

19: Yuan Dynasty China *Problem-Solving Subsystems*

Major Action Patterns

Every complex society is faced with a set of general problems shared by many people. To cope, they develop *systems*—certain ways of acting—to deal with them. For example:

- Members of societies need to exchange goods and services. This leads to development of an economic system (actually a subsystem).
- Societies need to control their members' unacceptable behavior. This leads to development of a legal system (another subsystem).

These are just two of many such subsystems. The larger and more complex the society—when villages become cities and tribes become nations—the greater the need for “standard” ways of acting. Government plays a major role in creating and maintaining such subsystems.

In this unit, you'll investigate important subsystems that support societies, nations, and civilizations, and relationships between them and governments.

Background

Sometime shortly after 1300 CE, copies of an adventure book began spreading over Europe. Before the printing press was developed, copies of books were made by writing them out by hand. This required enormous labor, but this book was so interesting it was copied frequently, translated into many languages, and soon was being read all over Europe. The book described the travels of a man from Venice, Marco Polo, to far-eastern lands he called Cathay and Manzi (present-day China), parts of the world unknown to Europeans at the time. He described cities so rich and customs so strange, many refused to believe his accounts.

Marco Polo traveled to China with his father and uncle (who'd been there earlier). They left Venice in 1271, arrived in China many months later, and remained for many years. According to his account, he became involved in Chinese government affairs under the ruler Kublai Khan, and traveled extensively in the country.

Carrying a fortune in gemstones, Polo returned to Venice in 1295, became involved in a local war, was captured, and spent several months in prison. While there, he dictated an account of his travels to another prisoner, Rustichello da Pisa, a professional writer of romantic stories. The account, called in English *The Travels of Marco Polo*, stirred the desire for exploration in the centuries that followed. Columbus carried a copy of the book on his first voyage to the New World.

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Investigation: Chinese Patterns Observed by Marco Polo

Marco Polo called the first great Chinese city he visited “Cambaluc” (now Beijing). Part of his description of the city is below.¹

Read the following accounts. Working with others, identify and list on separate paper slips such as Post-It Notes® (1) parts of each city built to benefit or solve problems for the general public who live there (e.g. “streets,” “walls,” “markets”), and (2) actions or services that benefit the people in each city (e.g. “preventing theft”). (Often the beneficial actions will be done by organized groups, such as the city guard.)

For three months each year, December, January, and February, the Great Khan [Chinese emperor] resides in the capital city of Cathay [China], which is called Cambaluc [Beijing], at the north-eastern border of the country...

Originally, a great and noble city, also called Cambaluc, which means "the city of the Emperor" was nearby. But the Great Khan [emperor Kublai Khan] was told by his astrologers that this city would later rebel against his imperial authority, so he ordered the present city to be built near the old one, with only a river between them, He made the people who lived in the old city move to the new one that he had founded.

The new city contains 24 square miles, since each side is six miles long. [These “miles” may be Chinese li, and shorter than our miles.] It is surrounded with walls of earth, ten paces thick at bottom, and a height of more than ten paces.

There are twelve gates, and over each gate there is a great and handsome palace, so that there are three gates and five palaces on each side of the square; for there is also a great and handsome palace at each corner. In the palaces there are vast halls where the weapons of the city guards are kept.

The streets are so straight and wide that you can see along them from end to end and from one gate to the other. All through the city are beautiful palaces, and many great and fine inns and many fine houses. All the plots of ground on which the houses of the city are built are four-square, and laid out with straight lines. All the plots are occupied by great and spacious palaces, with large courts and gardens. Each square plot is surrounded by handsome streets for the traffic. Thus the whole city is arranged in squares like a chessboard.

(Continued)

¹ All excerpts in this unit: *The Book of Ser Marco Polo: The Venetian Concerning Kingdoms and Marvels of the East*, Volumes 1 and 2, translated and edited by Colonel Sir Henry Yule (New York: Charles Scribner's Sons, 1903 http://afe.easia.columbia.edu/mongols/pop/menu/class_marco.htm (adapted)

In the middle of the city there is a bell which is struck to ring at intervals at night. After it has rung three times, no one is allowed to go outdoors in the city, unless to attend to a woman in labor, or to help someone who is sick. Those who go about on such errands are required to carry lanterns. At each gate of the city is a guard force of 1,000 armed men; not to prevent the city from being attacked, but only as a guard of honor for the emperor, who resides there, and to prevent thieves from stealing.

The city of Cambaluc has so many houses, and such a huge population, inside the walls and outside, that it seems beyond belief. There is a suburb outside each of the twelve gates, and these suburbs are so large that they contain more people than in the city itself. Many foreign merchants and travelers live in those suburbs, who have come to bring presents to the emperor, to sell articles at court, or because the city affords so good a market to attract traders. There are as many good houses outside the city as inside, without counting those that belong to the great lords and barons, which are very numerous.

Guards patrol the city every night in groups of 30 or 40, looking for anyone who may be outside at forbidden hours, after the great bell has struck three times. If they find anyone, he is immediately taken to prison, and examined next morning by the proper officers. If the officers find him guilty of any wrongdoing they order him beaten with a stick.

More costly and rare articles of all kinds are brought to this city, than to any other city in the world. All kinds of people from every region bring things (including all the costly wares of India, as well as the fine and precious goods of Cathay itself). Some of these are brought for the emperor, some for the court, some for the city which is so great, some for the crowds of barons and knights, some for the large army which is quartered round about; and thus between court and city the quantity brought in is endless.

As a sample, I tell you, every day of the year, 1,000 carts containing only raw silk enter the city, from which are made much silk cloth.

Around this city there are 200 other cities, from which traders come.

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Kublai Khan, emperor during Marco Polo's visit to China,
founder of the Yuan Dynasty ►

https://en.wikipedia.org/wiki/Kublai_Khan

He was not Chinese, but a Mongol from the north, grandson of famous warrior Genghis Khan. The Mongol forces—mainly archers on horseback—conquered China, and ruled over present-day China, Mongolia, Korea, and some adjacent areas.



The Great Khan chose twelve barons, and gave them control of all the necessary affairs of the 34 provinces of Cathay. These twelve barons live together in a very rich and handsome palace, inside the city of Cambaluc. This palace includes different buildings with many apartments. A judge and several clerks are assigned to every province; they all live in this palace, where each has his separate quarters. These judges and clerks administer all the affairs of their assigned provinces, under the direction of the twelve barons. However, when an affair is of very great importance, the barons come to the emperor, and he decides as he thinks best. But the power of those twelve barons is so great that they choose the governors for all those 34 great provinces that I have mentioned. Only after they have chosen do they inform the emperor of their choice. He confirms their choices, and grants to the chosen person a tablet of gold suitable to his government rank.

Those twelve barons also have such authority that they can send the armed forces wherever and in whatever strength they please. This is done of course with the emperor's awareness, but still the orders are issued on their authority. The barons, and the palace where they live and work, are called "The Supreme Court." This group has the highest authority at the court of the Great Khan; and they can favor and promote anyone they wish.

Many roads and highways go from this city of Cambaluc to a variety of provinces, one to one province, another to another. Each road is given the name of the province to which it leads. Every 25 miles along these roads, the emperor's traveling messengers arrive at a station called a "Horse Post-House." At each of those stations, there is a large and handsome building where they can stay overnight. The rooms are furnished with fine beds and all other necessary articles in silk, and they are provided with everything they can want. Even if a king were to arrive at one of these, he would be pleased with his lodgings. At some of these stations, there are as many as 400 horses standing ready for the use of the messengers; at others there are 200. Even when the messengers have to pass through an area with no road, no houses or inns, the station houses have been set up there just the same.

The size of this operation is greater than any other. In all these posts, taken together, there are more than 300,000 horses kept just for the use of the messengers, with over 10,000 great buildings, all richly furnished. Yet all these post-houses cost the emperor nothing at all. Every city, or village, or hamlet that stands near one has a fixed demand made on it for as many horses as it can supply. Only in uninhabited tracts the horses are furnished at the expense of the emperor himself.



Marco Polo

<http://www.history.com/topics/exploration/marco-polo>



◀ Picture by Wu Zhen, Yuan Dynasty artist.

https://en.wikipedia.org/wiki/Wu_Zhen

Below: Marco Polo describes paper money, unknown in Europe.

The royal mint is in the city of Cambaluc. Here the emperor has found the secret for converting something of little value into wealth. This mint produces money as follows. The bark is stripped from mulberry-trees (the leaves of this kind of tree are used for feeding silk-worms), and a thin inner ring of bark which lies between the coarse outer bark and the wood of the tree is removed. This inner bark is steeped in water, then pounded in a mortar until it becomes pulp. This pulp is then made into paper, resembling that which is made from cotton, but quite black. When ready for use, it is cut into pieces of money of different sizes, nearly square, but somewhat longer than they are wide. Different sizes are used for different values.

The preparation of this paper money is certified with as much official procedure and ceremony as if it were actually made of pure gold or silver. Each note is signed and sealed by several officers, specially appointed. When all of them have done this properly, the main mint officer, who is appointed by the emperor, smears the royal seal in his charge with vermilion red paste, and stamps the piece of paper with it. The form of the seal is impressed on the paper, in red, which makes it authentic money. Anyone caught counterfeiting the money is put to death.

Prepared in large quantities, this lightweight, easy to carry paper currency is circulated everywhere the emperor reigns. No one dares to refuse to accept it in payment, for refusing it would endanger their life. Everyone in the empire receives it immediately, because wherever they go for business, they can use it buy anything they might need or want, even gold, silver, jewels or pearls.

All his majesty's armies are paid with this currency, which has for them the same value as gold or silver. Because of this, we can say that the emperor has more treasure than any other ruler in the universe.

Continue working with others to analyze the data that follow, listing facilities and services that benefit the public.

Marco Polo described the city he called Kinsay (now Hangzhou), probably the largest city on earth at the time. Many of his numbers are exaggerated (e.g. 12,000 bridges), but the city population in Marco Polo's time is estimated by historians to have been at least one million people:

When you have...travelled for three days through a splendid country, passing a number of towns and villages, you arrive at the most noble city of Kinsay, a name which means "The City of Heaven." The city is beyond dispute the finest and the noblest in the world.

Kinsay is so large that the distance around its border is 100 miles. [*Chinese li?*] The city has 12,000 bridges of stone, most of them high enough that a great fleet could pass beneath them. If you wonder why there are so many bridges, the whole city stands in the water and is surrounded by water, so that a great many bridges are required to allow people to move around. Even though the bridges are high, the approaches are designed so carts and horses can cross them.

Twelve different craft guilds are organized in the city, and each guild has 12,000 houses occupied by its workmen. Each house contains at least twelve men; some contain 20 and some 40. Not all of these are master craftsmen; some are journeymen who work under the masters. All these craftsmen are fully occupied, for many other cities of the kingdom receive what they need from this city.

The number and wealth of the merchants, and the amount of goods that pass through their hands, are too large for anyone to estimate.

Inside the city there is a Lake which has a shoreline length of about 30 miles [*li?*] and all round it are built beautiful palaces and mansions that belong to the nobles of the city. Many religious buildings and temples of those who worship idols are also on its shores.

In the middle of the Lake are two Islands, on each of which stands a rich, beautiful and spacious building, furnished like the palace of an Emperor. The previous rulers set this up. When any one of the citizens wanted to hold a marriage feast, or to give any other entertainment, it was done at one of these palaces. And everything was found there ready to use, such as silver trays, bowls, and dishes, napkins and table-cloths, and whatever else was needed. The former King made this facility to keep his people happy, and the place was open to everyone who wanted to entertain guests. Sometimes there would be a hundred different parties at these palaces, some holding a banquet, others celebrating a wedding; and yet all would find well-designed spaces in the different apartments and pavilions, organized so one party was never in the way of another.

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The houses of the city are provided with high towers of stone in which articles of value are stored for fear of fire; for most of the houses are built from wood, and fires are very frequent.

Since the Great Kahn conquered the city he has ordered that each of the 12,000 bridges be given a guard of ten men, in case of any disturbance, or of anyone planning treason or rebellion against him. Each guard is provided with a hollow instrument of wood and with a metal basin, and with a time-keeper to enable them to know the hour of the day or night. And so when one hour of the night is past the sentry strikes one on the wooden instrument and on the basin, so that the whole quarter of the city is made aware that one hour of the night is gone. At the second hour he gives two strokes, and so on, keeping always wide awake and on the lookout. In the morning again, from the sunrise, they begin to count anew, and strike one hour as they did in the night, and so on hour after hour.

Part of the watch patrols their section of the city, to see if any light or fire is burning after the lawful hours; if they find any they mark the door, and in the morning the owner is summoned before the authorities, and unless he can plead a good excuse he is punished. Also if they find any one going about the streets at unlawful hours they arrest him, and in the morning they bring him before the authorities. Likewise if in the daytime they find any poor cripple unable to work for his own support, they take him to one of the many hospitals. These were founded by the ancient kings, and are supported by wealth given them in earlier years. If a vagrant is found, and is able to work, officials force him to take up some trade.

If they see that any house has caught fire they immediately beat upon that wooden instrument to give the alarm, and this brings together watchmen from the other bridges to help to put out the fire, and to save the goods of the merchants or others, either by moving them to the towers mentioned above, or by putting them in boats and transporting them to the islands in the lake. No citizen dares leave his house at night, or to come near the fire; only those who own the property, and those watchmen who flock to help, of whom there shall come one or two thousand at the least.

In the city there is a raised area where a tower stands, and at the top of the tower is hung a slab of wood. Whenever fire or any other alarm breaks out in the city a man with a mallet beats on the slab, making a noise that can be heard for a great distance. When people hear this, they are aware that fire has broken out, or that there is some other cause of alarm.

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All the streets of the city are paved with stone or brick, as are all the highways throughout Manzi [*southern China*], making it easy for people to ride and travel in every direction. Without this pavement, travel would be difficult or impossible, for the country is very low and flat, and after a rain it is deep in mud and water. Since the Great Khan's messengers cannot gallop their horses over pavement, the side of the road is left unpaved for their convenience.

The pavement of the main street of the city is laid out in two parallel ways ten paces in width on each side, leaving a space in the middle filled with fine gravel. Underneath are arched sewers to drain the rain water into the canals; keeping the road dry.

The city of Kinsay has about 3000 baths, supplied with spring water. They are hot baths, and the people take great delight in them, using them several times a month, for they keep their bodies very clean. These are the finest and largest baths in the world; large enough for 100 persons to bathe together.

There are ten main marketplaces, squares half a mile to the side. A market is held in each of the squares three days each week, visited by 40,000 or 50,000 persons. These people bring there for sale every possible necessary of life, so that there is always an ample supply of every kind of meat and game, as of roebuck, red-deer, fallow-deer, hares, rabbits, partridges, pheasants, francolins, quails, fowls, capons, and of duck and geese an uncountable quantity. In the market is a place where larger animals are slaughtered, such as calves, beef cattle, kids, and lambs, the flesh of which is eaten by the rich and important people.

Every day those markets display every kind of vegetables and fruit; including huge pears, weighing as much as ten pounds apiece, with white and fragrant pulp like a confection, and peaches in their season both yellow and white, of every delicate flavor.

Some nearby streets are occupied by the Physicians, and by the Astrologers, who are also teachers of reading and writing; and many other professions have their places near the markets. In each of the squares there are two great palaces facing one another, in which are set up officers appointed by the King to decide disputes between merchants or other inhabitants of that section of the city. It is the daily duty of these officers to see that the guards are at their posts on the neighboring bridges, and to punish them if they are absent.

The crowd of people that you meet here at all hours, passing this way and that on their different errands, is so huge that no one would believe it possible that enough food could be provided for them. However, on every market-day, all those squares are thronged and crammed with purchasers, and with the traders who have brought in stores of provisions by land or water. Everything they bring in is sold.

Once you've completed filling out your slips:

- (1) Sort them by grouping similar ones into several main categories. (Note that facilities built to benefit people in the city are part of the Model component "setting," but building and maintaining these facilities are "patterns of action.")***
- (2) Give each category a descriptive system or subsystem name.***

- (3) *For each category, describe the problem or problems being solved, or the benefit that category gives to the public.*
- (4) *Identify the role that government plays in the category, if any. What is the relationship between government services and Marco Polo's observation in the following box?*

The Khan watches the city Kinsay with extreme care because it is the center of power for all Manzi [*southern China*], and because he receives immense wealth from the duties (taxes) collected on the transactions of trade there. The amount of these collected funds is so large that it is hard to believe...

...revenue from the city of Kinsay and its territory: First there is the salt, which brings in much money. For the territory produces every year, in round numbers, salt worth over 900,000 ounces of gold, a vast sum of money! (This province, you see, is close to the ocean, on the shores of which are many lagoons or salt marshes, in which the sea-water dries up during the summer time; and there they extract such a quantity of salt to supply five of the kingdoms of Manzi besides this one.)

Salt, spices and sugar pays three and a third per cent tax on the value; and all merchandise likewise pays three and a third per cent. But sea-borne goods from India and other distant countries pay ten per cent. The rice-wine also makes a great return, and coal, of which there is a great quantity; and so do the twelve guilds of craftsmen that I told you of, with their 12,000 stations apiece, for every article they make pays duty. And the silk which is produced in such abundance makes an immense return. But why should I make a long story of it? The silk pays ten per cent, and many other articles also pay ten per cent.

Mounted archers made up most of the Mongol army that conquered China.

(Historical patterns: Compare this to the description given in Unit 9: Persian Empire, page 3, and Unit 14, Roman Culture Change, page 8.)

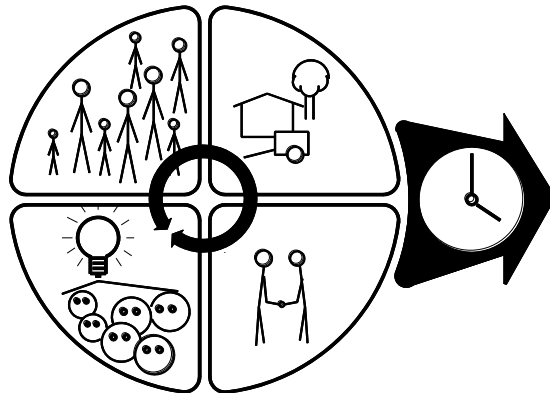


https://en.wikipedia.org/wiki/Mongol_military_tactics_and_organization

Follow-Up: Public Benefits Here and Now

Most of the public benefits—facilities and services—supplied to the Chinese and described by Marco Polo are supplied, in some form, to people today.

- (1) *For each “subsystem category” you identified in the main investigation above, identify ways in which services or facilities in this same category are provided to people where you live.*
- (2) *Identify, if possible, any additional facilities or services supplied to the public today that were not part of Chinese society as described by Marco Polo.*
- (3) *Identify the source of each service or facility you’ve identified—e.g. local, state, or national government, or a private organization.*
- (4) *Identify the source of funds to supply the service or facility.*



For Teacher/Mentor—Overview:

This unit was originated by Ignacio Carral, in the second of his Spanish-language world history resources, which were, in turn, based on the conceptual sequence presented in our *Investigating American History* handbook and course materials. See <http://www.marionbrady.com/AHH.asp>.

Two keys to educating have been stated as “making the strange, familiar,” and “making the familiar, strange.” These are goals of this unit. The essential role of public facilities and services, which are generally provided by government in most societies, can often be seen more keenly in unfamiliar contexts. That’s the function served here by Marco Polo’s description of Chinese society in the late 13th century.

There are some businesspeople among us today who play up their “self-made” image and denigrate the role of government in their success. None of them would be successful without the necessary resources or “commons” that government supplies—roads and bridges to transport goods, courts and laws to enforce contracts, an economic system with stable currency, regulations to help prevent corruption and unfair practices, an educational system to supply capable workers—the list goes on and on. Enhancing awareness of this reality is a worthwhile outcome of this unit. Thus, it’s a civics lesson.

Investigation: Chinese Patterns Observed by Marco Polo

The accuracy of Marco Polo’s account has often been questioned, and it seems obvious that some parts are exaggerated and embellished, perhaps mainly by Rustichello da Pisa, probably to enhance its appeal to a wide audience. The old principle, “Never let the truth get in the way of a good story,” no doubt played a part in the way Rustichello passed along Signor Polo’s reminiscences. However, a great deal of internal evidence indicates that much in the account is accurate, particularly in its description of the details of Chinese practices. Of course, because it is filtered through the perceptions and conceptions of Marco Polo and Rustichello, in some ways it tells us as much about Europeans of the time as it does about the Chinese.

Whatever its accuracy, Marco Polo’s account includes descriptions of a rich variety of both human-made setting (facilities) and patterns of action (services). Most of these are related to solving public problems and providing benefits to the public, making cities and civilization possible.

The task of analysis by learners simply involves going over the account, identifying facilities or services (e.g. the raised earth walls around Cambaluc/Beijing) and deciding whether it benefits the people. If the answer is “yes,” the workgroup lists “city walls” on a slip of paper or Post-It Note®.

If necessary, the analytical process may be speeded by dividing up the accounts in the boxes between different individuals or groups for the initial analysis. The process of grouping the slips and generating categories may be done by larger groups or the entire class.

We suggest that learners be asked to identify at least three major categories, but no more than ten or so, to provide a useful level of generalizations about the types of facilities and services. Categories/systems might include transportation infrastructure (roads, streets,

bridges, etc.), maintaining internal peace (law enforcement, dispute management), defense, public safety (fire squads), economic system (e.g. currency, provision of marketplaces), and government operations needed for decision-making and to manage the other systems, such as horse-courier communications and tax collection.

One major necessary category they may miss in their analysis is the “educational (or socialization) system,” because there’s little mention in Marco Polo’s account of how the young are taught what they need to know to take their place in society. There is a mention in passing that Astrologers teach reading and writing, which implies that those skills were only learned by a minority. Also, “masters” and “journeymen” are mentioned in the discussion of the craft guilds. This system for training specialized workers was prevalent in Europe; perhaps it was the same in China, or perhaps Marco Polo was misinterpreting what he saw based on his European preconceptions. In this ancient (but common-sense) system, young learners start as apprentices in a master’s workshop, working for room and board but no pay. Each one gradually, over several years, learns the basic techniques of the craft, and becomes a “journeyman,” moving on and spending time in the workshops of other masters, to further enhance his skills. Eventually he would progress to “master” himself. In Europe, the craft guilds managed this process and maintained performance standards.

The account mentions twelve craft guilds and thousands of craft establishments—the “factories” of the time. The guilds likely included masons and carpenters, furniture crafters, potters, metalworkers, weavers, dyers, tailors, and others, perhaps including artists. These workers and other participants in the economic system such as merchants supplied beneficial public products and services, but were not considered elements of government, although that which they produced and sold was taxed.

The level of organization of Chinese society portrayed by Marco Polo is such that it would require a great deal of tax money to maintain it in operation—and apparently a great deal of tax money was available.

For learners curious about how Marco Polo’s account lines up with historical reality, information about Beijing during the Yuan dynasty is at https://en.wikipedia.org/wiki/History_of_Beijing, including a map of the city. The actual dimensions of the city walls in the Yuan Dynasty were 5.3 miles (8.5 kilometers) by 3.7 miles (5.9 kilometers).

Follow-Up: Public Benefits Here and Now

This is a natural extension of the previous activity. As an assist, if learners bog down, suggest a look at a local telephone directory; it will provide a very long list of agencies providing services. Extended discussion can, of course, grow out of a cost/benefit analysis of each agency, or even just a consideration of each agency’s relative benefit.

Limiting investigation to local government only may help maintain focus.

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