had been constructed. In response to the complaints referred to the Health Officer, health inspectors in other districts had constructed or replaced side sewers and

[425] "As amended March 1, 1878, Order No. 1425, and Nov. 23, 1878, Order No. 1476," *SFMR 1877-78*, 887.
[426] *SFMR 1874-75*, 135.
[427] *SFMR 1879-80*, 480; *SFMR 1880-81*, 321.
[428] *SFMR 1887-88*, 473.

private sewers with primarily cement and iron-stone conduits. Examining the reports of health inspectors over the years, the general sanitary conditions in Chinatown did not improve until 1882, which coincided with the passing of the Chinese Exclusion Act in Congress.[429] In the following decades, there was no record of sewer construction, renovation, and repairs in San Francisco Chinatown in the municipal reports.

Map 1 An 1876 map showing San Francisco constructed and proposed to build brick, wooden, and pipe sewers with different indicator lines. Plats 6 and 7 show the constructed and proposed Chinatown sewers of the time.[430]

In the early days, house drains were constructed at the expense of property holders who contracted with private builders. The early pipes were not constructed uniformly and did not make up a complete domestic sewage system. In 1876, City and County Surveyor Humphreys

[429] *SFMR 1881-82*, 360-361.
[430] William P. Humphreys & Co., *Map of the city and county of San Francisco*, Compiled and published by Wm. P. Humphreys & Co., A.B. Holcombe, W.C. Kewen. Eng. by Worley & Bracher. Phila, Pa: Printed by F. Bourquin, 1876.

criticized the fact that each property owner built his own drains the way he thought was best, which often resulted in the wrong construction of sewers.[431] Many property owners were willing to pay *only* for the smallest and cheapest sewers for financial reasons. Such sewers might be inappropriate for the locality and the premises, causing a greater nuisance over time.[432] This was especially true in San Francisco Chinatown. Although water closets had already been introduced to the city, backyard privy vaults were still widely used in many slums of Chinatown. Before 1880, the only private house drains and branch sewers in Chinatown were predominantly wooden and susceptible to decay.[433] Sewage and waste from water closets, sinks, and privy vaults drained through these improperly built pipes into cesspools in the basement, which were often open wooden boxes. When there were no sewer pipes, a gutter way in the center of underground corridors served to empty the sewage into an open sewer at the end of the passage.[434]

For many years, the house drainage pipes and basement wooden cesspools in Chinatown buildings were not connected to the street sewers. Faced with the sanitary aberration caused by the outdated sewer systems, these sanitation facilities were in dire need of renovation. To make matters worse, the overcrowded and unventilated basements of the Chinatown boarding houses were home to many poor tenants and seasonal workers and provided a venue for vice-related businesses. This meant that the living environment of the basement tenants was most likely afflicted by foul air and filthy sewage leaked from basement cesspools. Observations by public health inspectors and political officials of such densely populated and filthy boarding rooms and the dilapidated sewer systems thus confirmed their medical knowledge about illness, namely that miasma and filthy environments were the root causes of diseases. These observations were infused with racial prejudice, thus shaping the biased and medicalized rhetoric in municipal and medical reports as well as some political speeches. Press and literature works amplified the power of such prejudiced discourse, reinforcing the negative representations of Chinese immigrant society in the United States.

By 1880, the Chinese population in the city amounted to 22,000.[435] Since it was hard for Chinese people to find housing outside Chinatown, these immigrants became concentrated

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[431] Humphreys report in 1876, in United States Census Office, *Census Reports Tenth Census: Report on the Social Statistics of Cities: Part II*, 807-808.
[432] *SFMR 1883-84*, 109.
[433] "Resolution of intention No. 10, 196 [New Series]," *Daily Alta California*, February 16, 1877.
[434] Workingmen's Committee of California, "Chinatown Declared a Nuisance!" Mid-March 1880, *The Museum of the City of San Francisco*, accessed April 6, 2022, www.sfmuseum.org/hist2/nuisance.html.
[435] *SFMR 1883-84*, 303.

there, which subsequently became ghettos. Therefore, Chinatown's population continued to grow, and its neighborhood health came under increased stress from dilapidated and outdated waste disposal facilities. Sewer pipes frequently failed owing to overloading and a lack of timely repairs. Besides, in the early stages of sanitation reform, health officials had strongly condemned the use of privy vaults for violating sanitation and recommended replacing this traditional waste disposal method with more "hygienic" water closets. However, the construction and improvement of sewerage systems in the Chinese district fell far short of the increasing number of water closets to be installed. As a result, the propagation and use of water closets had greatly increased the volume of sewage in need of disposal, overwhelming the already dilapidated drains in San Francisco Chinese neighborhood.

The property owners bore a great deal of responsibility for their inaction in improving the sanitary environment in Chinatown. First of all, as the value of real estate in San Francisco grew, the result was to squeeze every square inch of available space within buildings in order to maximize the productive value of property.[436] In the city's Chinese neighborhood populated by primarily impoverished residents, this practice was frequently taken to an extreme, with little concern for the health of the tenants. Secondly, in houses that had been built with sewers, broken or blocked drainage pipes were not repaired or replaced in a timely manner. This was due to the conscious neglect of the landlords, who cared more about rent income than the upkeep of sanitary facilities. In fact, the rate of revenue derived from Chinese tenants was materially larger than that obtained from other classes of tenants.[437] Thirdly, many private house drains violated the sewer orders enacted since 1870. Apparently, Chinatown landlords were unwilling to pay for the (re)construction of sewer pipes that complied with the sanitary regulations. Fourthly, a great number of buildings did not even have sewer pipes. Privy vaults and cesspools were often not connected to the street sewers. In such cases, night soil men were paid to clean the sewage and waste. However, cesspools in Chinatown houses frequently overflowed because landlords failed to pay for the costly service on time. Yet, there were some sympathetic voices towards California's dilapidated Chinatown. Chinese people were not allowed to hold property after the radical Workingmen's Party successfully cooperated with the Grangers to write California's new constitution in 1879.[438] Since the vast majority of Chinese did not have the legal right to own or inherit properties, Chinese tenants needed to

[436] Health officer's report, to Dr. Henry Gibbons, Jr., Health Officer, by Inspector, in *SFMR 1873-74*.
[437] Farwell and Kunkler, *The Chinese in San Francisco*, 207.
[438] John D. Hicks, *The American Nation: A History of the United States from 1865 to the Present* (United States: Houghton Mifflin, 1946), 158.

negotiate with their landlords to improve the sanitary conditions of their premises, which always turned out to be in vain.

On the other hand, installing indoor plumbing and connecting house drains and cesspools to the street sewers was no easy task. The issue of deplorable sewer facilities in San Francisco's Chinatown was much more complex than simply affordability and neglect from property owners. The Superintendent of Public Streets, Highways and Squares had the complete power to determine whether it was necessary to construct a sewer in a street and have the branch sewers connected with the street sewers.[439] Consequently, in order to construct, improve, and connect the house drains, cesspools, and branch sewers to the main street sewers, the streets and the premises need to adhere to specific regulations and go through a number of inspections. In 1871, for example, a deposit of twenty dollars in gold coin was required prior to receiving a formal written permit to connect the branch sewers to the main sewer.[440] Besides, pipe materials, dimensions, and street and housing conditions should comply with sewer regulations in order to obtain the permission from the Superintendent. In the mid-1870s, owners of the property to be drained were required to also submit an application to the Water Commissioners in writing "accompanied by a clear description of the premises to be drained, and the drains required; and also by certain agreements, all as provided in the printed form of application issued by said Commissioners."[441] In this manner, only accepted sewer proposals would be cleaned, repaired, improved, or (re)constructed.

Many other parts of the city, especially the neighboring districts of Chinatown, had progressed in parallel with the urban infrastructure planning since the sanitary reform. The San Francisco Chinese neighborhood was adjacent to several low-income white residential districts on its northern and eastern sides. In the early 1870s, these white quarters were also poorly drained. Filth from upper districts flowed down and accumulated there, making the residents vulnerable to the typhoid fever infections. In this case, the health report was particularly concerned with the neighborhood sanitation and health of poor white residents, blaming the issue on ineffective enforcement of municipal and sanitation ordinances, while stating that the people were "without any fault of their own."[442] In sharp contrast, city authorities had generally adopted a "hands-off" policy towards the asymmetrical development of sanitation facilities and services in Chinatown. Additionally, the dilapidated sewerage system there was prejudicially seen as

[439] *SFMR 1871-72*, 522.
[440] Ibid.
[441] *SFMR 1875-76*, 620.
[442] *SFMR 1870-71*, 296.

the result of the immorality of Chinatown residents. Given this situation, the failure to improve the house sewers and to connect domestic waste disposal facilities to public sewers in San Francisco Chinatown was also due to administrative neglect and inaction by city authorities in enforcing regulations to renovate the sanitary infrastructure in Chinatown.

In fact, the city authorities had the ability to improve the sanitary conditions in Chinatown by strictly enforcing sanitary laws against Chinatown property owners. For example, in 1881 and 1882, the Health Officer, Dr. J. L. Meares, reported that the drainage problem of San Francisco Chinatown was greatly improved when the property owners paid for the (re)construction of the sewers under law enforcement. Besides, the enforcement of sanitary laws allowed Chinatown to receive timely sanitary services from municipal departments, including daily street sweeping and garbage removal.[443] In a similar case in the city of San Jose, open gutters and private sewers that were not connected to the street sewers had raised health concerns.[444] Many local physicians agreed that drainage problem was a main cause of sickness among residents. By early 1878, the common council proposed the construction of a main sewer to improve the overall health of the city on the agenda.[445] Discussions between the common council and the mayor concluded that the project would benefit the Market Plaza, which was located near the Chinatown district, in terms of environmental and economic values. Several proposals for construction costs were also presented, including the sale of the plaza, a direct tax levy and the issuance of bonds. The sale of the plaza and the opening of Market Street were preferred by people because the increase in property values and rents would drive Chinese immigrants away from there.[446] Finally, after a year of negotiation and in response to the growing drainage needs of the older district of the city, including Chinatown, the city decided in early 1879 to build a complete drainage system by means of a fundraising or taxation.[447]

More importantly, the Superintendent of Board of Supervisors and the Street Department had the right to decide which sewer (re)construction and maintenance projects could be financed by the Street Department Fund.[448] For years, health inspectors' reports on Chinatown had underlined the urgent need for the construction and renovation of a complete and efficient sewage system in Chinatown. Yet, institutional discrimination and indifference towards Chinese immigrants confirmed that the sanitary needs of Chinatown were unworthy of

[443] *SFMR* 1881-82, 360-361.
[444] *San Jose Herald*, October 5, 1876.
[445] *San Jose Mercury-news*, January 15, 1878.
[446] *San Jose Herald*, January 15, 1878.
[447] *San Jose Herald*, January 16, 1879.
[448] *SFMR 1879-80*, 1051-1052.

municipal attention or funding in municipal sanitation development plans. As Robert Bullard, the father of environmental justice, notes, "human values are involved in determining which geographic areas are worth public investments."[449] The reluctance of city authorities to provide public sanitary service in Chinatown informed another dimension of sanitary borders that produced inequalities. By way of illustration, Chinatown had to rely on its residents to clean their own neighborhoods at their own expense while the city authorities undertook to clean the rest of the city.[450] Once again, the different attitudes confirmed the idea that the dominant voices of the time treated Chinese immigrants as perpetual foreigners.

The same was true for street pavement projects that started much earlier than the (re)construction of modern sewers. In the decade from 1860 to 1870, the Board of Supervisors of the city and county of San Francisco appointed a special committee to inspect, repair, and make new pavement on the streets and sidewalks. By then, street pavement was made through the contracts systems.[451] The streets were primarily paved with cobblestone and wooden materials, which proved to be unsatisfactory because these materials required frequent maintenance and repairs.[452] Developed well into the 1880s, streets of Chinatown were gradually paved with cobbles, Nicholson, and basalt blocks at the expense of property owners.[453] Cobble pavement made up most of the street pavement, with the basalt paved primarily on the eastern border in front of white dwelling houses (Map 2). The cobble material made it difficult and expensive to keep the pavement in clean condition, making the streets especially dirty because of heavy traffic and local climate.[454] Additionally, the Special Committee on Pavements evaluated that the open seams and the porous material of the Nicholson wooden pavement were easily filled with the refuse from the streets and households. At the same time, the "alternating six-months of rainy and six-months of dry season" made this wooden pavement susceptible to decay, shrinking and swelling.[455] As a result, both cobble and

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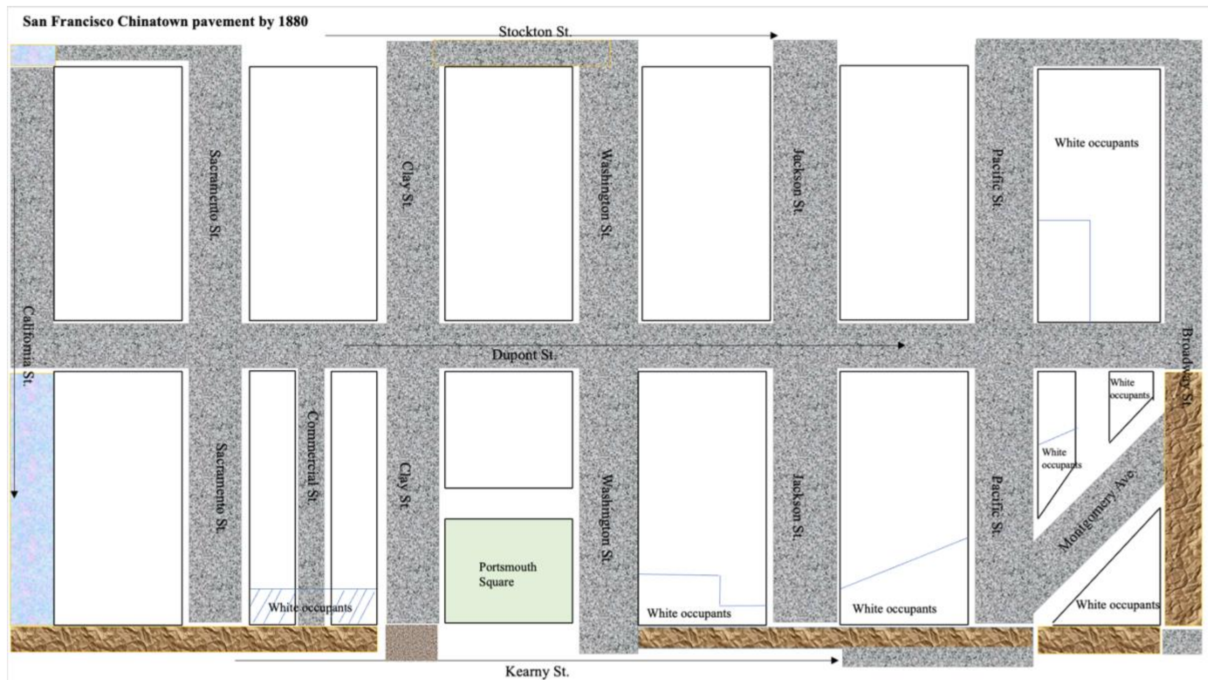
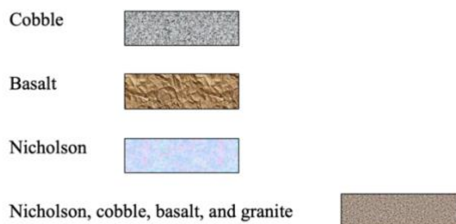
[449] Robert D. Bullard, "Environmental Justice in the 21st Century: Race Still Matters," *Phylon* 49, no. 3/4 (2001): 151-171.
[450] Joan B. Trauner, "The Chinese as Medical Scapegoats in San Francisco, 1870-1905," *California History* 57, no. 1 (1978): 70–87.
[451] *SFMR 1875-76*, 581.
[452] See, for reference, San Francisco Board of Supervisors, *Report of the Special Committee on Pavements of the Board of Supervisors of the City and County of San Francisco* (San Francisco: Steam Printing House of A. L. Bancroft & Company, 1870).
[453] The fourth, sixth, and seventh wards included the Chinatown area. *San Francisco Genealogy, Districts and Wards*; See *SFMR 1879-80*.
[454] San Francisco Board of Supervisors, *Report of the Special Committee on Pavements of the Board of Supervisors of the City and County of San Francisco*, 12.
[455] Ibid., 12-17.

Nicholson pavements were sanitary disadvantaged compared with the concrete, basalt, granite, and asphalt pavements.



Map 2 The pavement in San Francisco Chinatown by 1880.



The data was extracted from the San Francisco Municipal Reports for Fiscal Year 1879-1880. The map of Chinatown was based on Willard B. Farwell, *The Chinese at Home and Abroad: Together with the Report of the Special Committee of the Board of Supervisors of San Francisco on the Condition of the Chinese Quarter of That City* (San Francisco: A. L. Bancroft & Co, 1885).

From the mid-1870s, the mayor of San Francisco, James Otis, had suggested that the streets be made of granite, stone blocks, or asphalt instead of wood or other perishable materials that would break down over time.[456] In the following years, city streets in many districts were (re)paved with more durable materials. Around 80% of the Chinatown streets were paved in the years from 1863 to 1871. Because of the high costs for the maintenance and repairment of such perishable materials as well as the municipal neglect, streets in Chinatown in the downtown area were not able to endure for any length of time and rapidly worsened, increasing

[456] *SFMR 1873-74*, 647.

the burden of neighborhood sanitation. In March 1900, the Mayor of San Francisco wrote a letter to the president of the Board of Public Works, suggesting paving Chinatown roads with bituminous rock so as to keep the city clean and healthy.[457] The idea of linking asphalt pavements with sanitation and modernism in the urban built environment was traced back to the California sanitary reform since 1870s. At that time, the germ theory believed that germ-laden dust and mud generated from unpaved streets would transmit diseases. In this sense, hard paved and watered roads were critical for public health from a hygienic standpoint.[458]

Normally, the expense would be borne by the city.[459] Despite the fact that Chinatown residents paid taxes, city authorities had disregarded its responsibility to clean the streets for years.[460] In the Mayor's opinion, Chinatown property owners were responsible for the full cost of paving and cleaning their own neighborhood at their own expense.[461] Until the reconstruction of Chinatown after it was destroyed in the 1906 earthquake and fire, the neighborhood's cobblestone streets remained virtually unchanged and unmaintained by the city for many years. The great disaster brought extensive damages to downtown buildings and pipes above and below ground. This allowed rodents that had been hiding in sewer pipes and other concealed spaces to disseminate the plagues once again throughout the city.

To address the environmental health concerns, San Francisco municipal and public health officials launched a rat crusade to eradicate permanently the plagues by renovating and rebuilding a rat-proofed built environment citywide. Health officers claimed that wooden foundations in the premises were rat harboring places.[462] The measures of such "permanent civic immunity" included replacing the many outdated and decayed wooden sewers, sidewalks, floors, street pavement, and buildings with impervious materials and elevating the sidewalks and floors.[463] Indeed, Chinatown underwent a similar campaign to exterminate rats in the four years after it was first quarantined in 1900 due to the bubonic plague outbreak. The main measure used by the Public Health and Marine Hospital Service was to make a "complete rat-proofing of buildings with concrete."[464] The sanitation improvement was somewhat successful,

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[457] Asphalt is produced from Bituminous rocks. "Bituminous pavement on Chinatown streets," *San Francisco Call*, March 17, 1900.
[458] Ibid.
[459] Ibid.
[460] Shah, *Contagious Divides: Epidemics and Race in San Francisco's Chinatown*, 50.
[461] "Bituminous pavement on Chinatown streets," March 17**,** 1900.
[462] San Francisco Citizens' Health Committee and Todd, *Eradicating Plague from San Francisco,* 218.
[463] Ibid., 290-291.
[464] Ibid., 285.

as San Francisco Chinatown was not the epicenter of the following outbreaks of bubonic plague from 1907.

In such sanitation campaigns, concrete became a signifier of health and hygiene, giving its extreme importance in the post-earthquake reconstruction activities. The municipal and health sectors made extensive use of concrete (and of course other important modern industrial products including steel, iron, asphalt, and masonry) to rebuild and renovate the built environment above and below the city. More importantly, health officials deeply believed that concrete provided a permanent protection against the recrudescence of any epidemics. From an ideological dimension, the concrete was a powerful tool to seal off the oriental threat. As the Citizen's Health Committee maintained, the sanitation campaign was "the hope of San Francisco and in time that city would (will) be one block of concrete throughout, and the gateway to the Orient closed against plague."[465]

Compared to the sizeable Chinese community in San Francisco, Sacramento's Chinese quarter was rather small and occupied only half a block. From the 1850s, Chinese residents leased wooden dwellings on the south side of I Street, which was built on the levee. By the 1860s, the town had raised its streets to prevent frequent flooding due to its flat topography. Real estate and corporate investments followed this environmental improvement, resulting in a dramatic shift in ethnic and commercial patterns in the town center.[466] In the early days, the Chinese block was particularly afflicted by drainage problems. It was located in the lower portion of the town south of Slough Sutter, and the slough often overflowed into streets during a flood. However, the town's solution to flood-induced drainage problems did not benefit the Chinese quarter. Instead, the Chinese community had to move northward from its original location to the Sutter Slough as downtown property and commercial values increased.[467]

Archaeological excavations inform us that the Chinese quarter in the 1850s used shallow ditches and open gutters to drain both surface water and sewage. Since the Chinese quarter was frequently flooded out in the early days, Chinese residents came up with a solution to ensure that the trenches could handle the large amount of water well and to prevent environmental health hazards caused by overflowing sewage. They dug some temporary drains and made some square holes along them to trap sediments brought in by the water.[468] After Chinatown was

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[465] Ibid., 218.
[466] Praetzellis and Praetzellis, *Archaeological and Historical Studies of the IJ 56 Block,* 9.
[467] Ibid.
[468] Ibid., 51 and 57-58.

allocated to the north side of I Street, the domestic waste disposal facilities did not meet the sanitation standards set by the city's health department since the sanitation reform. As a result, Chinatown was often blamed by the press and health officials for generating diseases. Unlike the situation faced by the Chinese communities in San Francisco and Los Angeles, the white landlords in Sacramento's Chinatown were required to clean and renovate the waste disposal facilities by plumbing and laying lateral drains for cesspools after being penalized by the police court and the health department.[469]

However, the new Chinatown location met with even greater challenges. Bordering the slough on the south bank, the living environment was affected by untreated waste in addition to the drainage problem in rainy seasons.[470] The railroad shops on the north shore used the slough to discharge sewage and waste, gradually turning the slough and the southern bank into something of a dumpsite.[471] Still, this was not the only waste site in the vicinity of the Chinese dwellings. In the 1890s, some Chinese farmers living in the area south of Y Street, then on the edge of the city, operated truck farms and grew small-scale vegetables, flowers, or fruits as commercial crops. Many night soil men discharged the waste collected from urban cesspools and privy vaults into these Chinese gardens. The dumping had sparked strong complaints from residents nearby.[472]

In spite of numerous sanitary restrictions established by the Sacramento Board of Health, dumping waste into the slough continued until the turn of the century.[473] In fact, the sanitary decrees were flawed in their formulation and enforcement. In addition, the board’s command had limited force in terms of law enforcement and insufficient funding, so the violations continued for years.[474] The Street Commission gave permission to certain people to dump foul-smelling garbage in the slough, while the representative of the Board of Health admonished such action.[475] On the other hand, this uncontrolled dumpsite increased the risk of potential fires that threatened the Chinese residents living nearby at the end of the nineteenth century. Although the Board of City Trustees had appointed some policemen to prevent dumping, and

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[469] “Police Court,” *Sacramento Daily Union*, August 4, 1883; “The Chinatown Nuisance,” August 4, 1883.
[470] Brienes, West and Schulz, *Overview of Cultural Resources In the central Business District* (Sacramento: Sacramento Museum and History Department, 1981), quoted in “Sacramento’s Chinese of Yee Fow,” *Yee Fow Museum*, accessed July 12, 2020, http://www.yeefowmuseum.org/yeefowhistory.pdf, 14.
[471] Faren Maree Bachelis, *The Pelican Guide to Sacramento and the Gold Country* (Gretna: Pelican Publishing, 1987), 69.
[472] “Sanitary Matters,” *Sacramento Daily Union*, June 7, 1892.
[473] “Board of City Treasures,” *Sacramento Daily Union*, January 13, 1880.
[474] “Favoring the Tax,” *Sacramento Daily Union*, December 1, 1887.
[475] “How China Slough has been polluted recently,” *Sacramento Daily Union*, September 17, 1895; “Treat all alike,” *Sacramento Daily Union*, June 3, 1896.

the mayor stepped in in certain cases, these official interventions were only temporary and had no long-term legal force. In other words, this dump site – located next to the Chinese neighborhood – had been patronized by many haulers of garbage due to the neglect by city and health authorities.

In 1880, the city closed off the slough leading to the river, a move that cut off the river's source and further worsened the neighboring environment. This "public" dumping site inevitably affected the sanitation and the health of the Chinese neighborhood. On the south bank of the slough and in the vicinity of the Chinese houses, piles of trash, litter and garbage had accumulated.[476] In 1883, a Chinese resident made a statement that fish caught from the slough had a putrid smell.[477] Since fish was an important part of the diet of Chinese immigrants at the time, the contaminated food source would have been deleterious to the health of this immigrant group. Although there were no outbreaks of water-borne and vector-borne diseases such as cholera and malaria in Sacramento Chinatown, the polluted slough still harmed the aquatic ecosystem and posed health risks to many Chinese people who ate fish from the water.

The F-Diagram illustrated the fecal-oral transmission channels and potential obstacles to prevent diseases associated with excreta from reaching a new host (Diagram 1). *Vectors* transmit pathogens from *reservoirs* to potential hosts. In the case of the interplay between Sutter Slough and Sacramento Chinatown, the *reservoir* could be the animals or environment in which infectious agents survived, such as the piles of garbage and the contaminated slough by dumping. The *vectors* included mosquitoes, flies, lice, rats, fleas, and so on. Pathogens and toxins could also be ingested if people were exposed to sewage and waste that had not been treated. This is a typical example of environmental injustice and environmental racism. That is, dumping waste in an area for the benefit of others at the expense of an immigrant minority. During the dry season, the stagnant water emanated disagreeable odors, reminding the public of the disease theory about miasma. Therefore, in the social climate of the late nineteenth century, the filthy Sutter Slough at the rear of Chinese blocks became a powerful pretext to drive away Chinese immigrants. While the wealthy class gradually moved to more environmentally friendly districts, the Chinese community was left in the lowlands, exposed to the polluted neighborhood environment.

[476] "Favoring the Tax," December 1, 1887.
[477] "China Slough does not smell," *Sacramento Daily Union*, August 8, 1883.

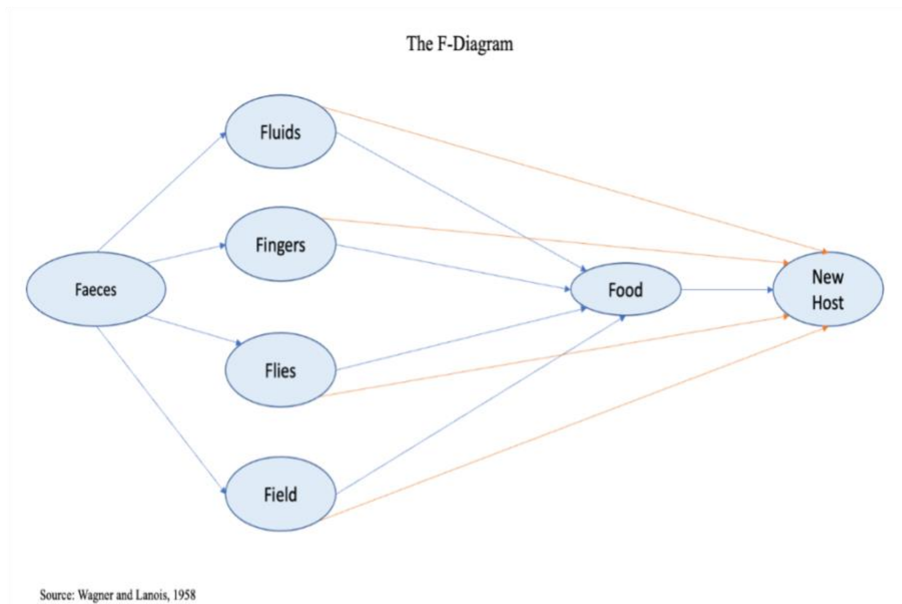

Diagram 1: The F-Diagram. Source: Source: Wagner and Lanois, 1958.

The rapid urbanization of the American West coupled with population migration in the second half of the nineteenth century led to unplanned and unsustainable urban development. Sanitation facilities in California cities could no longer meet the needs of the rapidly growing population. The sanitary reform movement that began in around 1870 focused its attention on the sanitary conditions of the built environment in cities. At the same time, contemporary disease theories were embedded in the development of urban infrastructure, waste disposal, and health services. City authorities and public health departments began to (re)construct streets, premises, sewerage and drainage systems in line with the new sanitary regulations. The potential risk of contamination of the living environment and the water supply systems from overflowing cesspools and leaking sewage from dilapidated sewers prompted city authorities and sanitation departments to make sanitary renovations to defective sewerage systems. Despite the fact that both surface and subsurface landscapes had been transformed by water and sewage drains, the construction and improvement of a complete modern sewerage system had become particularly important in California's urban development.

California's major Chinatowns shared a common sanitation problem. The unequal distribution of sanitation infrastructure and services reflected both environmental injustice and environmental racism, while also constructing a sanitation boundary that excluded Chinatown. Dilapidated and outdated sanitation infrastructure, which in this study includes sewer systems, street pavements, and waste disposal, contributed to an unsanitary living environment in

Chinatown. Again, based on the medical knowledge of the time, people who had a voice deeply believed that unsanitary living environment generated infectious diseases. The marginalization and municipal neglect thus contributed to the stereotype that Chinese immigrants were likely to be disease carriers. For a variety of reasons including race, income, and class, the sanitation problems in Chinatown were generally not resolved until the early twentieth century. It is important to note that there were differences between the Chinese middle-to-upper-class and the lower class in terms of their living environment in Chinatown. However, it is reasonable to infer from this study that a fundamental cause for such an inequitable distribution was based on race. As an example, the Los Angeles Commission of Immigration and Housing, in 1914, explained their inaction in solving sanitation problems in Chinatown by stating that "a separate housing standard" was applied to the Chinese quarters.[478] This statement was evidently marked by strong prejudice and racism.

The city's planning and the decisions of city officials played a more critical role in the (re)construction of sanitation infrastructure than simply financial issues. In the context of the anti-Chinese agitation in California throughout the nineteenth century, the vast majority of Chinese immigrants were not able to obtain U.S. citizenship and hence did not have the same opportunities to vote for politicians and committees that benefited Chinatown. Therefore, elected officials had actively sought to improve sanitation in other neighborhoods outside of Chinatown, while doing little to address the concerns of the Chinese quarters. This indifference and inaction widened the environmental divide between Chinatowns and the surrounding communities, especially after sanitation reform had significantly improved the environment of other neighborhoods. Given the American City Beautiful movement of the 1890s and the increased capital investment brought about by modernization, large Chinatowns in Californian cities, which were frequently located near commercial districts, were viewed by anti-Chinese forces as an eyesore that needed to be relocated.

Modern sanitary regulations, hygienic practices and the (re)construction of sanitation infrastructure had greatly contributed to the improvement of public health and the prevention of certain diseases. The quarantine and disinfection of premises with confirmed and suspected cases was also sound practice based on medical science. However, the lack of proper sanitation infrastructure and facilities in California Chinatowns escalated the stereotyped image of a "dirty Chinatown" and further marginalized this ethnic ghetto. In the broader context of the Chinese

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[478] California Commission of Immigration and Housing and Lubin, *Report on Relief of Destitute Unemployed, 1914-1915: To His Excellency, Governor Hiram W. Johnson*, 22.

Exclusion Act, racism against the Chinese community was embedded in sanitation infrastructures, led by the modernization of sanitary sewers and street pavements. Such injustice and racism would have a long-term impact on future migration influxes, urban development, and urban planning.

2.3 Relocation of Chinatown: conflicts and negotiations

Chinatown in California had been demeaned for decades. As the property and commercial values of the Chinatown area in the downtown business district increased, the anti-Chinese forces and vested interests increasingly saw the relocation of Chinatown as a good result. Racism was bluntly expressed in the discourses condemning the unsanitary living environment in Chinese quarters for generating diseases. The rhetoric of filthy and diseased Chinatown thereby provided the basis for moving forward with the relocation plans. In fact, relocating Chinatowns had been discussed in Los Angeles, San Francisco, and Sacramento in the wake of the public health movement in the second half of the nineteenth century. The Chinese community vigorously resisted these relocation plans. However, only San Francisco's Chinatown remained in its original position, while the other two Chinatowns had to be relocated to nearby locations.

In fact, in addition to the three major Chinatowns mentioned above, there were also small-scale Chinese settlements in other cities and towns in California. These Chinese settlements had similar experiences of forced relocation in the context of white supremacy and racism against Chinese immigrants in the second half of the nineteenth century. Besides, the relocation of some Chinese settlements incorporated other objective causes, including natural disasters such as earthquakes and floods, or man-made disasters such as fires. For instance, Oakland's Chinatown was forced to relocate several times before the turn of the century. The first relocation of Chinatown was to create space for white enterprises; the second was owing to a fire that destroyed Chinese-occupied buildings; and the third was due to a redevelopment push for the seat of municipal buildings.[479] Similarly, the 1886 fire was the primary reason for the relocation of Yreka's Chinatown, but rebuilding the homes on the same site was not permitted

[479] Armentrout Ma, *Hometown Chinatown: A History of Oakland’s Chinese Community, 1852-1995*, 29.

by the "citizens meeting."[480] The new Chinese quarter was resettled in the lowlands of the town, separated from the white community. During the winter of 1889-1890, Chinatown was severely impacted by flooding in Yreka Creek. Numerous people became homeless as a result of the inundation. The disaster also brought heavy losses to the local businesses and residents that relied mainly on the mining industry. However, Chinese victims disappeared from many damage reports, official records, and public voices.[481]

The relocation of Sacramento and Los Angeles Chinatowns was a direct result of urban development; however, these relocations also involved more complex causes in realms such as politics, real estate, and local government. Sacramento raised the streets in the city center, making the area more environmentally friendly; yet property values in the vicinity of the commercial center also increased. By the mid-1850s, the Chinese community had moved from the south side of I Street to live adjacent to the Sutter Slough. The new Chinatown faced additional challenges from the illegal dumping site around the slough, and the unsanitary living environment escalated the stereotype of a filthy, unkempt, and degenerate Chinatown. From the late 1870s, anti-Chinese organizations and leagues demanded that Chinese communities be driven out of the city and that Chinese employment be restricted in order to buttress white workers. This was the catalyst that forced the relocation of Chinatown at a later time. In 1892, the common council condemned Chinatown as a public nuisance, and saw it as a constant menace to the health and personal safety of its citizens. The council petitioned the Board of Trustees to order the removal of Chinatown from its present position to some location without the city limits. Finally, the second "driving out" took place from 1906 to 1909, when the city officials and the Southern Pacific Railroad buried Chinatown and filled the slough to make room for the railroad station.[482] The Chinese were then scattered to live on I Street and several blocks to its south.

At a time of heightened anti-Chinese sentiment in the 1880s, nativist voices accused Los Angeles Chinatown of being a hotspot of stench and vice, and they repeatedly called for the demolition of Los Angeles' Chinese quarter. However, it was not until about 1910 that local government, entrepreneurs, and real estate developers began their plans to remove the old Chinatown. In 1903, Los Angeles city officials believed that its smaller Chinatown was not as centrally located or as objectionable as the one in San Francisco, so there was no need to

[480] Siskiyou County Historical Society, *The Siskiyou Pioneer*, vol. 6, no. 3 (1990), 42-43.
[481] Siskiyou County Historical Society, *The Siskiyou Pioneer*, vol. 6, no. 3 (1990), 23.
[482] "Sacramento's Chinese of Yee Fow," *Yee Fow Museum.*

relocate Los Angeles' Chinatown from its current location, but there was clearly a case for improving its unhealthy neighborhood.[483] However, many of the buildings and infrastructure in Chinatown remained unimproved in the following years, resulting in an ever-deteriorating community environment. Apart from the dispute over sanitation and health, the relocation incorporated the motivation of replacing the Chinese businesses with white American businesses.[484] It was not until 1938 that the Supreme Court finally approved the condemnation of that area for the construction of Union Station. As a result, residents were evicted to make room for the new railroad station, and most of the old district was razed to the ground.[485]

In San Francisco, the debate over the relocation of Chinatown dated back to the early 1870s. Faced with an escalating public health crisis, health officials failed to identify the real causes of disease and were unable to effectively prevent the outbreaks of epidemic, and thus had to demonstrate their medical knowledge and authority by conducting "constant house to house inspection[s]" in Chinatown.[486] However, the main purpose of these periodic inspections in Chinatown extended beyond sanitary operations. The site of Chinatown was needed for the expansion of the financial district. To a large extent, the "constant house to house inspection" was a part of the overall agenda the municipal supervisors had developed to exclude Chinese immigrants from the city.[487] As a result of the increased property value of the downtown business district, many entrepreneurs, politicians, and developers had expressed their wish to remove Chinatown. Similar to the eviction of the Chinese population in other California cities at the time, the anti-Chinese sides promoted Chinatown as a source of disease and a threat to the health of American society, and subsequently utilized legal means to declare Chinatown a nuisance to justify its relocation.

In March 1890, the San Francisco Board of Supervisors passed an ordinance to move Chinatown out of the city center to a site on the outskirts of the city. The ordinance would make it illegal for Chinese people to live or do business in the Chinatown area after 60 days. The Board of Supervisors employed words tinged with white supremacy, stating that moving Chinatown out of the downtown area was in the public interest and a positive step. However, the ordinance was ultimately declared unconstitutional and in derogation of treaty rights.[488] At

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[483] "The Chinatown Menace," *Los Angeles Herald*, May 18, 1903.
[484] "Chinatown," *The Los Angeles Times*, Mar 15, 1909.
[485] Suellen Cheng and Munson Kwok, "The Golden Years of Los Angeles Chinatown: The Beginning," in *Los Angeles Chinatown 50th Year Guidebook* (Los Angeles: Chinese Historical Society of Southern California, June 1988).
[486] *SFMR 1885-86*, 373.
[487] Ibid.
[488] "The removal of Chinatowns," *Sacramento Daily Union*, March 16, 1890.

the end of June in 1900, shortly after the first outbreak of bubonic plague, the San Francisco health authorities decided to investigate and clean up Chinatown more radically. Sanitation regulations were enforced to drive Chinese residents out of their neighborhood.[489] The preferred plan of the central league was to remove the Chinese quarter to an isolated area in the suburbs and establish there an oriental city as a tourist attraction.[490] On the same day, the Public Improvement Central Club suggested appointing a committee of merchants to submit plans for the removal of Chinatown from its current location after the investigation.[491] The relocation plan reflected San Francisco's desire to get rid of a community that, while not infected with a disease, was considered a threat to the city.

As with the quarantine of Chinatown solely during the previous plagues, public health officials saw the relocation of Chinatown from the city center as a solution to the city's sanitation and urban beautification. According to the historian Natalia Molina, the majority of health officials and anti-Chinese forces have long attributed the Chinese immigrants' poor living conditions to "this group's personal habits and cultural proclivities."[492] The logic underlying these initiatives is that segregating the Chinese minority from white American society will solve all difficulties.

Still, the real intent involved the commercial interests of white merchants backed by the San Francisco Merchants' Association.[493] In May 1903, the State Board of Health once again condemned Chinatown and urged its relocation to some outlying and isolated district where strict sanitary regulations and quarantines could be enforced without harming local interests. In the same racist tone, the board stated that Chinatown was "a serious menace to the health, commerce and trade of the city and state."[494] Indeed, many of the ordinances and requests to relocate Chinatown were deemed unconstitutional and lacked support from the City Council.

A devastating earthquake hit San Francisco on April 18, 1906, and Chinatown was burned down by the great fire. The destruction of Chinatown was celebrated by the anti-Chinese forces because Chinatown had been finally eliminated and a moral and physical plague spot had been removed from their midst.[495] Shortly after the earthquake, the mayor E. E. Schmitz suggested

[489] "The Chinatown Problem," *San Francisco Call*, June 29, 1900.
[490] "How to deal with Chinatown," *The San Francisco Examiner*, June 29, 1900.
[491] "The Chinatown Problem," June 29, 1900.
[492] Natalia Molina, *Fit to Be Citizens?: Public Health and Race in Los Angeles, 1879-1939* (Berkeley: University of California Press, 2006), 33.
[493] "Would remove Chinatown beyond the county line," *The San Francisco Examiner*, June 29, 1900; "Working to park Chinese district," *San Francisco Chronicle*, Apr 2, 1903.
[494] "The Chinatown Menace," May 18, 1903.
[495] "The Chinatown Question," *Auburn Journal*, May 24, 1906.

that the police chief remove the Chinese residents to Hunters Point.[496] On 24 April, the Citizen's Committee of Fifty was appointed, and members held a meeting to discuss a permanent location for the new Chinatown.[497] The committee proposed several new sites for Chinatown on the outskirts of the city, where its filth and immorality would not "pollute" the white community. Hunters Point, which was the location suggested by the Merchants' Association and the United States Improvement and Investment Company in their previous plan, turned out to be the best choice. The suggestion was then hailed as a step in the right direction by the press.

Hunters Point was located far south of San Francisco, near Butchertown. Indeed, the area was a wasteland and was essentially uninhabitable. In addition to the fact that one of the outlets for the city's new sewage system was built there, the nearby Butchertown was also mentioned in a report written by a water engineer in 1900 as being notorious for its stench. Even though San Francisco's attempts to relocate Chinatown eventually failed, Hunters Point still played a key role in environmental racism after World War II.[498] Apparently, the Chinese community did not want to move to this undesirable district. Chinese representatives, including influential businessmen, Chinese consular officials, lawyers, and property owners, actively rejected the relocation plan and kept negotiating with the city for a better solution. They insisted in their position to return to the old site. On one hand, staying downtown would guarantee their business, and the class with purchasing power near Chinatown gave this location a great business advantage. On the other hand, San Francisco Chinese merchants and other Chinese holders owned one-third of the Chinatown property, and they had the legal right to stay and rebuild on their old premises.[499] Moreover, the negotiations between the Chinese community and the city did not yield satisfactory results. Although the city proposed several potential sites, most of them were remote districts without good environmental conditions and amenities, and Chinese representatives refused such proposals. Several other planned sites were also strongly opposed by local communities.[500]

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[496] Yong Chen, *Chinese San Francisco, 1850-1943: A Trans-Pacific Community* (Stanford University Press, 2002), 165.

[497] *SFMR 1905-06*.

[498] In the decade following World War II, Hunters Point was gradually transformed into a predominantly African American community. Most of them were poor and lived in low-rent public housing. Besides, Hunters Point also housed a wastewater treatment plant, power plants, and hazardous waste storage. Therefore, the residents' health and the living environment were greatly threatened by hazardous waste and pollution.

[499] The remaining two-thirds of Chinatown property was almost entirely owned by non-residents, who were all represented by San Francisco agents. "Will not submit to removal," *San Francisco Call*, May 11, 1906.

[500] Christopher Chou, "Land Use and the Chinatown Problem," *Asian Pacific American Law Journal* 19, no. 1 (2014).

The first secretary of the Chinese Legation in Washington, D.C. came to San Francisco shortly after the earthquake to find a solution to the problem of rebuilding the new Chinatown. Through the attorney, he conveyed to San Francisco politicians the attitude that "any location of Chinatown in a disadvantageous quarter would mean the death of San Francisco's trade and the consequent gain of Portland and Seattle."[501] At the same time, Chinese leaders were looking for alternatives. Seattle and Tacoma were bidding for the removal of San Francisco's Chinatown to their cities.[502] Chinese leaders had also explored with officials in Oakland the possibility of placing Chinatown, which had tremendous business value and tax revenue, in Oakland.[503]

The commercial value and the lucrative tourist trade of Chinatown, as well as the considerable tax revenues paid by Chinese residents, had become a major leverage that allowed them to rebuild Chinatown on the former site. On May 2, the Relief Committee therefore expressed concern about the permanent loss of San Francisco's enormous oriental trade by placing Chinese in remote areas. The Chinese newspaper *China West Daily* (also known as *Chung Sai Yat Po*) noted that Chinatown was a vital economic hub in San Francisco, and that the taxes it paid were crucial to the city's growth and its Oriental trade. While some people wanted to eliminate Chinatown from the city center, they did not want the Chinese community to leave San Francisco for other cities because the departure of the Chinese businessmen would mean the loss of property and poll taxes.[504] On May 10, the first secretary of the Chinese Legation at Washington and officials of the Chinese Consulate attended a general meeting of Chinese merchants and property owners in San Francisco. Chinese leaders decided to resist any attempt to build a new Chinatown at Hunters Point or elsewhere and informed the community with an ultimatum that a new Chinatown would be rebuilt on its old site or not rebuilt at all. The meeting ended with a final declaration of purpose to remain at the old quarters or leave San Francisco. Some influential Chinese merchants argued that if they were not allowed to remain on the old site, San Francisco would lose not only its entire Chinese local trade, but also its relationship with the Chinese empire.[505]

Some American politicians and merchants also provided support to the Chinese communities for political and economic considerations. On May 24, a local newspaper reported that white

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[501] "Danger in moving Chinese Oriental Trade may be prize offered for former location," *Marysville Daily Appeal*, May 2, 1906.
[502] "The Chinatown Question," May 24, 1906.
[503] Ralph Henn, "Chinatown in Hunters Point," *FamilyHenn*, 1970, accessed August 22, 2022, https://familyhenn.com/RWHenn/quake.htm.
[504] Ibid.
[505] "The New Chinatown," *San Francisco Call*, May 12, 1906.

landlords in Chinatown were protesting alongside the Chinese, who were hiring attorneys to fight against the relocation project. For these white landlords, their relationships with Chinese tenants and merchants were more complicated because they could get more rent from Chinese tenants than from white tenants.[506] Besides, the white landlords had the right to decide to whom to rent their houses. In the end, the city could not reasonably prevent Chinatown from being rebuilt on its old site. The report took a dim view of a successful relocation, suggesting that possibly the almighty dollar would prevail.

After many negotiations, the reconstruction of San Francisco's Chinatown took place on the site where it had been destroyed. As a way to change the unfavorable perception of filthy Chinatown, the Chinese Six Companies proposed an attractive redevelopment plan. In fact, a similar plan had been formulated by the anti-Chinese side in 1900. At that time, the San Francisco Merchants' Association sought to relocate Chinatown outside of the downtown area. They argued that the Chinese could build by themselves an Oriental city on the Bayshore in isolation from the white population.[507] In the post-earthquake reconstruction, Chinese leaders suggested to rebuild a traditional oriental style Chinatown and a Cantonese Garden in the old location, turning Chinatown into a beautiful sight-seeing place that would attract business investment and more tourists. Some landmarks, such as the pseudo-Chinese facade, the Chinese decorations and paintings on the facades, the dragon sculpture, and the pagoda on top of the buildings, have become representative of San Francisco's tourism and its culturally inclusive image. In addition, Chinese community leaders and associations, along with white property owners in Chinatown, assured the city officials that they would reconstruct the new Chinatown in strict accordance with the city's sanitary laws and ordinances.[508] In this way, Chinese leaders and associations expanded their economic and political clout by mobilizing their national and international networks to forcefully resist the discriminatory practices that sought to put the reconstruction of a new Chinatown in unwanted districts.[509]

About a year and a half after the disaster, the rebuilding of the new Chinatown was almost complete. It was not by chance that Chinatown was the first burnt region to be completely

[506] "The Chinatown Question," May 24, 1906; Similarly, white landlords in other places have also expressed their willingness to rent land and buildings to Chinese immigrants. See, for example, "Common Council, Market Street to be opened through the Plaza," *San Jose Mercury-news*, January 22, 1878. And "The Chinese Commission," *Daily Alta California*, November 15, 1876.
[507] "Plans a New Chinatown: An Oriental City May Be Built on the South Bay Shore," *San Francisco Chronicle*, October 6, 1900.
[508] Henn, "Chinatown in Hunters Point."
[509] Andrea Rees Davies, *Saving San Francisco: Relief and Recovery after the 1906 Disaster* (Temple University Press, 2011), 9.

rebuilt after the fire. Firstly, Chinese property owners and businessmen wished for a rapid solution to the danger of a contentious relocation. Secondly, Chinatown property owners obtained money from insurance companies. Thirdly, the Chinese owners had no trouble collecting immediate funds. They did not try to borrow from San Francisco banks, or from lenders in New York. Through the first post-disaster steamer to China, the Chinese Association sent letters and money orders from the firm treasurers in San Francisco to relatives and businesses in China. The return steamer brought the necessary gold, allowing the Chinatown reconstruction contractors to continue their work.[510] Fourthly, the Chinese consul provided $30,000 to the merchants for rehabilitation, and the Bank of Canton, created in 1907, assisted Chinese immigrants in meeting the necessary financial needs.[511]

In the late nineteenth century and early twentieth century, as a result of the public health reform, the cityscape became increasingly important in health, tourism and business issues. California's awareness of urban image and beautification increased as well. The appealing architecture of the new Chinatown played a crucial role in convincing the local government and the community to accept it as a redevelopment site. The new Chinatown made constant efforts and investments in sanitation and beautification. In 1913, more than a hundred of Chinatown's property owners formed the Chinatown Property Owners Improvement Association to promote the common interest. This association enhanced and beautified the pavement, street lighting systems, sidewalks, and other infrastructure on several streets in Chinatown.[512]

"Beautiful city" and "new San Francisco" became familiar phrases following the rebuilding of Chinatown. The ghettos in the alleys, the patchwork structures of the streets, and the deplorable interiors were replaced with fireproof buildings made of brick and stone in the Oriental style. Positive comments were made about the new Chinese quarter, though these sentiments were nonetheless racist. Reporting on the reconstruction, the *Sacramento Daily Union* wrote, "The new Chinatown of San Francisco is to be conducted along lines of physical and moral cleanliness."[513] As another newspaper article put it, "the new Chinatown has, of course, lost such picturesqueness as was found in the dirt and the squalor and the tumbledown effect of the old buildings. To offset this, however, there will be a heavy gain in healthfulness."[514] In a

[510] *The Dakota chief*, December 5, 1907.
[511] Davies, *Saving San Francisco: Relief and Recovery after the 1906 Disaster*, 133.
[512] "Chinatown realty owners unite," *The San Francisco Call*, May 3, 1913.
[513] "Stray Things of Interest From San Francisco," *Sacramento Daily Union*, December 1, 1907.
[514] *The Dakota chief*, December 5, 1907.

similar vein, a contemporary author who photographed the old Chinatown prior to the earthquake and made his trip to the new Chinatown wrote the following:

> It is gone now – this Old Chinatown – but in a newer and stronger San Francisco rises a newer, cleaner, more healthful Chinatown. Better for the city – O yes – and better for the Chinese, who must come to modern ways of life and health, if they are to survive among us. But where is St. Louis Alley, that tangle of sheds, doorways, irregular arcades and flaming signs which fell into the composition of such a marvelous picture? Where is the dim reach of Ross Alley, that romantically mysterious cleft in the city's walls? Where is Fish Alley, that horror to the nose, that perfume to the eye? Where are those broken, dingy streets, in which the Chinese made art of rubbish?[515]

The 1906 earthquake was a turning point, marking a shift in the built environment of Chinatown and the identity of the Chinese immigrant group. In the age of old Chinatown, the decrepit and filthy built environment and landscape, which came from the unequal distribution of sanitation facilities and neglect, established a social and cultural boundary. Despite being a visible blight, the old Chinatown remained a relatively safe place for overseas Chinese visitors at the time. In the new Chinatown, while there was still criticism of Chinatown's gambling business, the neighborhood's reputation shifted to one of cleanliness and beauty. New Chinatown's roads, walkways, housing, and especially its sewer system and garbage disposal facilities were significantly updated to fulfill the city's sanitary rules, compared to its conditions prior to the earthquake. Besides, Chinatown's contribution to the city's revenues through tourism and trade led to its acceptance by the city and American society. However, the "sanitized exoticism" continued to maintain the boundaries of Chinatown from another perspective.[516] Over the next years, new Chinatown's tourism, economic, regional, and international trade ties steadily blurred the racial and cultural spaces delineated by its oriental built environment.

The forced and frequent relocation of California Chinatowns from the second half of the nineteenth century to the beginning of the twentieth century confirms environmental racism against this immigrant population. These cases expand on prior research on whether harmful living environment or minority populations came first. The emergence of environmental justice in the 1970s brought to light the disproportionate impacts of environmental pollution on different social classes and racial groups. Many important studies, such as the one published

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[515] Will Irwin and Arnold Genthe, *Old Chinatown. A Book of Pictures by Arnold Genthe. With Text by Will Irwin* (United States of America: M. Kennerley, 1913), 8.
[516] Shah, *Contagious Divides: Epidemics and Race in San Francisco's Chinatown*, 249.

by Pastor et al., contend that toxic facilities and disposal sites are more likely to be located near communities inhabited by people of color and low-income neighborhoods.[517] These groups lack sufficient political, economic, and social strength to resist such unequal share of the negative environmental and health impacts. As environmental philosopher R. Higgins notes, these districts are viewed as "appropriately polluted" due to historical prejudices against the cultural and racial pollution that immigrants bring.[518]

The poor living environment, sanitation, and relocation of California Chinatowns in the nineteenth century indicate a more complicated "chicken and the egg" question. Firstly, early Chinatowns were mostly set up in places that whites perceived to be wastelands and uninhabitable. Typically, these were low-lying areas that were particularly vulnerable to drainage problems during the rainy and flood-prone seasons. This fact supports the "minority move-in hypothesis." Secondly, the poor and inadequate sanitation facilities in Chinatowns at the time and the many forced relocations exemplified the existence of environmental racism. By way of another illustration, in the aftermath of the San Francisco earthquake, the disaster relief racism suffered by Chinese refugees manifested itself in the form of persistent relocations of the camp. As noted by the chairman of the committee on the removal of Chinatown and disposition of the Chinese, General Greely of the Fort Mason post gave several orders to immediately relocate the Chinese refugee camps without notifying the disaster relief committee. At first, 25,000 Chinese refugees were given a comfortable camp near Fort Mason, where they were well cared for. Then they were all bundled off to the Presidio golf links before they were relocated again to a camp located behind Fort Point. The First Secretary of the Chinese Legation was unhappy with this constant inconvenience given to the Chinese.[519] White refugees refused to share shelters with Chinese, and the segregated camps set up for Chinese refugees in the post-disaster relief efforts reconstructed the racialized boundaries that existed prior to the earthquake.[520] For instance, some Chinese refugees were placed in a separate outdoor camp, away from several other camps set up on the Berkeley campus.[521] Even though the disaster physically destroyed the Chinatown ghetto, which was formed through racial segregation, it did not affect the idea of racialized boundaries in American society.

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[517] Manuel Pastor, James Sadd, and John R. Hipp, "Which Came First? Toxic Facilities, Minority Move-In, and Environmental Justice," *Journal of Urban Affairs* 23, no. 1 (January 1, 2001): 1–21.
[518] Robert R. Higgins, "Race, Pollution, and the Mastery of Nature," *Environmental Ethics* 16 (1994): 251-263.
[519] "Danger in moving Chinese Oriental Trade may be prize offered for former location," May 2, 1906.
[520] Davies, *Saving San Francisco: Relief and Recovery after the 1906 Disaster*, 85; The Bancroft Library, "The 1906 San Francisco Earthquake and Fire Online Exhibit," *The Bancroft Library*, accessed August 20, 2022, https://bancroft.berkeley.edu/collections/earthquakeandfire/exhibit/room04_item04.html.
[521] Davies, *Saving San Francisco: Relief and Recovery after the 1906 Disaster*, 137.

2.4 Accessibility to water

Fire and water in Chinatown

"Fire has reclaimed to civilization and cleanliness the Chinese ghetto."[522]

Historical archives and government reports indicate that conflagration constituted a significant threat to the people of the time. In both rural and urban settings, Chinese residential areas were particularly susceptible to fires. In the northern mining regions, for instance, archaeological excavations of melted and fire damaged objects revealed frequent fires in some Chinese neighbourhoods.[523] There were also numerous fires in the sizeable urban Chinatowns of San Francisco, Los Angeles, and Sacramento.

In general, there were three primary causes for the frequency of fires at the time. Firstly, the vast majority of residents lived in wooden houses, shacks or tents made of canvas in the early years. Beginning in the middle of the 1850s, the threat of frequent fires prompted the construction of fireproof structures in towns and cities. Some city councils in California also mandated that new buildings in burned areas be constructed of brick because it was believed that brick would resist fire and decay. Together with the introduction of public health reform, cities further promoted the replacement of wooden buildings with masonry and concrete constructions. These new structures symbolized whiteness, cleanliness, and, most importantly, the "spirit of progress."[524] However, brick was more expensive than wood, leaving many of the lower-class poor to continue living in cheap wooden houses that posed fire hazards. Especially in the crowded slums of Chinatown in the big cities, many of the buildings were still non-fireproof wooden or wood-framed with exterior masonry constructions until the late nineteenth century. Besides, many people used candles or coal oil for lighting, which might easily catch fire. Therefore, Fire Station #2, located at 1340 Powell Street in Chinatown, was the second busiest firehouse in San Francisco.[525]

Secondly, fire records suggest that many Chinese laundries were destroyed by fire prior to the 1880s. This is because laundry workers removed dirt and grease from textiles by washing and

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[522] Henn, "Chinatown in Hunters Point."
[523] Heffner, *Archaeological Investigations of Weilijia Bu: Yreka's Chinese Community*, 55.
[524] *Sacramento Daily Union*, August 31, 1855.
[525] John Garvey, "Introduction," in *San Francisco Fire Department* (Arcadia Publishing, 2003).

sanitizing them in hot water. Besides, ironing tools must be heated on a stove. Therefore, the stoves responsible for heating had the potential to readily spark fires.[526] According to the San Francisco municipal report in the fiscal year 1879-1880, three-fifths of those who died in the fires were Chinese laundrymen. On May 26, 1880, San Francisco passed Order No. 1,569 stating that laundries were only allowed to operate within the city limits in brick or stone buildings, *or* with the consent of the Board of Supervisors:

> Section 1. It shall be unlawful, from and after the passage of this order, for any person or persons to establish, maintain, or carry on a laundry, within the corporate limits of the city and county of San Francisco, without having first obtained the consent of the board of supervisors, except the same be located in a building constructed either of brick or stone… Sec. 68. It shall be unlawful, from and after the passage of this order, for any person or persons to establish, maintain, or carry on a laundry within the corporate limits of the city and county of San Francisco without having first obtained the consent of the board of supervisors, except the same be located in a building constructed either of brick or stone.[527]

Consequently, the ordinance affected 310 laundries located in wooden buildings in San Francisco, which accounted for approximately 97 percent of the city's laundry business.[528] The remaining laundries were run by large white enterprises located in stone or brick buildings.[529] In 1886, Oakland followed San Francisco's lead and passed a similar ordinance. Likewise, the Sacramento Board of Trustees, the predecessor of the City Council, mandated in the mid-1850s that only fireproof structures could be constructed in the burned area of Chinatown.[530] In both San Francisco and Los Angeles, licensing laws and zoning ordinances were first passed around the same time in 1882 and 1883. The licensing laws required that all laundries be inspected by the board of fire wardens regarding fire hazards, including the condition of stoves, washing and drying and heating apparatus, as well as the construction and use of buildings.[531] In addition, the health officers should issue a certificate of inspection demonstrating that the laundry had adequate drainage and would not endanger the sanitary conditions of the surrounding neighborhoods.[532] The zoning ordinance, on the other hand, was passed in 1880 to regulate the

[526] On the Sanborn Insurance Map, areas with boiling water and hot irons are considered fire dangers.
[527] *Yick Wo v. Hopkins*, 118 U.S. 356, 6 S. Ct. 1064 (1886).
[528] Bernstein, "Lochner, Parity, and the Chinese Laundry Cases," 211-294.
[529] Ibid.
[530] Praetzellis and Praetzellis, *Archaeological and Historical Studies of the IJ 56 Block,* 57.
[531] *Yick Wo v. Hopkins*.
[532] *Yick Wo v. Hopkins*.

sites of Chinese laundries, and in the 1890s, it aimed to confine all Chinese to a designated ghetto. [533] In addition to preventing fires and promoting urban construction and urbanization, the underlying objective of these ordinances was to put Chinese laundries out of business.

Thirdly, fire represented purification and cleansing in the anti-Chinese agitation, and Chinese-occupied buildings often fell victims to arson attacks. As an example, Chinatown in Sacramento experienced blatant arson attacks in the mid-1850s that destroyed a significant part of the neighborhood. With canvas and wood as building materials and little water from fire hydrants, fire crews were often unable to control the spread of fires. Although there was a hydrant at the corner of I and Fifth Streets, firefighters explained that they were unable to obtain water from there.[534] Similarly, the devastating fire caused by the explosion in the Oroville Chinese Quarter in 1876 had its roots in the antagonism of white workers to the employment of Chinese laborers in factories.[535] The fire destroyed approximately thirty Chinese-occupied buildings. Hundreds of locals did not to help fight the fire before white-owned properties were threatened.[536]

Chinatown's overcrowded and poorly ventilated buildings often made it impossible to put out fires in a timely way, which resulted in severe personal injury and property loss. At the same time, due to the high incidence of arson attacks on places where Chinese lived and worked, insurance companies refused to insure factories employing Chinese labor, or offered such coverage only at expensive rates.[537]

More importantly, not all Chinese communities in California had sufficient water for firefighting. In many instances, there was little water from the fire hydrants in the immediate vicinity of Chinese dwellings. Even when fire departments responded, their efforts to put out fires were futile. In 1896, for example, a fire accident in Los Angeles' Chinese quarter was so powerful that not enough water was available to control it, resulting in enormous economic losses.[538] By 1910, there was still no fire hydrant near Los Angeles' Chinatown.[539] In the 1880s, multiple arson assaults against San Jose's Chinatown pushed for the relocation of the Chinese community to Woolen Mills. The Chinese community then funded and constructed their own

[533] Bernstein, "Lochner, Parity, and the Chinese Laundry Cases," 211-294.
[534] "The City," July 4, 1855.
[535] Sucheng Chan, "Fires and explosions in various Chinatowns," box 8, folder 4, Sucheng Chan papers (IHRC3441), University of Minnesota Libraries, Immigration History Research Center Archives.
[536] Chan, "Fires and explosions in various Chinatowns."
[537] Ibid.
[538] "Saloon and Laundry burned," *Los Angeles Daily Times*, August 8, 1896.
[539] George William Baist, *Baist's Real Estate Atlas of Surveys of Los Angeles Calfornia* (Philadelphia: George William Baist, 1910).

system of fire hydrants at the new site. They connected wells to pumps in order to have a reliable water source in the event of fire.[540]

Similarly, in 1871, San Francisco engineers warned the street committee and the water company that five leaking cisterns in Chinatown needed to be repaired immediately lest there be insufficient water to put out a fire.[541] Great concerns were expressed regarding "an adequate water system" in San Francisco after the 1906 earthquake, which triggered the fires that destroyed Chinatown and the surrounding area.[542] Following the earthquake, the fires were originally contained to the region south of Market Street before spreading to the densely populated downtown area. The earthquake immediately destroyed three water mains. Chinatown eventually burned to the ground as fire hydrants in the area were either defective or only worked intermittently.[543] As one writer of the time put it, "the real trauma came from the water system's inadequacy."[544] A follow-up investigation revealed that the fire department's failure was due to water deficiency. In fact, a geological survey conducted prior to the earthquake had reported that the faulty construction of delivery pipes near Chinatown by the water company might interrupt the water supply in emergencies. However, neither the Spring Valley Water Company nor the responsible local authority made the necessary repairs in a timely manner.[545]

On the other hand, the devastating fire in 1906 highlighted the significance of cisterns in firefighting. In the early days, when city streets were not lined with water mains and hydrant connections, cisterns were built in the streets and filled with water for firefighting. At the time of the incident, however, fewer than half of the cisterns were working due to chronic neglect and lack of maintenance.[546] After the tragedy, San Francisco installed a high-pressure auxiliary water system and purchased additional cisterns, which were put into service in the following years.

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[540] R. Scott Baxter, "The Response of California's Chinese Populations to the Anti-Chinese Movement," *Historical Archaeology* 42, no. 3 (2008): 29–36.

[541] *SFMR 1870-71*, 108-109.

[542] John Philip Young, *San Francisco - A History of the Pacific Coast Metropolis*, vol. 2 (Chicago: S J Clarke Publishing Co., 1912), 851.

[543] Ibid., 848; Douglas Paul. Westfall and Henry C. Koerper, *Two Weeks in San Francisco: The Story of the 1906 Earthquake and Fire* (Orange, Calif.: Paragon Agency, 2006), 19.

[544] Young, *San Francisco - A History of the Pacific Coast Metropolis*, 851.

[545] Ibid., 881-882.

[546] San Francisco Board of Supervisors, *Excerpts from San Francisco Municipal Reports for the Fiscal Year 1905-6, Ending June 30, 1906, and Fiscal Year 1906-7, Ending June 30, 1907* (San Francisco: Neal Publishing Co., 1908), 722.

Getting water, Chinese laundries

In the nineteenth and early twentieth centuries, Los Angeles and San Francisco franchised private water companies to supply the cities with water. However, the large expenditures in initial construction and subsequent maintenance and extension increased the water rates compared to other options for getting water.[547] Moreover, there were frequent issues with limited water supply and poor water quality. Consequently, throughout the history of urban water supply in California, water rates and water supply services have been the subject of litigation between boards of supervisors and water companies.

In the early days, water companies were responsible for establishing water rates, but over time, the board of supervisors assumed this authority.[548] Before water meters were installed, the water rates were initially a fixed amount.[549] Private consumers paid their own water rates while the cities paid the bill for public use such as fire protection. Private water companies charged cities for hydrant rentals and water rates.[550] The demand for safe and abundant water in cities increased as a result of population growth, a greater focus on sanitation, and the fire insurance sector. Improvements and extensions of pipeline water distribution network further exacerbated tensions between cities and private water companies, paving the way for Los Angeles and San Francisco to take ownership of their water businesses at the turn of the century.

At that time, not everyone could afford the water supply service offered by the private water companies. Residents relied on formal, informal, and self-supplied water sources. The great majority of residents purchased water from water wagons, springs, and wells. In 1888, for instance, an advertisement in the *Los Angeles Daily Times* stated that spring water was sold and delivered for 25 cents per gallon in the city. Many Chinese residents also depended on other sources of water to lower their living expenses. Typically, wells were the most reliable way to obtain water for life and work. For example, Chinese residents in San Jose Chinatown cleaned out an old well and used it as their daily water supply because of the water company's expensive water rates.[551]

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[547] Nelson Manfred Blake, *Water for the Cities: A History of the Urban Water Supply Problem in the United States* (Syracuse: Syracuse University Press, 1956), 77.
[548] For instance, the new state constitution of 1880 gave the San Francisco Board of Supervisors the right to regulate water prices for both private consumers and the city's public uses.
[549] Cain, "An Economic History of Urban Location and Sanitation," 337-389.
[550] Masten, "Public Utility Ownership in 19th-century America: The 'Aberrant' Case of Water," 604-654.
[551] *San Jose Mercury-news*, May 16, 1876.

There were two ways to obtain water for urban Chinese laundries in the late nineteenth century. One was to get water from a well nearby.[552] Chinese hand laundries, like many other Victorian laundries, were equipped with big barrel-shaped tubs filled with passing water. Chinese laundrymen first boiled water in a kettle and then washed dirty clothes in a wash tub with hot water, a scrubbing board, and soap.[553] Also, the items were starched before being ironed. The alternative was to access water through the distribution system of the water companies. For instance, in 1882, the Los Angeles water company charged laundries without meters between $1 and $10 per month, based on the estimated volume used. For businesses installed with water meters, water rates varied between $1 and $0.75 per 1,000 gallons. Water meters were installed at the property owner's expense via an application.[554]

Municipal budgets, water consumption, expenses in construction, maintenance, and extension, as well as local resources constrained the development of piped water during the operation of private water companies in San Francisco and Los Angeles. Residents in towns and cities continued to mainly rely on water from wells, rainwater collected in cisterns, and springs for domestic water demands. In comparison, businesses and households with different water consumption patterns, such as laundries and families that used water-closets, would contract with water companies to connect with water mains, and since the 1880s, many had installed water meters.

2.5 A new perspective: environmental racism, the Chinese exclusion movement

From the last three decades of the nineteenth century, which historian Rayford Logan called "the nadir" in American race relations, Chinese immigrants in California suffered increasing discrimination.[555] This eventually led to the passage of the Chinese Exclusion Act in 1882. In fact, California was the only state to have crystallized the Chinese issue into public opinion

[552] Introduction To Part Three: Archaeological Artifacts and Other Specimens from Ninth and Amherst. in Eugene M. Hattori, M. K. Rusco, D. R. Tuohy, *Archaeological and Historical Studies at Ninth and Amherst, Lovelock, Nevada*, edited by Eugene M. Hattori, M.K. Rusco, and D.R. Tuohy, 1979, The Digital Archaeological Record (tDAR id: 106705).
[553] *The Los Angeles Times*, January 24, 1904.
[554] "Water rates, The City Council meet as a committee of the whole," *The Los Angeles Times*, Feb 11, 1882.
[555] See Rayford Whittingham Logan, *The Negro in American Life and Thought: The Nadir, 1877-1901* (Dial Press, 1954).

at the same time period. Drawing on the framework of environmental racism, this study extends its coverage to the nineteenth century to explore the nexus of Chinese exclusion and public health movements in California. In fact, environmental racism is a concept that emerged during the environmental justice movement in the United States. In 1982, Benjamin Chavez introduced this concept for the first time in an environmental justice campaign protesting the illegal dumping of hazardous waste in Warren County. He developed the following definition of the term:

> Environmental racism is racial discrimination in environmental policymaking. It is racial discrimination in the enforcement of regulations and laws. It is racial discrimination in the deliberate targeting of communities of color for toxic waste disposal and the siting of polluting industries. It is racial discrimination in the official sanctioning of the life-threatening presence of poisons and pollutants in communities of color. And, it is racial discrimination in the history of excluding people of color from the mainstream environmental groups, decisionmaking boards, commissions, and regulatory bodies.[556]

In other words, environmental racism refers to "any policy, practice, or directive that differentially affects or disadvantages (whether intended or unintended) individuals, groups, or communities based on race or color."[557] Although the concept of environmental racism did not emerge until 1982, racism in nineteenth-century California had already illustrated a clear environmental dimension in urban planning and government decisions, such as the early settlement site, (re)construction of sanitary facilities, street pavements, water supply, garbage disposal, and enforcement of sanitary regulations. It is important to note that the United States and China (the Ta-Tsing Empire) amended the previous Treaty of Peace, Friendship, and Commerce with Foreign Merchants and Senders to include additional terms in 1868.[558] The new Burlingame treaty conferred Chinese people in the United States equal rights with American citizens and protected them from discrimination and violence. To wit:

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[556] Robert D. Bullard, *Confronting Environmental Racism: Voices from the Grassroots* (South End Press, 1993), 3.
[557] Robert D. Bullard, "The Legacy of American Apartheid and Environmental Racism," *Journal of Civil Rights and Economic Development* 9, no. 2 (1994): 445-474, 451.
[558] China. *Treaties, Conventions, etc., between China and Foreign States, with a Chronological List of Treaties and of Regulations Based on Treaty Provisions, 1689-1886* (Shanghai: Statistical Department of the Inspectorate General of Customs, 1887), 342 (seq. 382), Harvard Law School Library.

> Citizens of the United States visiting or residing in China shall enjoy the same privileges, immunities or exemptions in respect to travel or residence as may there be enjoyed by the citizens or subjects of the most favored nation, and reciprocally, Chinese subjects visiting or residing in the United States, shall enjoy the same privileges, immunities and exemptions in respect to travel or residences as may there be enjoyed by the citizens or subjects of the most favored nation.[559]

Despite having equal rights under the Burlingame Treaty, the Chinese communities in California continued to have limited access to healthy neighborhoods and living environments. As a result of institutional neglect, racism, capitalism, and apartheid-type housing, Chinese quarters and other ethnic ghettos were always excluded from urban planning and development policies aimed at enhancing sanitation infrastructure and neighborhood environment. From the outset, Chinese settlements were subject to a variety of environmental hazards. Because of the nature of racism that created socially and geographically separated neighborhoods, many Chinatowns in California were located near lowlands or swamps that whites deemed uninhabitable. Environmental racism against Chinese immigrants was also evident in the frequent demands by anti-Chinese forces to relocate Chinatown under the pretext of health, disease, and potential fire hazards. Moreover, race-based decisions also restricted Chinese neighborhoods from municipal services such as garbage disposal and fire protection.

In this study, environmental racism centers on the continuation and intensification of the phenomenon of inequality and racism against the Chinese community with respect to environmental issues throughout the last three decades of the nineteenth century to the first decade of the twentieth century. Racial prejudice against the Chinese in California was one of the major driving factors of unequal distribution of environmental risk and environmental benefits. Such race-based inequalities or disparities was particularly accentuated after sanitary reform began in California around 1870 and after major cities sought to beautify their cities for tourism and economic development. In addition to race, class played a part in the injustice of environmental benefits and risks. For instance, the prosperous Chinese merchant class, who also lived in Chinatown, had equivalent sanitation and living standards to those of the white middle class, which established the notions and standards for hygiene and health and promoted sanitary reform.[560] However, the greatest victims were the lower class, who comprised the vast majority of the Chinese population and rented the overcrowded and dilapidated boarding

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[559] Andrew Johnson, *Additional articles to the treaty between the United States of America and the Ta-Tsing empire, of June 18, 1858. Concluded at Washington, July 28, 1868* (1868), Library of Congress.
[560] See, for reference, Shah, *Contagious Divides: Epidemics and Race in San Francisco's Chinatown*.

houses. Racism at the sociological and political dimensions created racial barriers that not only geographically isolated Chinese communities, but also influenced urban planning, municipal services, disease control and sanitation initiatives. Therefore, Chinatown and its immigrant community as a whole continued to be subjected to decisions and projects that led to environmental injustice.

As a result of environmental racism and injustice, the sanitation of Chinese neighborhoods in California's main cities were extensively condemned. Chinatown became the medical scapegoat for numerous diseases.[561] In the meantime, the racial and medical discourse played a significant part in the anti-Chinese agitation by labelling Chinatown as a threat to the public health and social morality of American society. In late nineteenth- and early twentieth-century California, race was often used as a major principle in understanding and investigating epidemics. Stigmatized images of Chinatown as a breeding ground for filth and disease were found in various reports of health and municipal officials, media reports, travelogues, and novels. This prejudiced discourse contrasted Chinatown with white American society, which was clean, progressive, law-abiding, and liberal. The negative implication of Chinatown added a medicalized dimension to anti-Chinese sentiment and transformed Chinese immigrants from victims of deadly diseases and dilapidated living conditions to perpetrators. Indeed, such discourse had its origins in environmental racism as a by-product of California's public health reform. This inequality and racism were most evident in Chinatown's sanitary infrastructure, such as the drainage and sewage systems and street paving. As a spatial metaphor for disease and filth, Chinatown was therefore interpreted by anti-Chinese forces as a site of contagion that threatened the health of the rest of the city. However, the biased understanding stemmed largely from the institutional neglect of Chinatown's poor sanitation and street infrastructure.

Beginning in the 1850, a mass exodus of Chinese immigrants from Guangdong province of China flooded to California in search of fortune and a better future. As the epicenter of the Gold Rush and a main Pacific Coast port of entry, California had the highest concentration of Chinese immigrants in the United States. By the 1880s, Chinese quarters had developed in multiple cities, villages, and resource extraction areas throughout California. However, these ethnic enclaves, while coexisting in American cities, remained separate from the rest of the city.[562] Historically, cultural differences, health issues, labor competition, and religious beliefs have

[561] Craddock, "Sewers and Scapegoats: Spatial Metaphors of Smallpox in Nineteenth Century San Francisco," 957-968.
[562] Pastron,et al., *Behind the Seawall*, 378.

contributed to the social marginalization of Chinese immigrants and the legitimization of racism. It is no accident that the stigmatization of Chinese immigrants spread widely in California after the 1870s. In response to the economic downturn and wage cuts, white workers began targeting their Chinese opponents through strikes and lobbying.[563] On the other hand, Saxton provides a new explanation of the Chinese exclusion movement in nineteenth-century California. Using the psychological ideas of "boundaries of consensus" and "concept of fundamental differentness," he investigates the origins of labels such as "otherness" and "uniqueness" applied to Chinese immigrants.[564] By equating "racially inferior" with "uniqueness," the new immigrants from across the Pacific Ocean was devalued and excluded from central "value systems and behavioral patterns."[565] In this way, associating Chinese immigrants with "disease carriers," "heathens," "moral inferiors," and other words that endangered "white purity" and modern liberal American society became an effective way of classifying Chinese as inferiors.[566]

Health officials at the time believed that stagnant water could spread disease and that the construction of a good sewer and drainage network would greatly enhance the city's public health and living conditions.[567] In addition to the likelihood of harboring disease-spreading rodents or pests, wooden structures in California were also subject to decay and rupture due to the local climate. During the sanitary reform, concrete, brick, and iron were therefore utilized to replace wooden structures and wooden sewer pipes to prevent leaks, damage, and pollution. From around 1870, California towns and cities (re)constructed buildings and sanitary infrastructure on a large scale to meet new sanitary regulations, but Chinese quarters in California were seldom incorporated into urban planning and development plans until the end of the century. Environmental racism shaped the hierarchy of infrastructure investment or (re)construction, and white supremacy continued to impact institutional operations and policy decisions. D. Torres-Rouff shares a similar view regarding the establishment of the Los Angeles sewer systems in the late nineteenth century. He points out that racism and injustice were

[563] David Omar Stowell, *Streets, Railroads, and the Great Strike of 1877* (University of Chicago Press, 1999), 71; David Omar Stowell, *The Great Strikes of 1877* (University of Illinois Press, 2008), 174.
[564] Saxton, *The Indispensable Enemy: Labor and Anti-Chinese Movement in California*, 16-18.
[565] Ibid., 17-20.
[566] See, for references, George H. Fitch, "A Night in Chinatown," *The Cosmopolitan* 2 (February 1887): 356-357; Lady Duffus Hardy, *Through Cities and Prairie Lands: Sketches of an American Tour* (New York: R. Worthington, 1881); Thomas Wallace Knox, *Underground or Life Below the Surface* (Hartford: J. B. Burr and Hyde, 1873); Farwell and Kunkler, *The Chinese in San Francisco*.
[567] "A notable decrease in the number of deaths," September 14, 1879.

embedded in the infrastructural and institutional structures of the city, laying the groundwork for further urban development and the creation of "a racial landscape."[568]

This prejudiced discourse linking Chinatown with filth and disease significantly influenced the attitudes and decisions of city and public health authorities in regard to the epidemics. Typically, city and health officials ordered quarantine, inspections, or a thorough cleaning of Chinatown as soon as a suspected case appeared, even if its veracity was questioned. This practice was undoubtedly discriminatory, for example the alleged bubonic plague that occurred in San Francisco's Chinatown in 1900. The federal health authorities designated Dr. J. H. White of the Marine Hospital Service to direct and supervise the cleansing, disinfection, and fumigation of Chinatown.[569] However, sanitation operations did not begin until April 8, 1901.[570] Even though there was no medical laboratory evidence of bubonic plague, the San Francisco health authorities demanded Chinese residents leave their dwellings and planned to force thousands of Chinese into a detention camp.[571] There were up to 15,000 Chinese in the quarantine area, and approximately 3,500 of them were unable support themselves due to the quarantine.[572] Over the next three years, the health authorities conducted other sanitary campaigns with an iron fist in San Francisco's Chinatown. According to the reports of the Special Health Commissioners and the Citizens' Health Committee, medical officials conducted a thorough inspection and cleansing of every room. Rats were trapped, and sewers were poisoned. All rat-harboring areas were repaired using concrete. Meanwhile, the basements, shacks, and outbuildings in which many impoverished people lived were forcibly demolished, and no appropriate housing arrangements were made for these refugees.[573]

Throughout the second half of the nineteenth and early twentieth centuries, the modernization of (waste) water systems, streets, and the built environment (this study refers to the replacement of wooden buildings with rodent- and fire-proof materials such as cement) accelerated the growth of California cities and towns in size, industry, economy, and population. However, this modernization had its drawbacks in its early stages. Specifically, the inequalities produced by class-stratified society and racism were magnified when the closed-pipe sewer systems advocated by sanitary reform began to replace traditional waste disposal facilities, such as privy

[568] Torres-Rouff, "Water Use, Ethnic Conflict, and Infrastructure in Nineteenth-Century Los Angeles," 119-140.
[569] California State Board of Health, *Report of the Special Health Commissioners Appointed by the Governor to Confer with the Federal Authorities at Washington Respecting the Alleged Existence of Bubonic Plague in California: Also Report of State Board of Health* (Sacramento: A. J. Johnston, Supt. State Print, 1901), 8.
[570] Ibid., 37.
[571] Ibid., 15.
[572] Ibid., 16.
[573] San Francisco Citizens' Health Committee and Todd, *Eradicating Plague from San Francisco,* 285 and 293.

vaults and cesspools. Furthermore, cities and towns became increasingly reliant on water infrastructures (such as water supply systems, sewer systems, and drainage systems) controlled by states and capital. Whenever such infrastructures were polluted, there would be an immediate and devastating threat to public health on a massive scale. Consequently, cities and towns were more susceptible to public health risks than in the past.

In the first half of the nineteenth century, for instance, numerous riverine cities in the eastern United States were confronted with severe water pollution challenges. Cities and factories discharged sewage directly into rivers nearby. This greatly polluted the water sources of the water companies. The companies then supplied water to cities and towns further downstream, putting residents' health at risk. Water pollution also sparked lawsuits and environmental conflicts between water companies, households, and municipal authorities.[574] In another example, the public health movement in late nineteenth-century California made efforts to (re)construct municipal sewer networks. Based on the prevailing miasma and filth theories of the time, sewage and miasma would transfer disease from impoverished neighborhoods to the remote homes of the wealthy through sewer pipes connecting different districts.[575] This biased medical understanding shaped the role of Chinatown as a scapegoat of smallpox epidemics and transformed it from a victim of environmental racism and inequality to a perpetrator. The prejudiced perspective also illustrated the questioning of government-controlled sanitation infrastructure. At the same time, it highlighted the role of the sewer systems in crossing class, ethnic, and geographical boundaries.[576]

[574] Paavola, "Reprint of: Sewage Pollution and Institutional and Technological Change in the United States, 1830-1915," 1289–1296.
[575] Craddock, "Sewers and Scapegoats: Spatial Metaphors of Smallpox in Nineteenth Century San Francisco," 957-968.
[576] Ibid.

Chapter 3 From cleanliness to filth

3.1 Racism through discourse

In this section, I analyze how the production of the Chinese "others" was built through both formal and informal discourses of filth and disease. Using the theories and methodologies developed by the linguist Teun A. Van Dijk in discourse analysis, I ask the following questions:

How did press media, municipal and health officials, and institutions talk and write about Chinese immigrants regarding their living environment during the Chinese Exclusion period?

How did such strategies of language shape racial prejudices, out-group members, *otherness*, white privilege, as well as social and spatial separation of Chinese immigrants?

What were the social, political, and cultural contexts and functions of such discourse? In particular, what role did the discourse play in the production and reproduction of racism and white supremacy?

Discourses in the form of text and talk play a fundamental role in social, cultural, and political agendas. According to the theories formulated by Van Dijk, prejudiced discourses such as news reporting, storytelling, and argumentation help to spread and reproduce discriminatory attitudes among the majority groups.[577] The linguist also developed critical discourse analysis that examines the relationship between discourse, power, power abuse, and ideology through the analysis of texts, discourse, as well as social issues regarding racism, social inequality, and discrimination.[578] In addition, I apply the theoretical notion of *group labels* and *otherness*, as well as the *similarity-attraction* theory to examine group prejudice manifested in discourse.[579]

Situated on the west coast of the United States, California was highly endowed with gold resources. The mainstream attitude towards Chinese immigrants was mild at the beginning.

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[577] Teun A. van Dijk, *Prejudice in Discourse: An Analysis of Ethnic Prejudice in Cognition and Conversation* (John Benjamins Publishing, 1984); Teun A. van Dijk, "Analyzing racism through discourse analysis: Some methodological reflections," in *Race and ethnicity in research methods*, eds. John H. Stanfield II and Rutledge M. Dennis (Newbury Park: Sage Publications, Inc., 1993), 92-134.

[578] Teun A. van Dijk, *Discourse and Context: A Sociocognitive Approach* (London: Cambridge University Press, 2008); Teun A. van Dijk, *Discourse and Power* (Palgrave Macmillan, 2008).

[579] Gordon Willard Allport, *The Nature of Prejudice* (Doubleday Books, 1958); Vernon L. Allen and David A. Wilder, "Group Categorization and Attribution of Belief Similarity," *Small Group Behavior* 10, no. 1 (1979): 73-80; Donn Erwin Byrne, *The Attraction Paradigm* (New York: Academic Press, 1971).

Oftentimes, newspapers depicted a scene of boom and prosperity in which Chinese immigrants arrived in ships and then streamed into the American cities and workplaces. In the early years, Chinese workers were generally preferred and welcomed among the many other immigrant groups by the white American majority due to labor shortages. In the spring of 1850, a local newspaper wrote that the Chinese immigrants were "very useful, quiet, good citizens and were (are) deserving the respect of all."[580] In the same tone, on May 12, 1851, the *Daily Alta California* applauded "the most industrious, quiet, patient" Chinese people.[581] Attributes including cleanliness and neatness were also frequently mentioned in the press. For instance, in the outskirts of every town and mining place, Chinese truck gardeners raised fresh vegetables for the local market, and local residents were impressed with the "miracles of neatness and productiveness" in Chinese market gardens.[582] Notably, in 1850, the Chinese residents of San Francisco accepted the invitation to participate in the solemn commemoration of California's admission to the Union in 1850.[583] Due to the small population and trade volume in California at the time, coupled with the isolated location of San Francisco, this commemorative ceremony was of great political and commercial significance. At the beginning, California actively welcomed gold prospectors, workers, and immigrants from China, which led to a great deal of political debate later on.

Historically, racial stereotyping and the assignment of racial features were (re)produced through the discourse of filth/cleanliness. The positive discourse of Chinese immigrants changed in due course in California. Historical factors including the recurrent outbreaks of epidemics, the introduction of modern sanitation, the increasing competition in the manufacturing market, urbanization, the decline of mining industries, and the economic distress of the 1870s all contributed to the change of attitudes towards the Chinese people in California. Many Chinese immigrants went to the east coast, while those who remained in the West moved into Chinatown looking for self-preservation. Chinatown and the residents became the target of racial attacks and were under increasing pressure from negative discourse. Selective words such as "stench", "filth", "squalid", "foul", "dirt", "disease carrier", and "sink of corruption" appeared frequently in media articles, illustrations, reports, and novels to describe Chinese

[580] "Our Population," *Daily Alta California*, March 8, 1850.
[581] "The China Boys," *Daily Alta California*, May 12, 1851.
[582] The large market gardens surrounding San Francisco provided fresh vegetables to Chinatown. "Chinatown in San Francisco," Call number: BANC MSS 2011/112, Box 1, Chinese in California collection, circa 1851-1963, Bancroft Library, Berkeley.
[583] William Walter Bode, *Lights and Shadows of Chinatown* (San Francisco: Press of H. S. Crocker company, 1896).

living environments or workplaces. In 1879, for instance, the San Francisco Annual Reports of the public health officer decried Chinatown as "a moral and social plague spot, productive of continual annoyance and much disease."[584] "Filthy Chinatown" was not only a phrase concerning sanitation, but also became a moralistic term built upon contemporary medical knowledge. Chinatown's reputation as a morally deviant community can be partly explained by the many "vice-related businesses" brought by serious gender imbalance and the lower cost of living and property value in the ethnic locales.[585] During the height of the anti-Chinese movement in 1882, for instance, the Los Angeles city council passed an ordinance drafted by the city attorney to restrict establishments of ill-repute places in Chinatown.[586] Depravity, dirt, and diseases helped shape the ideological attributes of Chinatown. In this specific historical period, prejudiced discourses and ordinances became tools to shape racial stereotypes and American identities in order to rationalize the geographic and social separation between Chinese and white Americans.

By 1870, Chinese laundries accounted for approximately 75% of the laundry business in California.[587] With the wave of anti-Chinese sentiment after the Chinese exclusion bill was passed in 1882, laundry businesses became one of the principal economic activities among Chinese immigrants. Unlike other major occupations practiced by Chinese immigrants, Chinese laundry businesses developed throughout the city, despite being required to operate within prescribed areas by the Public Welfare Committee at times.[588] Laundry business required small capital outlay, labor-intensive work, and menial work. Required facilities were easy to obtain, including "a boiler to heat the water, a stove to heat the irons and food, drying racks (outdoors into the early twentieth century), sinks, shelves, ironing beds, dining table, and sleeping beds."[589] Traditional laundry works relied only on female workers, and, as a result, Chinese hand laundries sparked criticism on their controversial gender roles by anti-Chinese voices in the United States. Also, such gendered labor identity was strongly protested by female workers from other ethnic groups. In 1885, for instance, the Washington Woman's Industrial League decried that "the good public health of the country demands that Chinese laundries shall go."[590]

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[584] "The Year's Mortality, the Annual Reports of the Health Officer," September 14, 1879.
[585] Molina, *Fit to Be Citizens?: Public Health and Race in Los Angeles, 1879-1939*, 29.
[586] "Council Proceedings," *Los Angeles Herald*, October 22, 1882.
[587] Paul Ong, "An Ethnic Trade: The Chinese Laundries in Early California," *The Journal of Ethnic Studies* 8, no. 4 (2006): 95.
[588] Paul C. P. Siu, *The Chinese Laundryman: A Study of Social Isolation* (NYU Press, 1987), xvi; "Chinese laundries," *The Los Angeles Times*, September 7, 1912.
[589] Praetzellis and Praetzellis, *Putting the "There" There*, 252.
[590] "Washington, A vigorous protest against Chinese laundries," *The Weekly Mirror*, September 12, 1885.

Chinese laundries became the first target of blame in response to the outbreaks of epidemics. In the mid-1890s, in order to investigate the municipal sanitary conditions, the San Francisco Board of Health made a thorough inspection of the municipal residential and business plumbing, sewage disposal systems, and laundries, among others.[591] Laundries were evaluated on their appearance and use, and among the most criticized was the "water-spraying myth" in Chinese laundries.[592] Health officers insisted that Chinese laundrymen drank the water and then spat on the clothes. Another health inspector warned that the washed linen was soaked with "dangerous mouth spray," and such "vile practices" were the origin of epidemics.[593] Such ideas confirmed the prevailing germ theory that believed disease germs spread through interpersonal transmission. The germ particles were believed to exist everywhere, including the air, water, dusty roads and pavements, and clothing.[594] In this way, the ironing practices described by the health inspectors "became a signature feature" and evidence of the dissemination of diseases.[595]

The racialized ideas and discourse that linked disease with Chinese laundrymen continued well into the early twentieth century, when the climax of anti-Chinese sentiment had long since passed. In 1915, a white American laundry still advertised that Chinese hand laundries were unsanitary and unhealthy. The illustration on the advertisement depicted a Chinese laundryman spitting on the clothes while ironing as well as other vile practice. The advertisement applied the tactics of the prejudiced discourse on filthy Chinese laundries. Such discourse encouraged customers to bring laundry linens to the "absolutely sanitary laundry" operated by "healthy American people" instead of the "filthy" Chinese hand laundry.[596] While attracting customers, it achieved the goal of excluding the Chinese competitors. However, whether the sharp rebuke of the sanitary conditions in Chinese laundries was true or not was questionable. Although the alleged observants claimed that Chinese laundrymen spat on clothes in the process of ironing, the truth was that they blew air through a tube filled with water for sprinkling.[597] The misunderstood practices were therefore widely spread, compiled, reprocessed, and produced in public discourse, newspaper articles, advertisements, illustrations, and literary works.

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[591] Shah, *Contagious Divides: Epidemics and Race in San Francisco's Chinatown*, 67.
[592] Bernstein, "Lochner, Parity, and the Chinese Laundry Cases," 211-294.
[593] Shah, *Contagious Divides: Epidemics and Race in San Francisco's Chinatown,* 68.
[594] Stout, "Hygiene as Regards the Sewage of San Francisco."
[595] Shah, *Contagious Divides: Epidemics and Race in San Francisco's Chinatown*, 68.
[596] An advertisement of Dothan Steam Laundry in 1915. See John Jung, "White Steam Laundry Ads Against Chinese Laundries," *Chinese Laundries* (blog), September 5, 2013, accessed December 10, 2020, https://chineselaundry.wordpress.com/2013/09/05/white-steam-laundry-negative-ads-against-chinese-laundries/.
[597] Mary McNair Mathews, *Ten Years in Nevada: Or, Life on the Pacific Coast* (Buffalo: Baker, Jones & Co., Printers and Binders, 1880), 252-253.

On the other hand, the long-existing sewerage problem in the Chinese neighborhoods further worsened their sanitary environment and reinforced the stereotypes. Historical documents point out that municipal residents at that time often disposed of wastewater by throwing it on the ground, into storm sewers, into street open gutters on the side of or in the middle of the streets, or into cesspools.[598] Until the first decade of the twentieth century, California Chinatowns still featured improperly constructed sewerage, open cesspools, wooden and stopped-up sewers.[599] Wastes and water were easily accumulated near the premises and formed stagnant pools emanating foul smells. As a result of poor sewer systems in Chinatown, the surface sewage was particularly likely to create a dirty living environment that posed a potential threat to the neighborhood's health. However, the improper sewer system in Chinatown was greatly neglected by the mainstream voices as the main cause of its filthy environment, and Chinese residents were therefore attributed with a morally and socially depraved identity simply based on the filthy appearance of their ethnic ghetto. This identity in turn rationalized the so-called filthy and diseased living environment as the result of their own negligence. In view of the filth theory, the Chinese community was continuously blamed for the cause of the several outbreaks of epidemics. The extensive coverage of "Chinese disease carriers" in newspapers, ranging from the blame for spreading the disease on laundries to those that raised the Chinatown sewerage issue, affected the way in which ordinary people responded to the epidemics and Chinese immigrants.

By the latter half of the nineteenth century, the germ and bacteriology theories developed by Koch and Pasteur brought new insights into the transmission of disease.[600] However, the miasma theory was still a deep-rooted and convincing explanation for disease among the public due to its long history. The theory suggests that illness is caused by disease-laden air emanating from a deteriorated environment.[601] The miasma theory again helped contemporary health experts to explain the spread of plagues through sewer gases in non-expected areas far from Chinatown. In this sense, the Chinatown ghetto was regarded as the "miasmal swamp," and

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[598] See Brooklyn (New York, N.Y.) Sewerage Department Engineer's Office, *Report of the Engineers to the Commissioners of Drainage of the City of Brooklyn Upon a Plan for the Drainage of Wards First, Third and Sixth* (Brooklyn: Van Anden's Steam Presses, 1857); Henry Ingersoll Bowditch, *Public Hygiene in America: Being the Centennial Discourse Delivered Before the International Medical Congress, Philadelphia, September, 1876* (Boston: Little, Brown, and Company, 1877); Joel Arthur Tarr et al., "Water and Wastes: A Retrospective Assessment of Wastewater Technology in the United States, 1800-1932," *Technology and Culture* 25, no. 2 (1984): 226–63.

[599] "Chinatown," August 29, 1878.

[600] Crellin, "The Dawn of the Germ Theory: Particles Infection and Biology," 57-76.

[601] John M. Last, ed., "miasma theory," in *A Dictionary of Public Health* (Westminster College, Pennsylvania: Oxford University Press, 2007).

was responsible for dispersing toxic effluvia that was considered a menace to the promising American society.[602]

The filth theory goes one step further, as it reflected the integration of a new "corporal space" into traditional patterns of public health.[603] In 1880, the California Board of Health made it clear that "the germs of disease were (are) produced by decay of animal and vegetable matter, and the air robbed of its oxygen by the exhalations of the withered inhabitants."[604] From the perspective of modern sanitation, filth was generated from the material exchange between "the space of body" and the outer settings that encompassed both natural and built environments.[605] The filth theory takes the environmental condition into consideration to justify the link between dirty environment and disease. By the time of the Civil War, promoters of sanitary reform were demanding that filth be removed from towns and cities.[606] Many contemporary physicians and sanitarians believed that a direct infectious transmission route existed between unsanitary living environment and illness.[607] Both air and water played important roles in the filth theory. Since air and water are essential elements for survival, intake of polluted air and water from the external environment would cause diseases. Waste excreted by the human body would befoul the air and water of the outer environment. In accordance with the filth theory, the unsanitary environment of Chinatown and the ironing practices of Chinese laundries therefore exacerbated the public's anxieties.

Filth had an explicit denotation of disease, and, at the same time, disease was often considered the punishment by gods on deprived people throughout the nineteenth century in California. Therefore, the filth theory continuously reminded the public of its association with evil spirits, immorality, and poverty. And in many public discourses, people believed that contagious diseases and the Chinese immigrants were detrimental to American society. The selected expressions, such as "disease-carrier", "heathen", "morally inferior", as well as a mental and physical health threat to white Americans and modern society, first confirmed the concept of *dirt* according to Mary Douglas's theory. The anthropologist makes the point that *dirt* is "matter out of place," and it "offends against order."[608] In other words, *dirt* is the "by-product of a

[602] "Hell's Half Acre, A report of a tour through Chinatown yesterday," April 14, 1882.
[603] Armstrong, "Public Health Spaces and the Fabrication of Identity," 393-410.
[604] G. B. Densmore, *The Chinese in California. Descriptions of Chinese Life in San Francisco. Their Habits, Morals and Manners. Illustrated by Voegtlin.* (San Francisco: Pettit & Russ, 1880), 29.
[605] Armstrong, "Public Health Spaces and the Fabrication of Identity," 393-410.
[606] Chapin, "The End of the Filth Theory of Disease," 234-239.
[607] American Public Health Association, *A Half Century of Public Health*, ed. Mazÿck P. Ravenel (American Public Health Association, 1921), 161-208.
[608] Douglas, *Purity and Danger: An Analysis of Concept of Pollution and Taboo*, 2 and 44.

systematic ordering and classification of matter."[609] This means that the antonyms of dirt, including purity, cleanliness or hygiene, are positive products of the systematic ordering and comply with the ideal social structure. By the same token, dirt symbolizes danger and disorder threatening to violate and break down the existing order. Thus, in the eyes of anti-Chinese activists, Chinese were the transgressors of the American social order and the pollution of American culture, society, and Christian civilization.[610] Their customs and culture were disconnected from American ones and were believed to be backward. By assigning Chinatown to the traits of filth and disease, the unwelcome Chinese immigrants were therefore categorized as dangerous *others* or *anomalies*. Indeed, the stereotype of filthy immigrants was not only limited to Chinese immigrants. Mexicans, Japanese, Filipinos, and southern and eastern European immigrants also suffered from similar racial discourse. From this perspective, the discourse on filth served to demarcate, inscribe, and assign values to the undesired immigrants, minority groups, and marginalized people.

The narrative representation of filthy and morally corrupted Chinatown was manifested in nativistic discourse. Such discourse framed the cleanliness/filth along the lines of us/them, morality/depravity, modern/backward to justify the *othering* of Chinese immigrants. Chinese immigrants were regarded as the menace to the city and the American population and culture. James Phelan, the Democratic mayor of New York City in 1900, described the presence of Chinese immigrants as "a great injury" and "a constant menace" to the working classes, the public health, and the economy.[611] The discourse of filth and cleanliness paved the way for defining biologically and metaphorically the racial and cultural difference between non-whites and whites, and, in the meantime, it was used to formulate categories of American citizenship.[612] Cleanliness and filth were relative notions defined by the host culture and served to meet the demands of the interests of the in-group majority in different circumstances and times. The reason why the identity of Chinese people shifted from the clean and law-abiding "loyal citizens of the United States" to alleged immoral foreigners should be attributed to

[609] Ibid., 44.

[610] In 1901, the president of the American Federation of Labor, Samuel Gompers, expressed his stance on Chinese immigration by saying, "We have this day to choose whether we will have for the Pacific Coast the civilization of Christ or the civilization of Confucius." American Federation of Labor, *Some Reasons for Chinese Exclusion: Meat Vs. Rice, American Manhood Against Asiatic Coolieism. Which Shall Survive?* (Washington: Government Printing Office, 1902), 24.

[611] *San Francisco Chronicle*, March 10, 1900.

[612] See, for reference, Suellen Hoy, *Chasing Dirt: The American Pursuit of Cleanliness* (New York: Oxford University Press, 1995); Molina, *Fit to Be Citizens?: Public Health and Race in Los Angeles, 1879-1939*.

various social, political, and economic factors.[613] As studied by Terry E. Boswell, the anti-Chinese discourse also focused on the Chinese moral threats to American culture in the time of unifying nationalism in the United States.[614] From 1870s, the general American attitudes towards Chinese people began to change. In 1870, Chinese workers made up about 46% of the workers in the low-wage manufacturing industries in San Francisco.[615] This data reveals a dramatical change in the social context. Discourse on the association between the Chinese community and diseases were widely spread at a time correlated with the end of Gold Rush fever, the completion of the trans-continental railroad, the rising competition in capital-driven manufacturing industries, the beginning of Kearneyism and the Workingmen's Party, and recessions in the 1870s. In fact, the Chinese Exclusion Act was at first instigated by the vote on the Chinese question by the Workingmen's Party, in which a majority voted against admitting Chinese immigrants.[616]

Filth and disease were much more culturally and socially framed. In fact, the perception of the Chinese health menace was far more exaggerated than the actual risk. To a certain extent, the risk of Chinatown to American health, culture, society, and citizens was shaped by deliberately constructed narratives.[617] For instance, the letter to the health officer Dr. J. L. Meares in the fiscal year of 1879 to 1880 confirmed the diffusion of the filthy Chinatown image by the San Francisco health department. The reporter detailed the expense of the health office and noted that the expense on "advertising condemnation of Chinatown" comprised about 409 dollars. In comparison, the costs of vaccination and inspection of sewer defects were only 82 dollars and 40 dollars respectively.[618] The construction of the medicalized dimension to the anti-Chinese sentiment converted Chinese immigrants from victims into producers of diseases.

Another example of prejudiced discourse was manifested in the cleaning action taken by the Board of Health in Chinatown. In November 1896, an article in *Pacific Medical Journal* celebrated the successful removal of San Francisco Chinatown's dirty and unhealthy structures by the health department. In the biased narrative, the reporters merely emphasized the efforts

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[613] Mildred K. Wellborn, "The events leading to the Chinese exclusion acts," *Annual Publication of the Historical Society of Southern California* 9, no. 1/2 (1912): 49–58.
[614] Terry E. Boswell, "A Split Labor Market Analysis of Discrimination Against Chinese Immigrants, 1850-1882," *American Sociological Review* 51, no. 3 (1986): 352-371.
[615] Bernstein, "Lochner, Parity, and the Chinese Laundry Cases," 211-294.
[616] William Downie, *Hunting for gold [microfilm]: reminiscence of personal experience and research in the early days of the Pacific Coast from Alaska to Panama* (San Francisco: California Pub. Co. 1893), 397.
[617] See Russel's risk theory. Russell and Babrow, "Risk in the Making: Narrative, Problematic Integration, and the Social Construction of Risk," 239-260.
[618] *SFMR 1879-80*, 471.

and correctness of the Municipal Board of Health, whereas they neglected the multiple factors that contributed to the unsanitary environment and the resettlement of the residents after the demolition of their shelters. The cleanup did not take into account the consequences of overcrowding and other sanitary problems when those homeless people flooded into the remaining Chinatown boarding houses. In their accounts, the existing nuisance in the Chinese quarter was the only problem to be considered, which had "too long been a menace to the health of this city."[619] In addition, the report commented that there was "enough of interest in Chinatown to make it well worth the time spent in touring this quarter" after the cleanup.[620] It seems that the main goal of the cleanup was not to improve the general sanitary condition of Chinatown, but to protect lives of white Americans, and to create a better tourist environment to attract more visitors. The directive to cleanup Chinatown satisfied the needs of stakeholders instead of acting on behalf of the general citizens.[621]

In a similar case, the removal plan of Los Angeles Chinatown partly had its roots in the city's tourism promotion of itself as a health resort and healing place. With the development of industrialization, urbanization, and the ongoing smallpox crisis, city boosters of Los Angeles began to advertise the city as a restorative health resort with "sanitariums for consumptives" endowed with "good soil," "beautiful location," delightful climate and clean air.[622] Land and real estate owners, developers and investors, physicians, as well as promotional literatures played a significant role in attracting middle-class Americans to Los Angeles. In the analysis of the health promotion campaign in Los Angeles, the historian Natalia Molina observed that numerous people looking for healthcare arrived in Los Angeles in the last three decades of the nineteenth century.[623] There was no doubt that tourism could drive local economic development, increase employment in related industries, and promote multilateral cooperation. On this account, stereotypes of the health menace of the Chinese population and the perception of Chinese *otherness* pressed for the relocation of Chinatown. In 1879, Dr. Lindley, one of the well-known city boosters, feared that all the natural resources of Los Angeles would be poisoned by Chinese immigrants and their neighborhood. In his opinion, it was necessary to

[619] "Chinatown," *Pacific Medical Journal* 39, no. 11 (November 1896): 652.
[620] Ibid.
[621] Bernstein argues that "politicians often supply legislation to meet the demands of important voter constituencies, rather than to serve the interests of a public at large." See Bernstein, "Lochner, Parity, and the Chinese Laundry Cases," 211-294.
[622] See, for example: *The Southern California Practitioner*, vol. 7 (Los Angeles: Stoll & Thayer, 1895), 381-382; Abram Marvin Shew, *California as a Health Resort* (Hartford, Conn.: Press of the Case, Lockwood & Brainard Company, 1884), 6; an advertisement published on *Los Angeles Times*, June 3, 1883.
[623] Molina, *Fit to Be Citizens?: Public Health and Race in Los Angeles, 1879-1939*, 21-22.

relocate Chinatown in order to protect the air, water, soil and climate of the restorative Los Angeles.[624]

The majority of the nineteenth-century materials about Chinese people and their living environment were written on a biased belief. Familiar metaphors were repeatedly used to describe the Chinese neighborhood, such as "pest holes" and "foci of disease."[625] Prejudiced discourse has been reproduced in many plots in literature works and films in the aftermath of the Chinese Exclusion period. On the other hand, the imagery of Chinatown as a filthy and disease-breeding spot was largely embedded in medical reports, in narratives from politicians and health officials, in the anti-Chinese political propaganda, and in much sensational press coverage, all of which finally held sway over the immigration policies in the following decades.

According to Teun's theory of prejudice in discourse, the selective words like "filth," "uncleanliness," and "disease carrier" in mass media and official discourses revealed the ethnic attitudes of the white American majority groups. Teun shares his thoughts by stating that prejudiced discourse has both communicative and social functions, including "interpersonal persuasion, the diffusion of social beliefs and opinions in the community, in-group solidarity, or normalization of attitudes and social precepts for the behavior towards minority groups."[626] In this sense, newspapers and public health reports were two popular ways to diffuse social opinions within the white majority community. Secondly, such prejudiced discourse helped to solidate the white majority members by formulating a collective identity standing on the opposite side of the *dirty* outsiders – the Chinese immigrants. Here, the outsiders encompassed the notions of *otherness* and *foreignness*. This perceived *foreignness* played a crucial role in protecting the interests of the white majority who were in-group members. Thirdly, the biased discourse (re)produced in numerous contemporary travelogues, newspaper coverage, political discourse, public health reports, as well as the exclusionists' propaganda, which was a driving force in normalizing the ethnic attitudes about Chinese people, and in justifying the menace of Chinese immigrants to the American culture, society and civilization. And, fourthly, the prejudiced discourse left long-germinating consequences "in discriminatory interaction" with Chinese people in California.[627]

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[624] "Los Angeles City Annual Health Officer's Report," November 13, 1879, Los Angeles City Archives (Untitled) Records, 14:3.
[625] "Chinatown," November 1896, 652.
[626] van Dijk, *Prejudice in Discourse: An Analysis of Ethnic Prejudice in Cognition and Conversation*, 4.
[627] Ibid., X.

Notably, the prejudiced discourse on Chinatown in the press openly expressed the white majority's negative perception of the immigrant group. Based on Teun's theory of racism in the media, the negative portrayal of filthy Chinatown in news reporting significantly influenced white Americans' knowledge and understanding about Chinese residents in California. The depictions were negative for the most part, which was usually associated with social and economic issues, crimes, and public health dangers.[628] In addition, the majority of people pay more attention to the negative actions of out-group members who have different and salient cultural backgrounds, as Teun further explicates, and the 'accentuation' in turn approves the stereotypical schema.[629] The California post-Gold Rush era inevitably increased tensions and competition between Americans and the large number of Chinese immigrants who had different cultural and social backgrounds. In this sense, the conflicts and the competition intensified "ingroup favoritism and outgroup rejection."[630]

In addition, the negative generalization of the Chinese neighborhoods, culture, behaviors, and works can be explained by the attribution theory proposed by Heider. His theory uses dispositional (internal cause) versus situational (external cause) attributions to explain the perception and interpretation of behaviors and events.[631] The dominant group members generally prefer to interpret minority people's behaviors negatively and associate their actions with group values, emphasizing the overgeneralized *group schemata* and internal traits rather than external causes such as the context and other factors.[632]

Studies on ethnic stereotypes have noted that prejudice against other groups is formed through social information processing characterized by "selection," "overgeneralization," "simplification," "categorization," "faulty reasoning," "differentiation," and "group representation."[633] Therefore, Teun has concluded four dominant strategies in processing ethnic prejudices, namely "selective perception and interpretation," "action interpretation," "model building," "group-schema use and (trans)formation."[634]

In the historical period of California Chinese Exclusion, discourse on filth, disease, and nuisance conformed with the above theoretical analysis. Firstly, the anti-Chinese voices

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[628] Ibid., 9.
[629] Ibid., 30-31.
[630] Ibid., 17.
[631] See, for reference, Fritz Heider, *The Psychology of Interpersonal Relations* (New Jersy: Lawrence Erlbaum Associates, 1982).
[632] van Dijk, *Prejudice in Discourse: An Analysis of Ethnic Prejudice in Cognition and Conversation*, 18-24 and 30.
[633] Ibid., 15-16.
[634] Ibid., 28-33.

selected and generalized the relationship between Chinatown and filth. Instead of finding the truth of miserable neighborhood environment and differentiating the situation between the Chinese upper-middle-class and poor-class, the prejudiced discourse was frequently recounted in the press and official reports. Consequently, the making, spreading, and perceiving the tags of 'filth,' 'disease,' and 'menace' on Chinese immigrants fell under the mechanisms of the social information processing. These mechanisms finally created an overgeneralized, simplified, categorized and negative Chinese identity, which was inherently different from the civilized, clean, and moral American citizens.

On the other hand, 'faulty reasoning' was showed in many events at that time, for example, the Chinese laundry ironing practices and the alleged underground world in Chinatown, both of which were considered detrimental to the physical and mental health of the American society. The racial prejudice confirmed the socially shared out-group values in the eyes of many American in-group members.[635] In turn, the prejudiced discourse on filth and disease reshaped the group schemata of the Chinese population in California. As Linda Lorraine Nash has argued, "disease among nonwhites was easily and frequently dismissed as personal rather than environmental in origin, the obvious outgrowth of their vice and unclean habits."[636] Likewise, from the latter part of the nineteenth century to the turn of the century, the *filthy* and *diseased* Chinatown environment was simply blamed on the inherent characteristics of the Chinese immigrants.

Still, the overgeneralized ethnic group schema of Chinese showed *negative extension*. Drawing on Teun's explanation, negative extension involves negative evaluation of actions, circumstances, and models.[637] Therefore, the judgement of Chinese laundry ironing practices exemplified the negative extension of the inherent "filthy and diseased" characteristics of the immigrants. The living environment in Chinatown was generally lower than the modern hygienic standards based mainly on the white middle-class norms after the public health reform.[638] New medical understanding of contagious diseases and American middle-class domestic norms demanded urban environmental improvement and particularly a sanitary living environment. Therefore, Chinatown constantly received negative evaluation from the middle- and upper-class social elites and anti-Chinese forces. Likewise, the deterioration and the lack

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[635] See theory of prejudice formation in Henri Tajfel, *Social Identity and Intergroup Relations* (Cambridge University Press, 2010).
[636] Nash, *Inescapable Ecologies: A History of Environment, Disease, and Knowledge*, 68-69.
[637] van Dijk, *Prejudice in Discourse: An Analysis of Ethnic Prejudice in Cognition and Conversation*, 31-32.
[638] See, for reference, Shah, *Contagious Divides: Epidemics and Race in San Francisco's Chinatown*.

of infrastructure improvement in the Chinese urban ghettoes were credited to the inherent characteristics of Chinese immigrants, their specific culture, poverty, and depravity. Furthermore, the verbal building of filthy and diseased Chinatown in public discourse extended the stereotypical discussion in other events. The inherent "filthy" characteristics provided good explanation for the stories of secret societies, opium addiction, and crimes in Chinatown, since the ethnic enclave was regarded as a place of degradation without any decency and dignity for many years.

Furthermore, the Chinatown underworld, which was reportedly dominated by evil forces in many contemporary novels, drawings, and anecdotes, corresponds to the stereotyped group schemata. Chinatown's underworld was synonymous with darkness, filth, and depravity. Some contemporary reports asserted that Chinatown contained a secret network of underground passageways packed with filthy, cramped labyrinths without ventilation and sunlight, in which gambling, prostitution, opium business and organized crimes were infested.[639] On June 8, 1873, *Thistleton's Illustrated Jolly Giant* of San Francisco released a weekly image titled "The Chinese Hotel." This cartoon vividly depicted a world that had been dramatized by racist and negative preconceptions.[640] The Globe Hotel in San Francisco's Chinatown was fictionalized as a microcosm of Chinatown society. Both the above and below ground worlds within the hotel were isolated from American society. Immediately upon disembarking the ships, the Chinese immigrants in the illustration were taken to the overcrowded three-story-high Globe Hotel, which was overcrowded with Chinese lower-class sojourners and "coolie labor." All Chinese immigrants spent the remainder of their lives in the same place, where they lived, worked, played, worshipped, and died. Moreover, there were medical confinement cells, smallpox hospitals, subterranean courts, torture and executions, Chinese cemeteries, and sewers leaking deadly vapors placed alongside the corpses.

Very often, such mysteries were a hybrid of excerpts from various stories, fabricated according to the ethnic group schemata described above. Shortly after the 1906 San Francisco earthquake, an article in the *San Francisco Chronicle* made it clear that the "ten stories underground" world of Chinatown was a figment of imagination.[641] For many readers, the imagined underground Chinatown was a world that had no end and was frequently associated with crime, sex, drugs, and corruption. Consequently, such a secret and sinister realm was typically depicted as the

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[639] See, for example, "Dens like ratholes," *Washington Post*, April 22, 1906; "Hole where Chinaman was," *New York Times*, April 21, 1906.
[640] "A Chinese Lodging House," *Thistleton's Illustrated Jolly Giant* 1/3 (June 8, 1873): 5.
[641] "Fire Reveals Chinatown Fake," *San Francisco Chronicle*, May 14, 1906.

enemy of white American society. This world then became the archetype of Chinatown in numerous films and works of literature. Moreover, the linkage between Chinatown (and its Chinese residents) and disease is congruent with Lakoff and Johnson's theories. The philosophers contend that *conceptual metaphor* is a way of thinking. The use of language enables the brain to generate "image schematic" concepts and inferences that shape the experience of certain places.[642] In this manner, the discriminatory words used selectively against Chinatown in the press, reports, and other anti-Chinese discourse developed a stereotyped image. Such images legitimized the segregation of Chinatown and the Chinese exclusion movement, while also contributing to the distribution of the racial imaginary.

However, underground opium dens, lodgings, brothels, and passageways did exist in the basements of some buildings.[643] Another example is the Fresno Chinatown underground passages. The archaeological excavation in 2007 found that the underground basements and some interconnected passages were used to keep out the scorching heat and escape racial attacks.[644] The underground was a survival space, yet it also housed degenerate entertainment. In fact, whether the underground mysterious and vicious world existed or not was not important; the imaginary Chinatown underground served to racialize the space. This built, or imaginary, environment was an embodiment of the Chinese immigrant community that would shatter the American ideals of social order in the eyes of the American majority group. The narratives of the secret underground world thus contributed significantly to the *othering* of Chinatown as an existence forever alien to the American world.

Similarly, Mary Douglas' theory on *purity* and *dirt* also emphasizes categorization and differentiation in the information processing. The anthropologist argues that the concept of dirt derives from disorder, and it is disorder that generates the notion of pollution and danger. Every culture and society has its own standards and norms of order that is determined by its functioning of categorization, and the concept of dirt varies according to different cultural interpretations.[645] The anomalies are therefore things/people/events that do not conform with the dominant cultural and social order, and are categorized as dirty or dangerous *others.*

[642] George Lakoff and Mark Johnson, *Philosophy in the Flesh: The Embodied Mind and Its Challenge to Western Thought* (New York: Basic Books, 1999), 509 and 556; George Lakoff and Mark Johnson, *Metaphors We Live By* (University of Chicago Press, 2008), 253.
[643] See, for example, "A Mongolian Maze, The Dens of Underground Chinatown," *The Morning Call*, February 21, 1893.
[644] "History," Chinatown Fresno Foundation, accessed May 8, 2022, https://www.chinatownfresno.org/history.
[645] See, for reference, Douglas, *Purity and Danger: An Analysis of Concept of Pollution and Taboo*.

This process of 'differentiation' is critical to the construction of *otherness* that drew explicit boundaries between in-groups and out-groups. The public health reform in late nineteenth-century California contributed to the definition of American identity, citizenship, and *otherness*.[646] To shape an immigrant group that was "forever foreign" to the American culture and society in the latter part of the nineteenth-century, public discourse acknowledged white Americans as "moral persons," "worthiest citizens," "clean," and "Christian."[647] And by contrast, the discourse attached prejudiced group labels to the Chinese, such as dirtiness, impurity, and pollution to the American social and cultural orders. *Group labels* played an important role in the process of categorization and differentiation. As many scholars have studied, the labels served to set apart in-groups and out-groups through specific traits and identities.[648] In this way, the labels draw attention to the dissimilarities in others/out-groups, and therefore "promote negative perceptions, evaluations, and behavior."[649]

In 1879, questions about the sanitary conditions in Chinatown rose to a new height. The state health officer Dr. Lindley reported that "the sanitary condition of city good, except that portion which borders on Nigger Alley, known as Chinatown, which, from a sanitary point, be pronounced a nuisance of the most dangerous character."[650] Discourse on Chinatown nuisance was also repeatedly mentioned in the San Francisco Municipal Reports. By declaring Chinatown a health nuisance, the board of supervisors rationalized the demonization of Chinese and their living space, manifesting *white supremacy* that underlined not only the racial prejudice but also the notion of moral purification.[651] From this perspective, such discourse further justified the anti-Chinese campaign by emphasizing the fundamental differences between white Americans and the Chinese population in California. The psychological notion of "boundaries of consensus" and the concept of "fundamental differentness" was a new rationalization added to the California anti-Chinese sentiment by the American historian Alexander Saxton. By equating *racial inferior* with *otherness/uniqueness*, new immigrants from the other side of the Pacific Ocean were excluded from the American central "value

[646] See, for reference, Molina, *Fit to Be Citizens?: Public Health and Race in Los Angeles, 1879-1939*.
[647] Wong, "Chinatown: Conflicting Images, Contested Terrain," 3-15; William R. Locklear, "The Celestials and the Angels: A Study of the Anti-Chinese Movement in Los Angeles to 1882," *The Historical Society of Southern California Quarterly* 42, no. 3 (1960): 239-256; *SFMR 1879-80*, 335 and 836.
[648] See Allport, *The Nature of Prejudice*; Allen and Wilder, "Group Categorization and Attribution of Belief Similarity," 73-80.
[649] Jeff Greenberg, S. L. Kirkland, and Tom Pyszczynski, "Some Theoretical Notions and Preliminary Research Concerning Derogatory Ethnic Labels," in *Discourse and Discrimination*, ed. Geneva Smitherman-Donaldson and Teun A. van Dijk (Detriot: Wayne State University Press, 1988), 76.
[650] *Los Angeles Herald*, February 14, 1879.
[651] *SFMR 1879-80*, 835-836.

systems and behavioral patterns."[652] This historical experience formed part of the enormous ideological baggage of Jacksonian America and paved new ways towards further racial projects.[653]

The concept of *medical labels* is built upon prejudiced group labels and goes one step further. According to Howard Markel and Alexandra Minna Stern, medical labels are closely linked to the foreignness of diseases, and the common practice of applying medical labels "contributed to durable biological metaphors that explained, usually in catastrophic terms, the potential risks of unrestricted immigration to the nation's social health."[654] In the late nineteenth century and early twentieth century, public health officials primarily employed race as a lens through which to understand epidemics. The health issue fed the alarm and legitimized the statements about social menace brought by *others* – the outsiders, foreigners, and unwelcome immigrants. This is evident in the case of Chinatown relocation plan in 1876, when San Francisco health officers justified their plans to cleaning out Chinatown as a "movement on the enemy's works."[655] In another Health Officer's Report in 1880 to 1881, shortly after the two outbreaks of smallpox, the Health Officer ascribed explicitly the cause and spread of smallpox to the existence of Chinatown, Chinese residents, workers, and business, denouncing these foreign immigrants as "a constant source of danger to the health and prosperity of the entire community."[656]

Discourse of *filthy* Chinese immigrants was indeed a replay of the older discourse of filthy *others*. The perceived out-group members also included Asians, Native Americans, Mexican Americans, African Americans, Irish, southern and eastern European immigrants throughout the course of American history. Previous debates over Irish and African Americans in other states showed similar discourse features.[657] For example, property owners near the Irish and Mexican neighborhoods also complained about the filthy environment in a like manner.[658] When southern and eastern European immigrants accounted for a large portion of new immigration at the turn of the twentieth century, the same rhetoric was applied to these European outsiders.[659] By employing *medical labels*, disease was used symbolically and

[652] Saxton, *The Indispensable Enemy: Labor and Anti-Chinese Movement in California*, 19-20.
[653] Ibid., 17-20.
[654] Howard Markel and Alexandra Minna Stern, "The Foreignness of Germs: The Persistent Association of Immigrants and Disease in American Society," *Milbank Quarterly* 80, no. 4 (2002): 757-788.
[655] "San Francisco Correspondence," October 14, 1876.
[656] *SFMR 1880-81*, 254.
[657] Hinton Rowan Helper, *The Land of Gold: Reality Versus Fiction* (Baltimore: Published for the author, 1855), 94-96.
[658] Higham, *Strangers in the Land: Patterns of American Nativism, 1860-1925*, 26.
[659] Molina, *Fit to Be Citizens?: Public Health and Race in Los Angeles, 1879-1939*, 46-47.

politically by anti-Chinese voices to justify the Chinatown removal and relocation plans. Likewise, the ousting of Chinese immigrants would be symbolically an elimination of dirt and danger, which aimed to reestablish and maintain American social order and norms.

To locate and protect the American identity, prejudiced discourse on marginal and minority people served to keep the dominant power of the in-group members over the outsiders. Such power could be formed through "everyday conversations, institutional dialogues, letters, evaluative reports, laws, and many other forms of institutional text and talk directed to minority groups and their members."[660] Media representations of the filthy Chinatown constituted a general group schema that reflected the mainstream attitudes at that time. In addition to the texts in the press, municipal and public health reports and speeches shaped institutional opinions on Chinatown and the residents. Most prominently, the prejudiced discourse reinforced the *mental model* of the filthy Chinatown and the Chinese community. Theoretically, the model features a social dimension and is continuously updated by new events.[661] Therefore, the mental model of filthy and diseased Chinatown was gradually interpreted from news, reports, institutional texts, and talk. Contemporary readers, listeners, and lay population – especially those who were opposed to Chinese immigration – collected information from the texts and talks, renewed the previous mental model with new fragments, which they then shared to other in-group members with possible personal judgement. Finally, the general mental model of filthy and diseased Chinatown was abstracted from these various model fragments and contributed to reproducing the prejudiced discourse to a much broader extent.

The artistic portrayal of a filthy Chinese community was another form of media representation. Oftentimes, the depiction showed a distorted Chinese figure and cultural identity elaborated by the anti-immigration nativists. Illustrations created a visual expression that facilitated the spread of discourse on filthy and diseased outsiders. Again, the artistic imagination indicated the visual politics that dictated the racial and cultural *otherness*.[662] As Yanshuo Zhang noted, "news media became a major vehicle through which Euro-centric social elites debated about and visually represented the 'vices' and 'virtues' of Chinese immigrants."[663]

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[660] van Dijk, "Analyzing racism through discourse analysis: Some methodological reflections," 92-134.
[661] Ibid.
[662] Yanshuo Zhang, "Between Representation and Repression: The Photography of San Francisco's Old Chinatown and the Visual Politics of Representing the Racial 'Other.,'" *Stanford Journal of Asian American Studies* VIII (Spring 2019): 10-26.
[663] Ibid.

The editorial cartoon "San Francisco's Three Graces" published in *Wasp* in 1882, for instance, created a vivid visual vocabulary that manifested the racial discourse of filthy and diseased Chinatown. The publication was virulently anti-Chinese. The three ghosts in the sky over San Francisco symbolized the three impending epidemics in California of the time.[664] Indeed, the message conveyed by the illustration suggested that Chinatown was regarded as the source of contagious disease alongside the infamous maritime hospital and Butchertown at the time. Based on the miasma theory, the vapors resembled the "foul air" and was identified as the transmission route of diseases. The artistic portrayal of the filthy and dangerous Chinatown also foretold its relocation plan to Butchertown at a later time.

Figure 3: The Rescue. Courtesy of UC Berkeley, Bancroft Library. [665]

Another illustration (Figure 3) named "The Rescue" in the *Wasp* showed that the Board of Health saw the Chinese as the culprit of the smallpox epidemic. Smallpox was introduced from Mexico to California in the 1780s, and the contagious disease killed large numbers of Native Americans. In this art, Chinese *others* were visually associated with disease and vice. Perseus, a hero of ancient Greek mythology, the defender, armed with the shield of Dr. Lawlor and

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[664] See, for reference, George Frederick Keller, "San Francisco's Three Graces," *The Wasp* 8, no. 304 (May 28, 1882), Identifier: d_494, [Digital Collections], Billy Ireland Cartoon Library & Museum, The Ohio State University.

[665] "The Rescue" [Perseus of Board of Health, armed with shield of Dr. Lawlor and sword of Local Power saves San Francisco from three-headed Chinese smallpox], *The Wasp* 8 (1882), Identifier: no. 305:344-345, Chinese in California Virtual Collection: Selections from the Bancroft Library, UC Berkeley, Bancroft Library.

sword of Local Power, became the embodiment of the Board of Health, while the three-headed smallpox monster symbolized the Chinese people in California. In Greek mythology, Perseus decapitated Medusa, and saved Andromeda from the sea monster. In this illustration, the direct combat between the Board of Public Health and Chinese signified the conflict between justice (goodness) and evil. Even from the perspective of the use of color alone, the white horse and Perseus sustained the narrative of white supremacy. By contrast, the painting of yellow "Chinese smallpox" proved the Asian American ethnic label at that time. Andromeda, seen behind Perseus, was certainly the epitome of the American society and people that fell continually under the threat of epidemics and immigrants. From the illustration, one can also read the segregation and exclusion of Chinese people from American society and identity. Perseus represented the justice of the Board of Health, riding on a white horse with *quarantine* written on its collar and protected the American society and people from the Chinese immigrants who were regarded as the culprit of smallpox epidemics.

On the other hand, prejudiced discourse of filthy Chinatown in the influential media, the municipal documents and public speeches, the exclusionists' propaganda texts, and public health reports was part of the "elite discourse" that involved *surface* vs. *deep* structures.[666] Accordingly, the selective words describing Chinatown and Chinese immigrants in the public discourse functioned as the surface structure, which produced directly the inferiorization of the target out-group members and framed the specific group schemata. At the same time, the underlying meaning of such words was closely associated with disease, criminals, and moral problems. Therefore, the words helped to reinforce the prejudiced image of the Chinese community and justified the necessity to segregate, relocate, and systematically exclude Chinatown and its community. It is also clear that these rhetorical weapons targeted the Chinese community and demanded their expulsion from the city. As historian Guenter B. Risse has argued, the leaders of main Californian cities found this an ideal pretext to implement their plan to segregate and further evict Chinese immigrants by generating "contagious anxieties" among the white Americans.[667]

At the same time, the underlying meanings can be interpreted by the syntactic structures of sentences and textual order. The primary methods to express underlying meanings in discourse structures include placing the responsible agent in the first position and the subject of the

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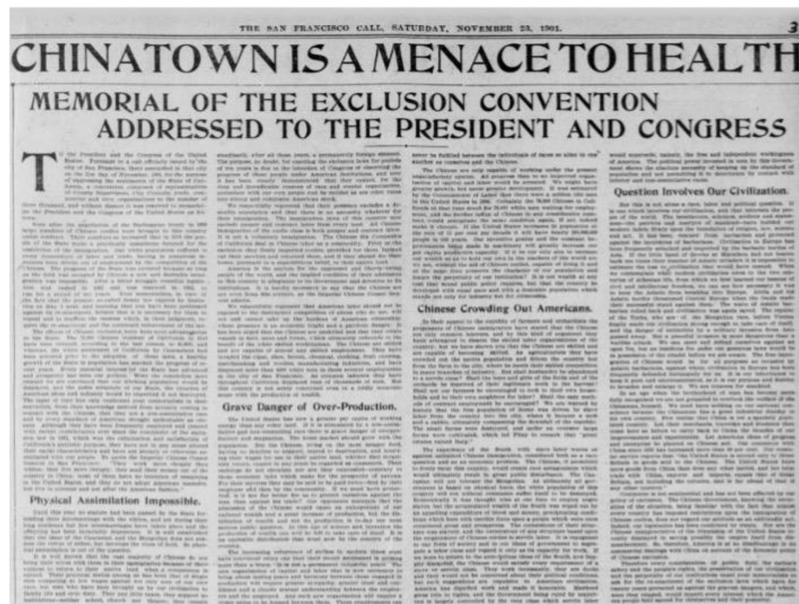
[666] See the explanation of discourse structures in van Dijk, "Analyzing racism through discourse analysis: Some methodological reflections," 92-134.
[667] Risse, *Plague, Fear, and Politics in San Francisco's Chinatown*, 3-4.

sentence, as well as highlighting the information and actions in the headlines or the beginning of the text.[668] For instance, the *San Francisco Committee* published a broadsheet on the Chinatown question in 1880 with the bold title "Chinatown declared a nuisance!"[669] This title therefore clearly underlined the negative value of the Chinese neighborhood at the very beginning. This was also true in many California news reports about Chinatown in the late nineteenth and early twentieth century. Here is one example of the half-page layouts from *San Francisco Call* in November 1901 (Figure 4):


THE SAN FRANCISCO CALL, SATURDAY, NOVEMBER 23, 1901. 3

CHINATOWN IS A MENACE TO HEALTH

MEMORIAL OF THE EXCLUSION CONVENTION ADDRESSED TO THE PRESIDENT AND CONGRESS

Physical Assimilation Impossible.

Grave Danger of Over-Production.

Chinese Crowding Out Americans.

Question Involves Our Civilization.

Figure 4: Chinatown is a menace to health and civilization.[670]

The textual structure of this address to the President and the Congress clearly reflected the racial and prejudiced attitudes of the anti-Chinese in-group members, including representatives of county supervisors, city councils, and trade, commercial and civic organizations. Like many other contemporary discourses, the headline reading "Chinatown is a menace to health," underlined the hygienic problem of Chinatown and reconstructed the discourse of the foreign health menace. Yet, the title aimed at attracting special attention from the public, since the whole text did not discuss the sanitary question in Chinatown. As the first paragraph of the textual structure, it pointed out the necessity of the immigration restriction and the most

[668] van Dijk, "Analyzing racism through discourse analysis: Some methodological reflections," 92-134.
[669] Workingmen's Committee of California, "Chinatown Declared a Nuisance!" Mid-March 1880.
[670] "Chinatown is a menace to health," *The San Francisco Call*, November 23, 1901.

important reason for the anti-Chinese movement was the vast influx of cheap manual labor that brought intense competition to the white working population. Besides, the four subheadings expressed the four major sins of Chinese immigrants from the author's perspective. This strategy of textual order follows Teun's theory that important information is placed at the beginning, and textual structure may reflect or communicate "prominence, relevance, importance, or interestingness" based on prejudiced ideas.[671]

NO MORE FILTH IN CHINATOWN

HEALTH DEPARTMENT ADOPTS HEROIC MEASURES

HARD TIMES SUCCEED CLOSING OF GAMBLING HOUSES

Formation of Chamber of Commerce Proposed—Entire Matter to Be Discussed at Forthcoming Feast of How Dow

Figure 5: A news report in Los Angeles Herald. October 12, 1908.[672]

Another example is selected from the *Los Angeles Herald* in October 1908 (Figure 5). The news reports editorialized the cleaning action by health officers in Chinatown. First of all, the report reminded the public about the negative aspect of Chinatown by emphasizing its filthiness in the headline that signaled prominence. Secondly, the cleanup action in Chinatown was deemed as "heroic measures" by the in-group members. Thus, the subject and responsible agent of this action – the health department – occurred in the first position. In this strategy, the word order and the textual order conveyed an underlying perspective of the news reports, namely, the dichotomy between the righteous, heroic, and clean *us*, and the filthy and dangerous *them*. The binary opposition between the white American majority and the Chinese in California was not uncommon in the contemporary prejudiced texts and discourse. Such phenomena can find

[671] van Dijk, "Analyzing racism through discourse analysis: Some methodological reflections," 92-134.
[672] *Los Angeles herald*, October 12, 1908.

theoretical support based on Teun's argument that implications of the discourse "may specifically play a role in the strategies of positive self-presentation of white group speakers, or in the negative other presentation of minority groups."[673] Framed by contemporary sociopolitical agendas, the discourse structures showed the social and political "position" of the writer, and revisited existing mental models of Chinatown. Again, the discourse reproduced white dominance over the *others*/*outsiders*.[674]

The question of the Chinatown nuisance bore the brunt of anti-Chinese agitation in California. The negative portrayal of the filthy Chinatown environment imposed a social stigma on the filthy *others*, and had little concern with the immigrants other than the meaning of their ghettoes.[675] For one thing, the stigmatized Chinese community became a means by which municipal and sanitary institutions responded to the out-of-control epidemics, using the discourse on filth and disease of the *others* as a reason to prevent challenges from the public to the real cause of recurrent outbreaks and other unresolved problems. Furthermore, some real estate capitalists, entrepreneurs, and nearby residents valued more on the economic possibility and commercial interests of the Chinatown location in the city center.[676] This was true for Los Angeles, San Francisco, and Sacramento, where the Chinese quarters were located in the city center and had convenient transportation.

Furthermore, following the 1877 Great Strike instigated by white railroad workers in response to the wage reduction, California Chinese immigrants and Chinatowns soon became the main target of aggression.[677] The Workingmen's Party of California saw Chinese laborers as the first barrier to be removed in order to break down the "corporate capitalism" in California as soon as it was established.[678] They largely employed the discourses of health menace and language of anti-coolie in their propaganda that resulted finally in the Chinese Exclusion Act in 1882.[679] Although blaming the unsanitary environment of the Chinese quarters had been circulated sporadically in the press in the past, it was no coincidence that such racial and stigmatized

[673] van Dijk, "Analyzing racism through discourse analysis: Some methodological reflections," 92-134.
[674] Ibid.
[675] Wong, "Chinatown: Conflicting Images, Contested Terrain," 3-15.
[676] "Chinatown," March 15, 1909.
[677] Stowell, *The Great Strikes of 1877*, 174.
[678] Batzell, "Free Labour, Capitalism and the Anti-Slavery Origins of Chinese Exclusion in California in the 1870s," 143–186.
[679] The eastern merchants who favored cheap Chinese labor strongly opposed such a bill, and they signed petitions against the bill. "Last night's dispatches, The Chinese Bill being shorn by Foreign Committee," *Los Angeles Daily Times*, April 22, 1882.

language towards the Chinese population was largely revived and spread in California after 1877.

Overall, the rhetoric of filthy Chinatown was used by the anti-Chinese activists to solidify the stereotypical perception that the Chinese out-group members were the threat to American society and civilized humanity. Such discourse linking race, disease and environment had become a new face of racism. Nativists and the anti-Chinese working class took advantage of the negative discourse that provided them the grounds for limiting future Chinese immigration, eliminating competition from Chinese workers in the labor market, and reinforcing barriers of social immobility of the Chinese community.

3.2 Hygiene, health, and identity

The word *hygiene* originates from Greek word *hygieina*, the goddess of cleanliness and health in Greek mythology, and was first recorded in use in 1671, meaning to keep healthy.[680] Ancient medicine in various civilizations and cultures primarily focused on the study of personal health, disease prevention, and longevity. For centuries, people attributed disease-causing factors to miasma, filth (including filthy water and filthy waste), morality, and religion when they knew little about what made a group of people sick. The meaning of *hygiene* was then developed in the nineteenth century with an emphasis on preventative medicine that promoted a healthy body and a clean environment.[681] The scientific research of the laws of disease affecting large numbers of people began in England in the nineteenth century.[682] Edwin Chadwick's use of statistics to study the health of the poor led to the passing of the Public Health Act 1848. He maintained that clean water supply and efficient sewer systems were crucial to both individual and public health.[683] In addition, the British physician John Snow's research on cholera indirectly contributed to the development of urban water and waste systems.[684] On the other hand, the health reforms of nineteenth-century Europe no longer viewed the health of citizens

[680] *Merriam-Webster.com Dictionary*, s.v. "hygiene," accessed August 26, 2022, https://www.merriam-webster.com/dictionary/hygiene.
[681] See, for reference, American Social Science Association, *Journal of Social Science: containing the transactions of the American Association* (New York: Leypoldt & Holt, 1869-1909).
[682] Ibid., 222 and 236.
[683] John R Ashton and Janet Ubido, "The healthy city and the ecological idea," *Social History of Medicine* 4, no. 1 (1991): 173-180.
[684] See Peter Vinten-Johansen et al., *Cholera Chloroform and the Science of Medicine: A Life of John Snow* (Oxford University Press, 2003).

as the responsibility of the church or private philanthropy, but rather as the obligation of the government.

Whereas health was concerned with the individual body, public health was associated with the city and the state. Partly influenced by the European sanitary movement, American sanitary reform in the nineteenth century also applied statistics to public health, and at the same time, weaved together *self* and *society*.[685] At the external level, the public health movement sought to prevent or eradicate the generation of disease in the surrounding environment; at the internal level, it sought to make the personal body less susceptible to these external factors.[686] According to an order signed by the State Board of Health in Connecticut in 1878, the aim of public health was to prevent and control the spread of all diseases that had "a tendency to spread throughout families, institutions, and communities" owing to external factors.[687] The American health officials determined that effective urban management and planning, environmental cleanliness, healthcare, and *hygiene* education were the most important aspects in preventing epidemics.[688] In addition, modern preventive medicine believed that personal illness and endemics/epidemics had close ties to nature and the surrounding environment. For example, contemporary physicians stated that living on damp soil caused consumption, and proper drainage might mitigate its dangers.[689] In the second half of the nineteenth century, four major disease theories, including the miasma theory, the filth theory, the germ theory, and bacteriology, were developed and refined. Contaminated air, water, and living environments could result in a number of contagious diseases. Hence, the objective of early American sanitary reform was "guarding against all unhealthful conditions in person, house and environments."[690]

As the California Gold Rush came to an end, rapid urbanization and industrialization led to the expansion of cities and populations, which heightened concerns about urban health, sanitation, pollution, and fire hazards. In this context, scientific advancement in public health and the promotion of white middle-class American standards particularly brought the importance of

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[685] Shah, *Contagious Divides: Epidemics and Race in San Francisco's Chinatown*, 14.
[686] Albert Henry Buck, ed., *A Treatise on Hygiene and Public Health: Occupation. Public Health*, vol. 1 (New York: William Wood & Company, 1879), 11.
[687] Public hygiene / [signed] by order of the Board, C. W. Chamberlain, M.D., Secretary State Board of Health (Hartford, Conn.: State Board of Health, 1878), Harvey Cushing/John Hay Whitney Medical Library at Yale University.
[688] Institute of Medicine (US) Committee for the Study of the Future of Public Health, The Future of Public Health (Washington (DC): National Academies Press (US), 1988), 3, A History of the Public Health System, https://www.ncbi.nlm.nih.gov/books/NBK218224/.
[689] American Social Science Association, *Journal of Social Science*, 237.
[690] James Copper Bayles, *House Drainage and Water Service in Cities, Villages, and Rural Neighborhoods: With Incidental Consideration of Causes Affecting the Healthfulness of Dwellings* (New York: David Williams, 1878), 6.

unpolluted water sources and piped sewage systems to the forefront of urban development and public health. However, the notions of hygiene and health were not simply employed to differentiate between filth and cleanliness in a material sense; their meanings were also strongly tied to identity, morality, and social class. Thus, early public health initiatives exacerbated class and racial inequality and tensions, intentionally or otherwise. People who lived in deteriorating ghettos, including the poor, new immigrants, people of color, and the marginalized, were judged as a menace to public health and public morals.

With the advancement of sanitary reform in the second half of the nineteenth century, sanitary education and promotion by the government and medical specialists to the general public led to a binary thinking about filth and cleanliness, disease and health, depravity and morality. Pollution could cross the boundaries between the classification spaces shaped by these dichotomies. For instance, pollution made clean water and air dirty, caused healthy people to become ill, and corrupted moral individuals. The late nineteenth-century disease theories provided detailed explanations for the mechanisms of pollution and disease transmission. These disease theories provided scientific legitimacy for anti-Chinese forces to justify their plans to remove Chinese quarters and exclude Chinese immigrants. For example, Dr. Walter Lindley, a health officer appointed by the Los Angeles City Health Department, noted the deplorable sanitary conditions in Chinatown in his 1879 health report. He asserted that Chinatown posed a threat to the health of the city and its citizens because this "rotten spot" poisoned the water they drank.[691] In this way, the health officer demanded the relocation of Los Angeles Chinatown. In a similar situation, Chinese laundries were repeatedly associated with contagion and public hazards. Some newspaper articles claimed that Chinese laundries polluted the air and water. A variety of restrictions on Chinese-owned laundries were enacted. In addition to the zoning laws, laws adopted in Sacramento during the 1870s required Chinese laundries to wash only in enclosed buildings and forbade Chinese laundries from occupying or utilizing buildings that extended over the water.[692]

Informed by British ideas about hygiene, contemporary American medical officials also insisted that maintaining personal health and personal hygiene was part of a citizen's responsibility for the welfare of society and nation.[693] In 1878, the Connecticut Department of

[691] "Los Angeles City Annual Health Officer's Report," November 13, 1879, Los Angeles City Archives (Untitled) Records, 14:997.
[692] "Sacramento's Chinese of Yee Fow," *Yee Fow Museum*.
[693] Institute of Medicine (US) Committee for the Study of the Future of Public Health, The Future of Public Health, 3.

Health quoted British Prime Minister Benjamin Disraeli to highlight the significance of public hygiene: “The health of the people is really the foundation upon which all their happiness and all their powers as a state depend.”[694] Meanwhile, a top-down approach to standardize public hygiene practices required constant self-restraint and legal constraints on both the health and ethical dimensions. George Wilson, a British health officer of the time, in his *A Handbook of Hygiene and Sanitary Science*, also wrote:

> In a wide sense, therefore, the science of public hygiene enlists the services of the people themselves in continuous efforts at self-improvement; of the teachers of the people, to inculcate the best rules of life and action; of physicians in preventing as well as curing disease; and of lawgivers, to legalise and enforce measures of health preservation…. the general well-being of the people must mainly depend on their own exertions and self-restraint. Sanitary improvements in man’s material surroundings will not compensate for social transgressions against laws of morality; for public virtue is essential to public health, and both to national prosperity.[695]

In other words, good conduct, a healthy body and mind, and clean environment defined a citizen’s responsibility and informed consequently the notion of citizenship. Obedience to the sanitary regulations and laws established by the governments and health departments of the time became the basis for social acceptance in the United States. Besides, hygiene became an important sign of American modernity and civilized behavior. However, such sanitary administration was also a racial project that produced an ideal American race identity, namely a “race of healthy, vigorous, long-lived moral human beings.”[696] In this way, the concept of race as framed by hygiene, health, and morality was not biologically essentialist but rather a social construct consistent with Omi and Winant's racial formation theory.[697] In the late nineteenth century, the American racial identity was constructed at both the micro- and macro-levels within this context. The health, hygiene and morality of individuals were also closely linked to the external environment and social prosperity in which they lived.

[694] Public hygiene, Harvey Cushing/John Hay Whitney Medical Library at Yale University.
[695] George Wilson MD, *A Handbook of Hygiene and Sanitary Science*, 5th ed. (Philadelphia: P. Blakiston, Son & Company, 1884), 1-2.
[696] Public hygiene, Harvey Cushing/John Hay Whitney Medical Library at Yale University.
[697] See Michael Omi and Howard Winant, *Racial Formation in the United States*, 3rd ed. (Routledge, 2014).

Therefore, hygiene had become more than a medical and health issue – it had turned into a political and social concern.[698] The delineation of American identity based on the rhetoric of hygiene, health, and morality could be used as a political tool to justify the exclusion or restriction of certain groups. From about 1870 through to the beginning of the twentieth century, Chinatown and Chinese immigrants in California were stigmatized as disease carriers. Anti-Chinese forces used the "medical labels of exclusion" to justify restrictions on Chinese business and employment, as well as the spatial and social segregation of California's Chinese communities.[699] On the other hand, equating hygiene with American modernity introduced an additional dimension of prejudice; specifically, the antonym of modernity was not tradition, but barbarism. The American public health movement promoted sanitary plumbing as a critical determinant of maintaining a healthy and prosperous social order.[700] In the second half of the nineteenth century, separate water mains, drainage, and sewer systems began to replace conventional ways of supplying water and removing sewage and waste in California. Cesspools, privy vaults, and open gutters were then deemed as signs of barbarism. In response to the general lack of modern sanitation infrastructure in Chinatown, white supremacists failed to recognize the political and financial restrictions and regulatory constraints, but instead argued that Chinese immigrants had not been "civilized and converted."[701] Similarly, following the 1906 San Francisco earthquake, when the Chinese associations and wealthy Chinese merchants suggested rebuilding Chinatown "in a satisfactory manner" on the previous location and in strict compliance with sanitary laws, the city viewed this as "commendable public spirit."[702]

As *hygiene* moved from the private to the public realm, the regulation of the individual body became an important basis for maintaining the order and norms of American society. Armed with the power of the State, ways of constructing personal and public hygiene manifested themselves through teaching in schools and colleges, medical agencies, boards of health, and legal institutions, with the purpose of influencing, conducting, and shaping social behavior in

[698] Historian Nayan Shah shares a similar view in his study of the changing iconography of Chinese immigrants in modern American society. Shah argues that health is the starting point for examining the relationship between *self* and *society/state* in modern American history. He discusses how modern concepts such as public health, citizenship, and race have been shaped by intertwined political agendas, financial interests, and cultural power, and how these concepts have influenced each other. Health is not a neutral concept, nor is it a scientific concept; rather, it is politically framed. See Shah, *Contagious Divides: Epidemics and Race in San Francisco's Chinatown*.
[699] Markel and Stern, "The Foreignness of Germs: The Persistent Association of Immigrants and Disease in American Society," 757-788.
[700] Bayles, *House Drainage and Water Service in Cities, Villages, and Rural Neighborhoods*, 18.
[701] Wellborn, "The events leading to the Chinese exclusion acts," 49-58.
[702] "Plans for city buildings," *The Los Angeles Times*, July 10, 1906.

accordance with American norms.[703] By way of illustration, when Dr. Henry Gibbons took the chair of the California State Board of Health in 1870, he proposed various plans for diffusing public health knowledge, including the publication of monthly reports, more frequent reports on mortality and other problems at special times, lectures on public health issues throughout the state, reports to the Legislature to attract public attention, and cooperation with medical societies and people who engaged in philanthropic work.[704]

Commenting on public health reform in California during the last three decades of the nineteenth century, Nayan Shah argues that physicians, public health authorities, and social reformers initially regulated the conduct of the white middle class and then used their cult of domesticity and sanitary standards as norms for the general public. In this setting, lifestyles and cultural and hygienic practices that did not conform to these cultivated standards were considered "aberrant" according to "the public health hierarchy of the normative and the aberrant."[705] Such was the case in California's Chinatown, which was not only a built environment, but a concept encoded by white privilege. The health and sanitation in Chinatown always received special attention and rigorous surveillance from health and municipal authorities. As soon as the first case of bubonic plague was identified in San Francisco's Chinatown in 1900, health officials immediately quarantined the area, employed competent physicians to search for possible cases, and undertook door-to-door sulfur disinfection and fumigation.[706] However, disinfection and fumigation involved the use of harmful chemicals, such as Sulphur, chlorinated lime, acid solution of perchloride of mercury, and other ingredients. These disinfectants were sprayed in every corner of the room by health inspectors. In this manner, hygienic surveillance and intrusive public health responses reflected a reversal from public to private space.

As discussed in the earlier section, disease as a symbol is associated with outside group members and danger in the political and social narratives. Similarly, politicians, elites, and medical professionals also used hygiene as a vehicle for cultural metaphors, leading to a rhetoric in which hygiene was associated with the state, modernity, and prosperity. The promotion of this rhetoric cultivated the public with American social norms and public health codes. And, in turn, the public began to imagine hygiene as a symbol of the "American race."

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[703] See American Social Science Association, *Journal of Social Science*.
[704] California Department of Public Health, *First Biennial Report of the State Board of Health of California, for the Fiscal Years 1870 and 1871* (Sacramento: D. W. Gelwicks, State Printer, 1871), 20.
[705] Shah, *Contagious Divides: Epidemics and Race in San Francisco's Chinatown*, 75.
[706] "Guarding against Invasion of Plague," *Los Angeles Daily Times*, January 28, 1903.

On the other hand, the metaphors and imagery of hygiene moved from elite discourse into cultural, social, and political practices, changing from abstract symbols into tangible norms.

Chapter 4 Struggles against environmental racism

4.1 Disease, Chinese hospitals, and Chinese physicians

Throughout the nineteenth and early twentieth centuries, typhoid, cholera, leprosy, smallpox, and other diseases plagued California's major cities and towns as a result of high immigration, rapid urban expansion, and poor urban sanitation. Although health officials had slightly different ideas of how various infectious diseases were spread, their understanding was generally consistent with the miasma and filth theories. Health officials developed different preventive measures based on the perceived modes of introduction and transmission. For instance, cholera was believed to originate from putrefied secretions in the patient's digestive tract; yellow fever was linked to the decomposition of animals and plants at high temperatures; and smallpox was believed to be transmitted through contact with the patient's body or infected clothing.[707] Water-related diseases such as typhoid fever and cholera were intermittent and occurred frequently, as the sewerage problem and drinking water contamination persisted in daily life.[708] Therefore, in order to control and prevent infectious diseases, health officials typically used measures such as mandatory quarantine of patients to smallpox hospitals, lockdown of infected apartments, disinfection and fumigation of premises, vaccination, posting of notices, and (re)construction of sanitation infrastructure and facilities.

Due to the limitations of theories of disease of the time, public health officials almost always insisted on subjectivity and bias when identifying who was responsible for the introduction or spread of diseases.[709] In other words, public health officials focused solely on the outside environment while explaining the causes of infectious disease outbreaks. Their conclusions drew mostly on reported cases, sanitary facilities, neighborhood environments, and foreign immigration. Even if the original cases and routes of transmission were not tied to Chinatown and the Chinese people, even if Chinatown did not record as many cases in health inspections

[707] California Department of Public Health, *Seventh Report of the State Board of Health of California, from July 1, 1880, to December 1, 1881* (Sacramento: J. D. Young, Supt. State Printing, 1882), 45.
[708] C. A. Gordon, ed., *An Epitome of the Reports of the Medical Officers to the Chinese Imperial Maritime Customs Service, from 1871 to 1882: With Chapters on the History of Medicine in China, Materia Medica, Epidemics, Famine, Ethnology, and Chronology in Relation to Medicine and Public Health* (London: Baillière, Tindall, & Cox, 1884), 63.
[709] Craddock, "Sewers and Scapegoats: Spatial Metaphors of Smallpox in Nineteenth Century San Francisco," 957-968.

as other communities, or even if health officials were unable to pinpoint the causes of outbreaks and transmission, Chinatown still appeared as a disease incubator in various health reports, medical journals, and anecdotes due to its squalid environment. Just as local governments and health departments educated the general public about hygiene and health, this subjective and racist rhetoric equating Chinatown with disease was easily adopted by the general public.

In addition to suffering from the anti-Chinese movement, Chinatown and its residents were scapegoated for the most serious epidemic outbreaks, such as smallpox and bubonic plague. Smallpox outbreaks in American California began in Los Angeles in the late winter of 1862 and persisted for decades in many other places. In the spring of 1868, the Board of Health and the civic administrators established a smallpox hospital in Potrero to provide care for those who could not afford doctors and nurses. In July 1868, a severe smallpox epidemic broke out in San Francisco. In fear of "person-to-person transmission," public health officials quarantined diagnosed cases at this small hospital.[710] However, the hospital's mismanagement was harshly criticized by the local press, led by the *Chronicle*.[711] Over the next few decades, smallpox appeared sporadically, but only in 1876, 1881, and 1887 did it provoke social panic and have a great impact. Beginning in 1870, health authorities required infected individuals to be quarantined in their homes and put yellow placards in front of their houses as a warning.[712] The relatively mild nature of the disease made it difficult for health officials to constantly maintain quarantine of the diagnosed cases, and many people raised serious objections to the quarantine system. Local health authorities were expected to take sanitary measures to protect public health, but it was always a challenge to do so without excessively interfering with private lives and business interests.[713]

Despite the Burlingame Treaty between the United States and China and the Fourteenth Amendment ensuring overseas Chinese equal rights to U.S. citizens on U.S. soil, access for Chinese people to medical services in public hospitals remained limited. Given that U.S. Customs imposed a hospital tax on every Chinese person upon arrival, the inequity in access to public hospitalization services was legally weak.[714] For example, the City and County Hospital

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[710] Craddock, *City of Plagues: Disease, Poverty, and Deviance in San Francisco*, 104.
[711] *The San Francisco Chronicle and Its History: The Story of Its Foundation, the Struggles of Its Early Life, Its Well-earned Successes. The New Chronicle Building, the Edifice and Machinery Described, Comments of the Press* (San Francisco Cal., 1879), 13.
[712] Craddock, *City of Plagues: Disease, Poverty, and Deviance in San Francisco*, 104.
[713] California Department of Public Health, *Seventeenth Biennial Report of the State Board of Health of California, for the Fiscal Years from June 30, 1900, to June 30, 1902* (Sacramento: W.W. Shannon, Supt. State Printing, 1903), 4.
[714] Shah, *Contagious Divides: Epidemics and Race in San Francisco's Chinatown*, 70-71.

in San Francisco declined to receive Chinese patients because of the repeated announcements by the Board of Health. The majority of indigent Chinese patients went to nonprofit Chinese asylums, while only those identified as suffering from leprosy and smallpox were sent to the Twenty-Sixth Street Smallpox Hospital and other pesthouses and almshouses.[715] However, at the time, these public medical facilities for infectious diseases were highly controversial due to management issues and mortality rates.[716]

It was not until 1881 that the Mayor, pushed by the urgent request of the Chinese Vice-Consul, had the Board of Health hold a special meeting to discuss the issue of access to public medical care for Chinese residents. An agreement was reached at this meeting to admit solely Chinese patients to a separate house on the north side of the smallpox hospital. The smallpox hospital administered to Chinese patients at the same time.[717] At a time when the causes of many plagues had unknown etiology, Chinese immigrants in California were often labeled as "disease carriers" by public health professionals. The approach of segregating Chinese from other patients in public hospitals exemplified the *othering* of particular immigrant groups by city and health authorities. Similarly, "Chinese" was either listed as a separate category or moved to the "Other" column in public health reports.

Environmental racism, as well as the lack of adequate sanitary infrastructure and services in Chinatown, directly affected the well-being of immigrant communities. In 1870, for example, the San Francisco Health Officer's Report stated that the ward with the highest concentration of Chinese immigrants had the highest mortality rate in the city.[718] This result was further explained in the same health report accompanied by statements revealing racial prejudice and assimilation concerns. Given this context, Chinese district associations founded several Chinese "hospitals" in early California times in order to help general Chinese patients who needed hospitalization.[719] These medical facilities provided only limited services.[720] However, although Chinese hospitals were quite different from the American ones in California at the time, their wards were nevertheless clean. In an 1877 interview with the Board of Health, an

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[715] United States. Congress. Joint Special Committee to Investigate Chinese Immigration, *Report of the Joint Special Committee to Investigate Chinese Immigration* (Washington: Government Printing Office, 1877), 180; Harriet Quimby, "The Chinese Hospital," *San Francisco Chronicle*, August 24, 1902, ProQuest Historical Newspapers.

[716] *The San Francisco Chronicle and Its History*, 17.

[717] "The County Hospital. Chinese Patients to be Excluded," *Daily Alta California*, November 20, 1881.

[718] *SFMR 1870-71*, 293.

[719] United States. Congress. Joint Special Committee to Investigate Chinese Immigration, *Report of the Joint Special Committee to Investigate Chinese Immigration*, 225 and 447.

[720] Him Mark Lai, "東華醫院的過去現在與未來 [The Chinese Hospital's Past, Present, and Future]," *East/West*, January 16, 1974.

American who had visited a Chinese hospital on Clay Street recounted that there were no beds in the hospital, and patients were placed on mats or boards on the floor; however, the hospital kept floors clean and regularly changed clean bedding. There was another Chinese hospital on Union Street, which was one of the first to be founded in San Francisco. In the earliest days of California, the city donated a piece of land on Union Street to an influential Chinese man, who might have belonged to a Chinese district association named the Hong Wo Society. He then built a small hospital there for Chinese patients. The two-story hospital featured a spacious, well-ventilated, and clean ward with "a very white floor" for hospitalized patients.[721]

With modest interiors, these small health facilities were the earliest and most important community-based medical care providers for the Chinese population in San Francisco and even in California. To be precise, these early Chinese nonprofit "hospitals" were more like asylums or quarantine sites that provided minimal services; physicians came to treat patients in these hospitals but did not work in them permanently. In addition, the Chinese "hospitals" or district associations usually had separate rooms for "chambers of tranquility," where the coffins of deceased Chinese could be temporarily stored pending the return of their remains to China by international shipping.[722] Since the majority of public hospitals in California declined to receive Chinese patients and the Chinese population had grown rapidly compared to years ago, the Chinese Six Companies (the forerunner of the Chinese Consolidated Benevolent Association), inspired by the French and German hospitals in the city, wished to establish a general hospital and a smallpox hospital in San Francisco for their countrymen as well.[723] In 1877, the directors of the Chinese Six Companies asked the chairman of the Joint Committee of the two houses of Congress if they could buy or rent land to build their hospital. The leaders of the companies promised to cover all construction and medical costs. Additionally, the Chinese hospital planned to employ American doctors from the Board of Health as well as Chinese doctors to treat patients.[724]

However, the Chinese community's proposal to have its own general hospital and smallpox hospital was declined by the Board of Health and the city authorities. Over the next decades,

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[721] United States. Congress. Joint Special Committee to Investigate Chinese Immigration, *Report of the Joint Special Committee to Investigate Chinese Immigration*, 646-647.

[722] Guenter B. Risse, "Translating Western Modernity: The First Chinese Hospital in America," *Bulletin of the History of Medicine* 85, no. 3 (2011): 413-447.

[723] United States. Congress. Joint Special Committee to Investigate Chinese Immigration, *Report of the Joint Special Committee to Investigate Chinese Immigration*, 647; Lai, "東華醫院的過去現在與未來 [The Chinese Hospital's Past, Present, and Future]."

[724] United States. Congress. Joint Special Committee to Investigate Chinese Immigration, *Report of the Joint Special Committee to Investigate Chinese Immigration*, 647.

the Chinese Six Companies and the Consul General made two additional attempts to establish a Chinese hospital at their own expense, both of which were thwarted by the authorities and ended in failure.[725] It was not until 1900 that the Tung Wah Dispensary was officially opened at 828 Sacramento Street. The dispensary was also referred to as the "Chinese Hospital" or "Oriental Dispensary" in English reporting.[726] As the first Chinese-operated general health care facility in the United States, it was founded by the Chinese Consul General Ho Yow and the Chinese Six Companies to "afford succor to Chinese throughout California", who were usually discriminated against and had restricted access to public and charitable medical services.[727] In addition to subscriptions from Chinese commercial organizations, the Chinese hospital also received donations from American merchants and Chinese immigrants in the name of philanthropy.[728] There were both Western and Chinese doctors on the staff of Tung Wah Dispensary, and patients could select between Western medicine and Chinese herbal medicine treatments based on their preferences.[729] Without a doubt, this was a strong indication that the Western approach regarding the treatment of the sick had been embraced by a considerable number of Chinese residents in California at the turn of the century. By establishing a medical care facility that incorporated Western and Chinese medicines, Chinese community leaders and immigrants fought against long-standing disparities in healthcare and racism. Likewise, the opening of this hospital demonstrated the Chinese community's efforts to assimilate itself into American society by actively adopting new Western medical science while maintaining its own intellectual heritage.

In the spirit of charity, Tung Wah Dispensary provided free surgical and medical treatment and food to indigent patients. At the same time, due to limited funds, it hoped that patients who had the financial means would pay some of the fees voluntarily.[730] Although this charitable Chinese hospital had insufficient medical and financial capacity to help every Chinese person in California, it still offered a ray of hope to sick and needy Chinese people who had been turned away from public medical facilities. As the dispensary recounted in 1902, it had provided medical care to more than 8000 Chinese patients since the founding of the hospital,[731] and from

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[725] Lai, "東華醫院的過去現在與未來 [The Chinese Hospital's Past, Present, and Future]."
[726] "Hospital for sick Chinese," *San Francisco Call*, May 16, 1900.
[727] Ibid.; Lai, "東華醫院的過去現在與未來 [The Chinese Hospital's Past, Present, and Future]."
[728] "Hospital for sick Chinese," May 16, 1900.
[729] Quimby, "The Chinese Hospital," August 24, 1902.
[730] "Organization of an Oriental Hospital Association: The Chinese Are Beginning to Adopt Occidental Methods Regarding the Treatment of the Sick," *San Francisco Chronicle*, February 19, 1899, ProQuest Historical Newspapers.
[731] Quimby, "The Chinese Hospital," August 24, 1902.

1902 to 1906, the number of patients treated soared to about 7,500 per year.[732] Moreover, the Tung Wah Dispensary paved the way for its transformation into a full modern hospital in 1925, which was named Tung Wah Hospital and housed Western-trained American and Chinese doctors.[733]

Racial disparities in public medical care also enabled Chinese people to flexibly use alternative medical options. In addition to the above-mentioned Chinese asylums and the 1900-established Tung Wah Dispensary, Chinese physicians have provided medical care to Chinese immigrants from the start of the Gold Rush. Since ancient Chinese customs were based on ancestor worship, postmortems and physical examinations in Western medicine were still met with strong resistance from many Chinese people in California.[734] Moreover, many Chinese patients did not speak English well enough to communicate accurately with American doctors about their conditions. Also, most American public and private hospitals were located far from Chinatown, making Chinese people vulnerable to assault on the way to medical care.[735] Therefore, most Chinese patients preferred the familiar and gentle treatment therapies used by most Chinese physicians, but many also called in American doctors for surgical operations. In addition to surgery, American doctors also treated some wealthy Chinese patients for ordinary ailments.[736] This may be because American doctors were more expensive than Chinese physicians, making them unaffordable for Chinese patients from lower socioeconomic classes.

However, Chinese physicians and practitioners of traditional Chinese medicine (hereafter TCM) met legal obstacles and racial harassment in their struggles to protect the health of their community members and their traditional cultural practices. Health authorities were deeply skeptical of TCM, Chinese physicians, and Chinese hospitals. On April 3, 1876, the California legislature approved an act regulating the practice of medicine through licensing in California. The Board of Examiners was responsible for approving the issuance of licenses after checking appropriate diplomas or other proof.[737] Unlike modern Western medicine, where medical knowledge was imparted through college education, TCM of the time was learned and

[732] "Applies for Permit for Oriental Hospital," *San Francisco Chronicle*, October 18, 1908.
[733] Lai, "東華醫院的過去現在與未來 [The Chinese Hospital's Past, Present, and Future]."
[734] "Rich field for doctors," *Los Angeles Sunday Times*, August 13, 1916; Ancestor worship is characterized by filial piety and reverence for parents and ancestors. The ancient Chinese Confucian classics emphasize that every part of the human body is a gift from the parents, and as such, the body should not be intentionally wounded.
[735] Lai, "東華醫院的過去現在與未來 [The Chinese Hospital's Past, Present, and Future]."
[736] United States. Congress. Joint Special Committee to Investigate Chinese Immigration, *Report of the Joint Special Committee to Investigate Chinese Immigration*, 226.
[737] Library of the Surgeon-General's Office (U.S.), *Index-Catalogue of the Library of the Surgeon-General's Office, United States Army. Authors and Subjects. Second Series. Vol. X* (Washington: Government Printing Office, 1905), 345, http://resource.nlm.nih.gov/8104689X26.

professionally acquired through apprenticeship with some famous physicians. Without an academic title, TCM was therefore frequently denigrated as pseudoscience by the American public health authorities, the Western Medical Association, and the Immigration and Naturalization Service.[738] Some Chinese physicians were arrested or fined for allegedly practicing medicine illegally; consequently, many opened herbal stores or firms with merchant status, selling herbs to consumers while also providing medical care.[739]

Despite the fact that some American press stigmatized Chinese practitioners as quacks and claimed that they treated patients with "absurd decoctions," there was still quite a demand for Chinese physicians from both Chinese and non-Chinese patients in California.[740] Therefore, a number of prominent Chinese physicians opened sanatoriums outside of Chinatown because of the expanding business among non-Chinese patients. Still, some well-known Chinese physicians were legally licensed to practice medicine and frequently advertised in English and Spanish in local newspapers at the time.[741] In their advertisements, some physicians highlighted that they used "no operation and no knife" but rather herbs for painless treatment, along with feedback from satisfied Americans (Figure 6).[742] However, it is often misunderstood that TCM did not deal with surgery. An advertisement by another Chinese physician stated that he had been a Chief Physician and Surgeon in the Chinese Imperial service for five years and had practiced Chinese medicine in China and America for twenty years.[743]

[738] Haiming Liu, *The Transnational History of a Chinese Family: Immigrant Letters, Family Business, and Reverse Migration* (New Brunswick, NJ: Rutgers University Press, 2005), 68.
[739] Ibid., 66-68.
[740] Snowden, *Epidemics and Society: From the Black Death to the Present*, note 8, 336.
[741] Greenwood, *Down by the Station*, 110; For another good example, Dr. Wong, a Chinese physician, opened a sanitarium outside of Chinatown in Los Angeles and advertised in the *Los Angeles Herald* multiple times in English. *Los Angeles herald*, April 2, 1891.
[742] "Herbal medicine, herbalists, California," Ctn 31:28, Ethnic Studies Library, University of California, Berkeley.
[743] Ibid.

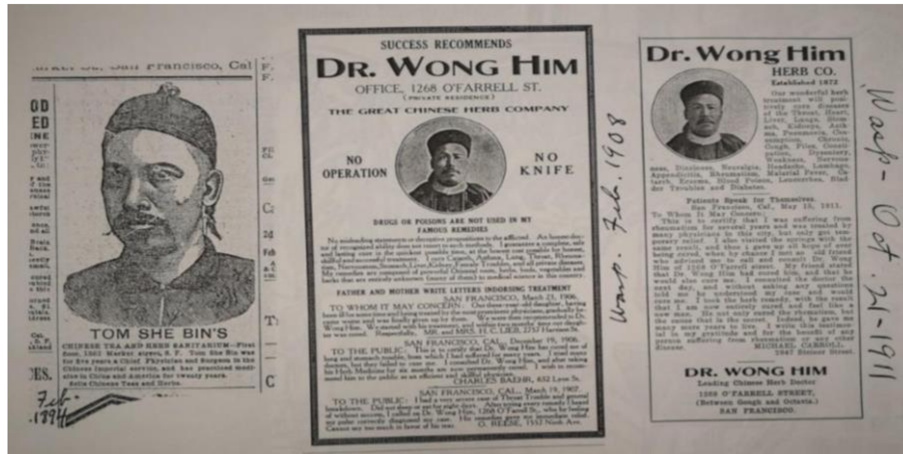

Figure 6: Advertisement for Chinese physicians in local newspapers. The Wasp, October 21, 1911. Courtesy of the Ethnic Studies Library, University of California, Berkeley.[744]

Since the gold rush, TCM has been practiced throughout the land of California. Chinese physicians from the middle and upper classes were among the earliest Chinese immigrants to arrive in California. They made use of herbs, roots, plants, and certain animal tissues to treat illness. In this way, Chinese pharmacies also became necessary medical facilities for overseas Chinese communities in their struggles against racism, inequality, and exclusion. At the same time, TCM reinforced the overseas network of Chinese communities in the U.S. Almost all Chinese settlements, including mining and agricultural regions, villages, towns, and cities, had Chinese herbal medicine stores. In January 1854, an account of a Chinese apothecary in Sacramento provides the earliest record of TCM in California. For the Chinese miners living in the most remote mining areas or the railroad workers living in the regularly changing camps, Chinese medicine could be brought by the traders or sutlers who followed the camps.[745]

The xenophobia and environmental racism of the late nineteenth and early twentieth centuries led to the establishment of Chinese community-based medical care facilities and services in California. At the same time, medical facilities and services provided by district associations and private herbalists helped to maintain diasporic networks between individual Chinese immigrants, overseas Chinese communities, and their country of origin. The early Chinese district associations, which formally consolidated into the Chinese Six Companies in 1882, funded and administered the charitable Chinese asylums and later the Tung Wah Dispensary. During the whole Chinese immigration process, these community-based hospitals assumed

[744] "Herbal medicine, herbalists, California," Ctn 31:28, Ethnic Studies Library, University of California, Berkeley.
[745] Ibid.

both limited medical and post-mortem burial responsibilities. In addition, they served as courier stations so that the Chinese on both sides of the Pacific Ocean could keep each other informed and in touch.[746]

For a long time, the Chinese community in California was viewed as an aberration that was unwilling to assimilate into the host society. Yet, the support of the Chinese merchant and elite classes facilitated the introduction and promotion of Western medicine in the Chinese communities. Their acceptance and adoption of sanitary regulations and Western medical treatment prescribed by the U.S. authorities represented a key step in the proactive assimilation of the Chinese community into the local society and culture. However, for many Chinese immigrants and laborers from the lower and working classes of the time, Western medicine was alien, disrespectful, aggressive, and unreliable. This understanding derived mostly from the experiences of this group of people in the United States, which were significantly different from those of the Chinese affluent classes. They had long been exposed to racial discrimination, racial attacks, and poor treatment in all aspects in white society, as well as class-based inequality and oppression within the Chinese community. Their resistance to Western medicine was also amplified by the aggressive interventions of health and city authorities in Chinese quarters during numerous epidemics. Health officials, who were usually known as "wolf doctors," quarantined, vaccinated, and violently inspected Chinatown together with the help of the police force. In many circumstances, they made unfounded arrests of people who were claimed to have violated health regulations or were diagnosed with an infectious disease. The latter were then forcibly quarantined in smallpox hospitals or pesthouses, places deemed by many people at the time as horrible places.[747] Likewise, during regular raids on illegal gambling venues in Chinatown, police officials also conducted secret searches for sick people.[748]

Many Chinese people did not believe in the Western vaccinations promoted by the California State Board of Health, despite the fact that health officials considered vaccination to be the only effective method for eradicating infectious diseases.[749] There were strong anti-vaccine sentiments among Americans as well.[750] In 1877, the year following the second outbreak of smallpox in San Francisco, the city's health officer, Dr. Meares, stated that the majority of

[746] Elizabeth Sinn, *Power and Charity: A Chinese Merchant Elite in Colonial Hong Kong (with a New Preface)* (Hong Kong University Press, 2003), xvi.
[747] *The San Francisco Chronicle and Its History*, 13.
[748] Risse, *Plague, Fear, and Politics in San Francisco's Chinatown*, 187.
[749] United States. Congress. Joint Special Committee to Investigate Chinese Immigration, *Report of the Joint Special Committee to Investigate Chinese Immigration*, 21; California Department of Public Health, *Seventh Report of the State Board of Health of California, from July 1, 1880, to December 1, 1881*, 45.
[750] Risse, *Plague, Fear, and Politics in San Francisco's Chinatown*, 123.

Chinese were confident in their capacity to control smallpox.[751] In fact, the earliest smallpox variolation dates back to the 10th century in China. Physicians injected pulverized smallpox scabs into the nasal passages of uninfected adults and children, resulting in a moderate infection with a subordinate type and long-lasting immunity.[752] In nineteenth century China, smallpox inoculation was compulsory.[753] People went to a designated village where the government sent enough physicians to inoculate people.[754] By comparison, the American vaccine was derived from the European cowpox virus. It is unknown whether Chinese physicians practiced their traditional method of smallpox inoculation within their communities in California. However, according to the American representative of the Chinese Six Companies, Chinese immigrants had been inoculated against smallpox in China (many as infants and children) prior to their arrival in the United States, and in the past few years, a greater number of Chinese in California had also been re-vaccinated in accordance with American standards.[755]

Similarly, immediately after people learned of the mass vaccination campaign against plague at the turn of the century in California, there was a sharp division of attitudes within the Chinese community. Urged by the Surgeon General of the Marine Hospital Service, the Chinese Foreign Minister Wu Tingfang and Consul General Ho Yow, along with the leaders of the Chinese Six Companies in San Francisco, attempted to collaborate with the federal agency of Public Health Service to persuade Chinese in California to comply with mass vaccination.[756] However, the vast majority of Chinese were deeply suspicious of the intentions of the city and health officials and showed strong resistance to vaccination because they had very traumatic memories of past smallpox outbreaks. Persistent concerns about the health of Chinese immigrants and the potential threat of spreading disease made Chinatown and the Chinese prime suspects for any disease. In combating the smallpox epidemics, all Chinese immigrants were subjected to physical examinations by doctors at quarantine sites upon arrival in California and had their personal belongings fumigated and inspected.[757] Health authorities also constantly supervised the San Francisco Chinatown during epidemic outbreaks and conducted intrusive house

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[751] United States. Congress. Joint Special Committee to Investigate Chinese Immigration, *Report of the Joint Special Committee to Investigate Chinese Immigration*, 21.
[752] Yumin He 何裕民, ed., *Zhongyixue fangfalun jianzuo zhongxi yixue bijiao yanjiu* 中医学方法论兼作中西医学比较研究 [Methodology of Chinese Medicine and Comparative Study of Chinese and Western Medicine] (Beijing: Zhongguo xiehe yike daxue chubanshe, 2005), 43.
[753] United States. Congress. Joint Special Committee to Investigate Chinese Immigration, *Report of the Joint Special Committee to Investigate Chinese Immigration*, 134.
[754] Ibid., 21.
[755] Ibid., 134.
[756] Risse, *Plague, Fear, and Politics in San Francisco's Chinatown*, 117.
[757] Ibid., 42.

inspections. Moreover, Dr. Meares' door-to-door vaccination program during the smallpox outbreak in 1880 was first implemented in San Francisco's Chinatown before the program was conducted in low-income white neighborhoods.[758]

Many Americans, even medical professionals, also had doubts about the safety of smallpox and bubonic plague vaccines and the trustworthiness of authorities. It is worth noting that unlike the smallpox vaccine, the plague vaccine was only first developed in 1897, so it was still in the early stages of medical experimentation when the health authorities requested house-to-house inspection and Haffkine vaccination for Chinese people in affected areas.[759] Some white doctors went to Chinatown and warned Chinese residents that the Haffkine prophylaxis was highly toxic and potentially fatal and that they would be the victims of this dangerous experimental vaccine.[760] A Chinese circular was then posted on the walls of Chinatown declaring that the vaccination program was a plot to poison all Asians, citing two cases of Chinese persons who died immediately after being vaccinated, thereby spreading fear of the inoculation.[761] This message further increased Chinese residents' distrust of the authorities and their community leaders who worked with the American "wolf doctors."

On May 18, Chinese residents of San Francisco's Chinatown gathered in front of the offices of the Chinese Six Companies to ask for an explanation from the community leaders regarding their cooperation with the public health authorities on forcible "toxic" vaccinations for Chinese.[762] They pressured Chinese community leaders and governmental officers to negotiate with the public health authorities again. Over the next few days, almost all the Chinese in Chinatown refused the door-to-door vaccinations conducted by municipal health officials and doctors. As a result, the inoculators made attempts to catch and vaccinate Chinese or Japanese in the street. In the days that followed, nearly all Chinese residents and merchants in San Francisco Chinatown declined the door-to-door vaccination conducted by municipal health officials and physicians.[763] The *China West Daily* (also known as *Chung Sai Yat Po*) also disseminated the warning of the dangers of vaccines by naming some Chinese individuals

[758] Ibid., 46.
[759] United States Public Health and Marine Hospital Service, *Annual Report of the Supervising Surgeon-General of the Marine-Hospital Service of the United States for the Fiscal Year 1900* (Washington: Government Printing Office, 1900), 538.
[760] "Letter of Kinyoun to Wyman," quoted in McClain, "Of Medicine, Race, and American Law: The Bubonic Plague Outbreak of 1900," note 98, 559.
[761] "Health Board gives up," *New-York tribune*, May 22, 1900.
[762] *Chung Sai Yat Po*, May 18, 1900.
[763] Nine-tenths of the people caught in the street were Japanese. "Health Board gives up," May 22, 1900.

whose health was greatly jeopardized by vaccination.[764] Moreover, federal authorities and the local board of health introduced a new way to restrict the freedom of Chinese residents in San Francisco:

> At the railway stations they compel all outgoing Chinamen to halt and bare their arms. Then a search is instituted for a Haffkine prophylactic mark. Those federal surgeons are high-grade doctors, and cannot be fooled by either a sign of cow-pox vaccination or a strawberry mark. If nothing in the line of bubonic prevention is found the luckless Chinaman must choose between the horrors of inoculation and enforced residence in San Francisco.[765]

On May 19, Chinese community leaders retained a top law firm to contest the Department of Health's right to compel people to be vaccinated in the Northern District of California's Circuit Court.[766] In the case filed in court by the Chinese Six Companies, *Wong Wai* v. *Williamson*, the team of attorneys filed a lawsuit on behalf of businessman Wong Wai, asking the court to overturn an order passed by the local Board of Health on May 18 prohibiting Chinese from leaving San Francisco without receiving the Haffkine prophylactic vaccination. Wong contended that the order violated the Fourteenth Amendment and the laws of the state of California. It was an "arbitrary, unreasonable, unwarranted, wrongful and oppressive" infringement on Chinese freedom.[767] In addition, Wong argued that the inoculation order deprived Chinese and other Mongolians of equal rights and protection under existing treaties between the United States and the governments involved. The judge agreed with his complaint, noting that the inoculation order discriminated against the freedom of Chinese people and exceeded the legitimate power of the Board of Health and the police. Moreover, the judge stated that the Federal Quarantine Officer, Kinyoun, was not acting under the authority of U.S. laws, and not even the President or Surgeon General Wyman had the power to add to Kinyoun's authority.[768] As a result, the Federal Circuit granted a final injunction prohibiting government officials from imposing a quarantine on Chinatown and an order requiring Chinese individuals to be fully vaccinated before leaving San Francisco for other places.[769] The San Francisco

[764] "Zhao and Shen's Case Is a Warning to Us," *Chung Sai Yat Po*, May 23, 1900.
[765] *Los Angeles Herald*, May 26, 1900.
[766] "Chinatown is in terror: plague measures in San Francisco meet resistance," *Chicago Daily Tribune*, May 20, 1900, 1, Proquest Historical Newspapers.
[767] "An oriental kick: case against board of health heard, Mongolians complain of the discrimination," *Los Angeles Times (1886-1922),* May 26, 1900, 1, Proquest Historical Newspapers.
[768] Ibid.
[769] *Wong Wai v. Williamson*, 103 F. 1 (9th Cir. 1900).

Board of Health and the Federal Quarantine Officer Dr. Kinyoun withdrew the compulsory mass vaccination in Chinatown following pressure from the Chinese community leaders, the consul general, and the United States Circuit Court.

4.2 Chinese associations and collective identity

In California, large-scale anti-Chinese sentiment began around the 1870s, reached its peak in the 1880s, and persisted into the early twentieth century. Chinatown was formed as a result of both xenophobia and the voluntary establishment of a Chinese community in response to racism. The ethnic enclave provided early immigrants with a shared identity, culture, and values, as well as a platform to seek equal access to public resources through collective power and organizations. In the second half of the nineteenth century, there were many Chinese mutual aid organizations in California, including trade and workers' guilds, Chinese Christian groups, secret societies, and particularly district associations with a higher status within the Chinese immigrant community. Among them, the Chinese Six Companies (formally known as the Chinese Consolidated Benevolent Association, henceforth referred to as CCBA) evolved from the earlier district associations and was the general governing body of the Chinese community in California. As a semi-official organization, the CCBA also maintained close ties with Chinese officials and agencies assigned to the United States by the Qing government at the time. The numerous entities had a predominantly vertical structure.

With the arrival of the first Chinese gold seekers and merchants in California in 1849, early district associations were soon formed. These district associations, usually referred to as "gongsi" in Chinese by immigrant groups, consisted of members from the same region or clan in China. Individuals from the merchant class served as heads of the various district associations, and they had great influence and social control over their members.[770] In addition to providing basic medical care for sick and underprivileged countrymen, these district associations arranged housing and work for new immigrants upon their arrival, according to their preferences.[771] As Greenwood argues, the practice of the merchant class integrating the impoverished and

[770] "Gongsi" literally means "companies" in English. Him Mark Lai, "Historical Development of the Chinese Consolidated Benevolent Association/Huiguan System," *Chinese America: History and Perspectives* (1987): 13-51, The Him Mark Lai digital archive, accessed September 25, 2022, https://himmarklai.org/keywords/chinese-consolidated-benevolent-association/.
[771] Von Hübner, *A Ramble Round the World, 1871*, 156-157.

newcomers into American society actually transcended social and class boundaries.[772] When the property or rights of Chinese people were imperiled in their work and life in California, they would usually turn to their respective associations for help.[773] From the outset of the gold rush, district associations were established in large cities and towns where a certain number of Chinese people lived. Since San Francisco was the most important port city for Chinese immigrants arriving in the United States and the largest Chinese settlement in the nation from the nineteenth to the early twentieth century, the then headquarter of the Chinese district affiliations, CCBA, was founded there in 1882. CCBA was a highly structured umbrella organization, responsible for protecting Chinese immigrants and mediating the problems encountered by the Chinese labor and merchant classes in the United States.[774] In addition, as with the early district associations, CCBA had certain judicial power to arbitrate internal disputes and conflicts between fellow citizens.[775] In the latter three decades of the nineteenth century, discriminatory state and local ordinances exacerbated prejudice toward the Chinese. Therefore, CCBA became the most important voice in California representing the Chinese population.

Most importantly, district associations led by the CCBA provided legal support to Chinese workers and merchants in California. In many instances, this governing body retained a team of prominent American attorneys to file lawsuits in courts on behalf of the Chinese community against discriminatory ordinances and other interracial conflicts. For instance, in the *Wong Wai v. Williamson* case, the San Francisco Department of Health and the federal quarantine officer finally lifted the quarantine of San Francisco's Chinatown and rescinded the mandatory mass vaccination campaign. This case is just one aspect of the Chinese community's fight against the discriminatory quarantine and vaccination orders in court. Then again, when Chinatown was quarantined in late May 1900, the residents were left without supplies of food and other necessities. The CCBA and the Chinese Consul General negotiated with the city authorities to provide basic supplies to the residents of Chinatown and to temporarily accommodate the evacuees whose homes were being sanitized. Otherwise, they threatened to resort to legal action.[776] Meanwhile, influential Chinese members of the San Francisco Board of Trade

[772] Greenwood, *Down by the Station*, 21.
[773] *The Los Angeles Times*, May 3, 1912.
[774] Lai, "Historical Development of the Chinese Consolidated Benevolent Association/Huiguan System," 13-51.
[775] Von Hübner, *A Ramble Round the World, 1871*, 156-157.
[776] McClain, "Of Medicine, Race, and American Law: The Bubonic Plague Outbreak of 1900," 447-513.

successfully lobbied other American merchants to raise funds to provide transitional housing for Chinese in need, as federal funding was insufficient.[777]

In many of the lawsuits against the laundry ordinances, CCBA also assisted Chinese enterprises in hiring attorneys and finding testimonies from doctors to challenge the claims made by the City Council or the Board of Health regarding the alleged health threat caused by Chinese laundries.[778] During the nineteenth century and early twentieth century, the Chinese laundry business was both "an economic foundation of the Chinese-American community and the source of a lingering stereotype."[779] Unlike other Chinese businesses that were located in or near Chinatown, Chinese laundries opened throughout the cities. Through publicity and news coverage, Chinese laundries were seen as both health and fire hazards. Therefore, there were numerous court cases involving Chinese laundries.

Moreover, Chinese merchant guilds also played an important role in fighting for the legal right to conduct business. For instance, Chinese laundry guilds were based on the models of trade guilds in China and operated in many California cities and towns.[780] In 1886, The Chinese laundry association in Oakland raised 1,000 dollars to pay legal representation to fight the Hackett laundry ordinance.[781] Likewise, the San Francisco laundry guild, Tong Hing Tong, was also responsible for defending Chinese laundries in court against unconstitutional ordinances.[782] It had a special fund to pay for its members' appeals in court. The most famous case organized by the association would be *Yick Wo* v. *Hopkins*, which was a landmark in the Chinese collective fight against discriminatory laws and harsh rules against Chinese people.

The Chinese community was similarly negatively affected by environmental racism. Such environmental racism was manifested in many ways, such as the location of settlements, post-disaster relocation, the neighborhood environment, public services and public health facilities, sanitation infrastructure, and the location of facilities that generated pollution. While there are few records of Chinese people fighting environmental racism in nineteenth century California, the 1875 Chinese protest against Senator Jones' plan to locate a depot near Los Angeles' Chinatown is probably the earliest relevant record.[783] Based on the social structure of the

[777] Saxton, *The Indispensable Enemy: Labor and Anti-Chinese Movement in California*, 243.
[778] See, for example, "Heavy attack on ordinance," *The Los Angeles Times*, April 10, 1912.
[779] Bill Sing, "Is the Chinese Laundry Going Down Drain?" *San Jose Mercury News*, September 2, 1984, SCPL Local History, accessed September 26, 2022, https://history.santacruzpl.org/omeka/items/show/93.
[780] Ong, "An Ethnic Trade: The Chinese Laundries in Early California," 103.
[781] Praetzellis and Praetzellis, *Putting the "There" There*, 246.
[782] Charles J. McClain, *In Search of Equality: The Chinese Struggle against Discrimination in Nineteenth-Century America* (Berkeley: University of California Press, 1994), 112.
[783] "Local Brevities," *Los Angeles Herald*, August 24, 1875.

Chinese community at the time, it is possible that local Chinese district associations took the initiative to organize such a protest, although there is no record of this in the archives. Overall, the protest protected the rights and defended the interests of Chinese residents in the face of environmental injustice and racism that had long been imposed on them.

Chinese language journalism has become an integral part of the communication network and internal social network of overseas Chinese, keeping them updated on the most recent American and international news while establishing a cohesive community. During the heyday of the California Gold Rush in 1853, San Francisco already had 23 newspapers, including one German-language and three French-language publications.[784] Greatly influenced by the western press, the first Chinese language newspaper in California was the *Golden Hills News*, published on April 22, 1854, by the Presbyterian activist William Howard. The newspaper articles were handwritten with Chinese brush pens and then lithographed.[785] The newspaper was published weekly and was intended to serve businessmen by conveying information and government affairs and preventing Chinese businessmen from being manipulated by corrupted forces.[786] In the following decades, a dozen Chinese newspapers were established in California and in some eastern cities. However, like the *Golden Hills News*, those newspapers discontinued publication shortly after their founding. The *Chung Sai Yat Po* marked a new phase in Chinese journalism in the United States. It was established in 1900 and ceased publication in 1951, making it one of the most influential Chinese newspapers among Chinese communities in California.

Although few of the Chinese newspapers of the second half of the nineteenth century survived for very long and their primary audience consisted of Chinese and some American businessmen interested in commercial messages, these newspapers kept Chinese people informed of the most recent government affairs and anti-Chinese ordinances, allowing the Chinese community in California to respond more effectively. The district councils in California had great social power and influence over the Chinese lower and working classes, and they were able to relay important information from the newspapers from the top down. In addition, the Chinese

[784] *Golden Hills' News*, July 29, 1854. Reprinted in Him Mark Lai, "十九世紀美國華文報業小史 [Short history of Chinese journalism in America during the 19th century]," *Hua qiao li shi xue hui tong xin* 華僑歷史學會通訊, vol. 2 (June 1983): 26-33, The Him Mark Lai digital archive, accessed September 20, 2022, http://himmarklai.org/wordpress/wp-content/uploads/Hua-qiao-li-shi1.pdf.

[785] Him Mark Lai, "The Chinese-American Press," in *The Ethnic Press in the United States: A Historical Analysis and Handbook*, ed. Sally M. Miller (New York: Greenwood Press, 1987), 27–43.

[786] Lai, "十九世紀美國華文報業小史 [Short history of Chinese journalism in America during the 19th century]," 27-28.

community of the time had a faster means to deliver important news of immediate relevance to the Chinese immigrants. In 1886, an observer told a local American newspaper that a store near Washington 8th Street in San Francisco had an employee who translated anti-Chinese news from the morning publications and wrote a brief account of the news in Chinese. The summary was then forwarded to the nearest Chinese store quickly. The store owner then made a duplicate and posted it on the window. The brief news was subsequently distributed in the same manner to all Chinese stores.[787]

In the early years of the twentieth century, with the changing international and Chinese political circumstances and the influence of Chinese reformist voices for national salvation, overseas Chinese associations as well as the Chinese press partly became political tools for domestic political groups and activists. During this time, China's politics, reform, and nationalist ideals dominated the content of many Chinese newspapers published in the U.S.[788] Likewise, the editors of *Chung Sai Yat Po* held a pro-reform political stance. At the same time, this newspaper remained focused on covering domestic news, regulations, ordinances, business, and issues related to Chinese immigrants and neighborhoods in the U.S.

Chinese newspapers circulating in the United States from 1854 marked the growing collective consciousness and cultural identity of the Chinese community that went beyond national and class boundaries. They contributed to connecting Chinese networks more broadly at home and abroad. In addition, the newspapers' readership spanned all socioeconomic strata within the Chinese American community. More importantly, the Chinese newspaper reports reflected different political views and Chinese responses to American policies and ordinances within the Chinese community in California. For example, the mass vaccination of San Francisco Chinatown in 1900 showed political divisions among Chinese elites and other classes.

[787] *Morning Call*, March 17, 1886, 3, col. 5, quoted in McClain, *In Search of Equality: The Chinese Struggle against Discrimination in Nineteenth-Century America*, 331.
[788] Lai, "The Chinese-American Press," 27-43.

Conclusion

This research explores the role of Chinese immigrant groups in California's early development, and their suffering from environmental racism in urban settings throughout the late nineteenth to early twentieth centuries. From a new perspective of environmental history, I answer the leading research question of how environmental inequality and racism fostered the anti-Chinese movement. Following this question, I explore environmental racism initiatives through the lens of water, waste, and disease. These three factors were interrelated since contemporary disease theories believed that waste and filthy/stagnant water could generate and spread diseases. Therefore, water, waste, and disease were used both symbolically and politically in constructing prejudiced discourse of "filthy Chinatown", and thus associated racial attitudes with environmental thought. In particular, the physical projects for transporting water and treating waste, such as (waste) water systems and other sanitation facilities, materialized the environmental racism towards the Chinese community during the historical context of this study.

At the outset of this research, I made a comparative study of water cultures in China and in California in the nineteenth century to find out similarities. Although the way water resources were controlled and developed differs among cultures and political circumstances, the water cultures of the period demonstrated an anthropocentric idea. From this perspective, water culture is essential to meet different political, cultural, and social needs, whether positive or negative. After California was incorporated into the United States, Euro-American capitalists recruited Chinese laborers to work on California's development and took advantage of the cheap Chinese labor and their experience in handling water and constructing water projects. At the same time, the success of Chinese gold miners made it possible for many of them to settle in the United States. During this period, there was also a transfer of knowledge and a cultural adaption of Chinese and American water devices, despite the damaging effects this knowledge and technology had on the region's natural and riverine environment.

The economic depressions, unemployment, and epidemics of the 1870s generated an anti-Chinese campaign in California, driven by the white working class. During the same period of public health reform, the (re)construction of the urban built environment, especially the sanitary infrastructures, by urban and health authorities in an effort to beautify the city and improve the built environment exemplified patterns of environmental injustice and racism. This

environmental injustice and racism deepened the disparity between Chinatown and other white communities in terms of sanitary conditions and neighborhood environment, while also contributing to the prejudiced imagery of a "filthy Chinatown." Clearly, the environmental and sanitary issues of Chinese neighborhoods in nineteenth-century California constituted a more complex "chicken and egg" problem. The vast majority of early Chinese quarters in this study were built in areas that whites deemed uninhabitable, and several settlements underwent multiple relocations. This fact supports the "minority move-in hypothesis." On the other hand, the (re)construction projects frequently neglected the needs of Chinese communities, revealing the very existence of environmental racism.

This study extends the framework of environmental racism into the nineteenth century. The discussion of equal rights is based on the treaties between the United States and China (Qing Empire) in the second part of the nineteenth century. Under the protection of the Fourteenth Amendment, many ordinances made by the city, the state and the health authorities against Chinatown and Chinese businesses were unconstitutional. Although the concept of environmental racism did not emerge until 1982 during the Warren County protest movement against the illegal dumping of hazardous waste in the United States, racism in California in the nineteenth century already had an environmental dimension regarding vulnerability to risks, urban planning, and governmental decision-making issues. Post-1980s environmental racism centered on policies, practices, and ordinances that negatively impacted individuals, groups, or communities based on race or color. In this study, environmental racism in the nineteenth century also encompasses the distribution of environmental wellness benefits. Examples include early settlement sites, the (re)construction of sanitary facilities, street paving, water supply, waste disposal, the enforcement of sanitary regulations, and the access to public services. In this study, I investigate that racial prejudice towards Chinese community was both the cause and result of the unequal distribution of environmental risks and environmental benefits. Furthermore, the biased medical thinking turned Chinatown from a victim of environmental racism to the culprit for dilapidated environment and disease.

While the modernization of town (waste) water systems, streets, and other built environment promoted urban development and improved public health to a certain extent, it exacerbated the disparities in a class and race-divided society during its early phases. In addition, towns and cities became more reliant on sanitary infrastructure managed by the state and the capital, making them more susceptible to environmental and health risks than in the past. From available historical sources, it is clear that urban sewage and drainage systems transcended

geographical, cultural, and identity borders. In particular, these wastewater systems showed a hygienic sense of connectivity that linked neighborhoods in the city inhabited by different classes and races into the same sanitary network, thereby contributing to the fear of infectious disease transmission through this sanitary network in late nineteenth- and early twentieth-century American society. In this context, Chinatown was repeatedly scapegoated as a breeding ground for epidemics because of its unsanitary neighborhood environment. However, this unfavorable environment was a direct result of environmental racism. By comparison, water for domestic use and commerce was supplied by independent pipes or through traditional ways of getting water, such as water carts and wells. This reduced the probability that Chinatown would be held accountable for unfavorable events connected with disease and pollution concerns.

The unequal distribution of modern sanitation services as a result of environmental racism suggests that city and health officials did not take the health needs of particular communities seriously. In this process, race was often an important factor in determining whether a community's health needs were prioritized. This differentiation logic has resulted in increasing disparities between the built environments of Chinatowns and other districts in health reform in California urban settings. In other words, California's public health reform in the late nineteenth century showed biased assumptions regarding the health needs of various communities, which were then naturalized into the built environment in urban renewal initiatives.

While the health needs of Chinatown received little attention from authorities, its poor community environment has attracted continuing attention and condemnation from health officials. Health authorities primarily used miasma and filth theories to figure out how infectious diseases spread and to devise control measures. When they were unable to determine where the disease originated, they would identify Chinatown's unsanitary environment and often deficient sewage systems as the source of infectious disease, as various health officer reports and newspaper articles have suggested. At the same time, anti-Chinese organizations, particularly the white working class, justified the exclusion of Chinese immigrants with prejudiced rhetoric built on these disease theories backed by the purportedly scientific explanation.

As many scholars and historians have argued, historically, rhetoric about disease and health has often been used as a political tool to argue for the exclusion of undesirable populations who may be immigrants, minorities, the poorer classes, and socially marginalized people. As the

concept of health and hygiene moved from the personal to the public sphere, the body was associated with racial, cultural, social, political and moral properties. In the context of the second half of the nineteenth century in California, the prejudiced discourse created the sick bodies of Chinese immigrants and the disease-breeding space of Chinese quarters. Such prejudiced discourse projected the dichotomy between filth and cleanliness to the racial, moral, and cultural aspects of Chinatown and white American society. Fears of contagious disease were then turned into violence and hatred of the "Other." In my investigation, Chinese immigrant groups and Chinatowns were labelled as the "Other," who were more susceptible to the social and political winds of the period when uncontrollable and unexplained diseases triggered fears and broader crises.

On the other hand, the concept of the "Other" is related to the "Self." The distinction between the two is essential to the construction and the development of the notion of "Self." Therefore, the construction of the notion of "Other" is also a process by which Americans seek to establish their cultural identity, ingroup consciousness, and construct a progressive American "race." Although the United States is a multi-ethnic and multicultural nation, Puritanism, brought by the first Anglo-Saxon immigrants, played an important role in shaping mainstream American culture in the early years. Therefore, after the founding of the United States, especially after the Civil War, there was an urgent need for Americans to unify, find and establish a cultural identity and value that belonged to the United States.

Throughout the eighteenth and the nineteenth centuries, under the influence of European immigrants and the Enlightenment ideas that they brought with them, mainstream American culture evolved to emphasize the coexistence of secular values and religious morality. In the nineteenth century, the idea of Manifest Destiny gave the rationale for the Westward Expansion and therefore played an important role in the movement. The idea was inherited from religious evangelizing and was fused with American republicanism. At the same time as the Mexican-American War, the Civil War, and the gold rush in the West broke out, and American identity and culture began to be challenged by issues of race, culture, immigration, gender, and so on. In this time period, racism was a central theme to the idea of Manifest Destiny, and it developed American identity by contrasting it with that of the "Other" through the binary of white/non-white. Health, hygiene, the environment, culture, morals, customs, and food culture can all be infused into the prejudiced framework of producing the "Other."

Drawing on a Foucauldian theoretical perspective on discourse and power, as well as R. N. Adams' works on "ingroup consciousness,"[789] this binary implies an unequal or even oppressive relationship between the two parties, with the "Other" often being stigmatized, excluded, or disciplined in terms of language, ideology, knowledge, culture, and so forth. The notion of the "Other" was formulated by repeated discourse and writings related to beliefs, values and cultural categories at a given historical context. This is the case of the construction of Chinese "Other" through prejudiced discourse during the anti-Chinese movement in the nineteenth century. Such prejudiced discourse illustrates Foucauldian insights about power-knowledge. The disease theories of the nineteenth century and the scientific racism are therefore the very "knowledge" that supported the strategies of the stigmatization and the exclusion of the Chinese community in California. And although class and economic differences existed within the Chinese community, racial identity was more important than class differences.[790]

Moreover, a set of sanitation and domesticity norms, (re)construction standards, hygiene and health education for the public, as well as quarantine and surveillance of Chinatown and newly arrived immigrants were ways to "discipline" and "examine" people through power.[791] For instance, the Department of Public Health in California wrote in its report that medical professionals were censors of public health. They were responsible not only to treat disease, but to promulgate principles of hygiene.[792] Likewise, the mass vaccination campaigns conducted in Chinatown during smallpox and plague are examples of health authorities exerting their power to discipline certain groups of people, despite the inevitable conflict, suspicion, and resistance such vaccination orders provoked.

I conclude this study by exploring what Chinese organizations, newspapers, and TCM practitioners did for the health of Chinese immigrants in the face of disparities in access to public and charity health services. While many Chinese mutual aid associations protected the rights and defended the interests of Chinese residents in the face of environmental injustice and racism, traditional Chinese medicine and physicians played a crucial role in Chinese struggles over their cultural norms and values. In addition, Chinese district associations appealed en

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[789] Richard D. Adams, "Ethnocentrism and Ingroup Consciousness," *American Anthropologist* 53, no. 4 (1951): 598–600.
[790] Kay J Anderson, "The Idea of Chinatown: The Power of Place and Institutional Practice in the Making of a Racial Category," *Annals of the Association of American Geographers* 77, no. 4 (1987): 580-598.
[791] See Michel Foucault, *Discipline and Punish: The Birth of the Prison* (Penguin UK, 2019).
[792] California Department of Public Health, *First Biennial Report of the State Board of Health of California, for the Fiscal Years 1870 and 1871*, Appendix, 54 and 57.

masse to the federal courts illustrated the struggles of marginalized communities to assert their legal rights and gradually integrate into local society. On the other hand, the emphasis and use of legal tools by Chinese groups exemplified their trust in the national justice system rather than politics in the host country.

Although Chinese immigrants in California were marginalized since the beginning of the Gold Rush, the anti-Chinese forces expanded from the white workers competing with Chinese laborers to include parts of the white elite class from the 1870s. Besides, the reasons for anti-Chinese agitation gradually shifted from economic factors to concerns about disease, the environment, and morality. In constructing their prejudiced discourse, the authorities linked Chinese immigrants and the places they inhabited to diseases.

In this study, the involvement of Chinese immigrant groups in the urban, public health, and environmental history of California was shaped by unique historical settings and influenced by specific immigration laws, regional development pathways, and forms of government administration. Yet, this study provides a new perspective and explanation for interpreting the nineteenth-century Chinese exclusion movement. Notably, the underlying cause of environmental injustice and racism involves the capitalist system. According to Wallerstein's world-system theory, current environmental problems are not just a reflection of the degree of modernization, but also the result of the external structures.[793] Furthermore, the Chinese exclusion movement had a lasting influence on immigration policies and racial relations in the United States. As a result, this research not only complements the existing literature in Asian studies, environmental humanities, public health, and urban history, but this new perspective is necessary for a comprehensive study of minority, migration, and justice-related issues, particularly in this period of worldwide pandemics, economic, and war crises.

[793] Immanuel Maurice Wallerstein, *World-Systems Analysis: An Introduction* (Durham, NC: Duke University Press, 2004), 48 and 55.

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