Topic 2: Land and its Legal Description

Definitions:

1) *Real estate*: Land and improvements permanently attached (often in a physical sense, but not necessarily).

2) *Land*: Surface of the earth and natural resources; also areas below the surface (such as mineral rights) and for some distance above the surface. Think of a wedge shape running from the center of the earth into the sky; a New York court once noted an older view that a land owner's property rights extended "from heaven to hell."[1] The more modern standard is that the owner's rights reach to a height that prevents others from interfering with the owner's use and enjoyment of the property (sometimes approximated as the height of the tallest human-made structures). In a famous case from just after World War II a North Carolina chicken farming couple was awarded money for lost property value when a nearby airport expanded beyond serving small planes. Noise and vibrations from large military craft flying just overhead during takeoff kept the farmers from sleeping, and upset the birds so much they could not lay eggs; some even panicked and fatally flew into walls. The U.S. Supreme Court held that while the common law view of property rights extending to the heavens was impractical in the aviation age, when the air space far overhead must serve as a "public highway," the "immediate reaches above the land" are not in the public domain, such that frequent flights low enough to interfere with owners' use and enjoyment of their land created a compensable taking under the U.S. Constitution's Fifth Amendment.[2]

3) *Real property*: Technically it relates to rights in real estate, but informally the term is used interchangeably with "real estate."

4) *Legal description*: A description of a parcel of land that would be acceptable in a court or a legal proceeding. (Both a contract to buy/sell real estate and the deed ultimately delivered must contain written descriptions of the land to be conveyed, as part of the *statute of frauds* that requires important contracts to be in writing to be enforced by courts – although a more informal description might pass muster in the contract than in the deed, since the deed becomes part of the permanent public record on land title and thus must be complete and accurate.) A legal description should unquestionably differentiate the subject parcel from all other parcels.

Why is a system of legal descriptions needed? Among the reasons:

- Transactions: What exactly is a buyer getting?
- Taxation: How much land is being taxed?
- Boundary disputes: Where does a particular parcel begin and end?

Why not just use street addresses or refer to adjoining owners? Problems would be that:

- Street names can change, as can the numbering on some or all properties on a street
- Owners of neighboring properties can change
- We need a method based on reasonably permanent reference points

There are three primary methods of legal description:

1) U.S. Government Rectangular Survey System
2) Metes and Bounds
3) Reference to recorded Subdivision Plat Maps

An acceptable legal description can be based on one or more (used in combination) of these methods.

I. *U.S. Gov't/Congressional Rectangular Survey System/Public Land Survey System/"Great American Grid"*[3]

The *Domesday Book* census of England that followed the 1066 Norman conquest noted land measures that varied in size based on the ground's topography and fertility, such as the rod (relating to the distance someone could cover in a day's work) and the hide (enough land to support a family) – with all land to belong, thereafter, to the king. So the acre grew or shrank based on the land's features, as did the bushel (the amount of seed needed to plant an acre). But his break with the Pope in 1534 coincided with Henry VIII's need for money to pay for his wars with France, and his solution was to sell the considerable English land formerly occupied by Roman Catholic monasteries to wealthy nobles. The buyers' practice, in turn, of renting out their now-privately held land was facilitated by the development of unchanging land measures. A *rod* was fixed at 16½ feet, with four rods = 66 feet = 22 yards constituting a *chain*, two rods squared = four square rods = 1,089 square feet = a *workday*, and forty workdays = 43,560 square feet = one *acre*. Then in 1595, under Elizabeth I's rule, the *mile* was standardized at eighty 22-yard chains (= eight furlongs),

which is 1,760 yards or 5,280 feet (replacing the 5,000-foot Roman mile). A feature of these standardized measures was that they were multiples of four, which simplified computing land area within a four-sided, rectangular field.

The word *survey* comes from the French *sur + voir*, or oversee. Medieval land surveyors were the overseers of land-owning noblemen's estates, charged with measuring and keeping track of the amount of land held. (Surveying land based on fixed markers actually started in old Egypt and Babylon – the foundations of most real estate law trace back to those ancient civilizations – where it was important to know boundaries when land became submerged during floods, though under modern laws land that is submerged is often viewed as public property, with private holdings reaching only to the water's edge.) Much of what surveyors do is based on trigonometry; they use angles relating to known distances to compute unknown distances.[4] Surveys also can involve determining location with celestial observation, and establishing height by barometric pressure. Skilled surveyors in England's American colonies, George Washington among them, earned as much money as lawyers. (But even more could be made by those who speculated on colonial and early U.S. land, a practice in which Washington engaged as well. Until the Industrial Revolution brought railroads and large-scale manufacturing, owning land or ships was about the only way to amass considerable wealth. Other early land speculators included Thomas Jefferson and Benjamin Franklin, along with Judge Richard Henderson from North Carolina, who forgave a debt owed to him by an able frontiersman named Daniel Boone when the latter explored the Kentucky region to locate favorable land for him. The financially astute Alexander Hamilton did not speculate in land, but his nemesis Aaron Burr did. Yet the speculators often were unsuccessful; many lost money, or lost their land to the government through unpaid taxes. Robert Morris, famed for his financial prowess in funding the American Revolution, died in debtor's prison after losing big on land deals.[5])

After the American Revolution, under the Articles of Confederation, only the states could impose taxes or apply tariffs, limiting the new national government's ability to raise money. But the national government did hold the extensive land between the Appalachian Mountains and Mississippi River, which had been claimed by individual states before the Articles were enacted but was ceded in return for the national government assuming the states' debts. (An exception was a strip along Lake Erie in present day Ohio, held back to benefit citizens of Connecticut towns that the British had burned during the war; the region was surveyed by Isaac Cleveland, for whom the largest city in Connecticut's "Western Reserve" is named.[6]) The national government would sell much of that land to get money to pay the country's debts, while also using much of it to compensate veterans of the war for independence. Continental currency and military warrants that had paid the soldiers fell, after the war, to a fraction of their wartime value, but Congress decided to let those instruments be used at face value to pay for western land. (Speculators bought the currency and warrants at their low deflated values, and used them to buy large amounts of that land.) Government leaders proposed surveying the area west of the original thirteen states to determine how much land the new country possessed, and to promote dependable land records so a parcel could not fraudulently be sold multiple times. Jefferson was a driving force behind the proposal, while one-time land surveyor Washington opposed the idea; a concern was the old observation that equal sized plots can be so different in topography and productivity.[7]

The Land Ordinance of 1785 called for surveying the western lands known as the Northwest Territory (now Ohio, Indiana, Illinois, Michigan, Wisconsin, and part of Minnesota) with a rectangular system based on *townships*, as largely had been used in New England. This grid system solved the problem seen in *metes and bounds* (discussed later), as used in Virginia, of having gaps, with areas of land unaccounted for in the survey maps. Every six-mile square township was to be broken into thirty-six equal *sections*, each one-mile square, with a marker placed every mile along the survey. The section's resulting 640-acre size had the positive feature of being divisible by two, to achieve smaller parcels (half-section, quarter section, *etc*.) seven times while leaving a whole digit quotient. Uniform rectangular land measures also would reduce the chance that speculators could bribe surveyors to select favored parcels for them, and would make it easier for ordinary citizens to get land. A seventh of the land was to be used to compensate soldiers ("military tracts"), with the government selling the rest for cash.[8] This system was favored by the first U.S. surveyor-general, Rufus Putnam, a longtime ally and former military aide to Washington.

Surveying for the new Government Rectangular Survey System was done by sizable teams, largely consisting of axmen who cut down trees to create paths and unobstructed sight lines for those doing the measuring. The first survey team was to include at least one member from each of the thirteen states, since the land to be surveyed had been ceded to the federal government by the states. But travel was difficult, and ultimately only eight state representatives made it to the starting point on the Pennsylvania-Ohio border, along the north side of the Ohio River near the town of East Liverpool. The survey's first phase was primarily in Ohio. A treaty had given the federal government the Iroquois nation's claims to the land that constituted the Northwest Territory, but other native tribes posed a danger to the early surveyors, who at times had to be protected by army troops. A justification used for taking over land in North America, going back to the early English settlers (and also seen in Australia, New Zealand, and South Africa), was that the native tribes had never enclosed it. (British land owners had begun fencing in their holdings to protect it from others' use after Henry VIII first sold the monastery land to private parties.)

The Land Act of May 18, 1796 provided for the sale of land northwest of where the Kentucky River empties into the Ohio River – which is essentially the Northwest Territory area west of Ohio. The error-filled initial survey of Ohio, where getting the work done had been treated as more important than precision (section sizes ended up running from less than 600 acres to more than 700, rather than the uniform prescribed 640), provided lessons for the rest of the survey. In 1802 Putnam was replaced as surveyor-general with the highly capable engineer Jared Mansfield.

The Government Rectangular Survey System's foundational measure was the 22-yard chain, which British mathematician Edmund Gunter calibrated in the 1600s. Gunter's measuring tool was a 100-link physical chain that blended decimal measures with the traditional English land measurement system. Surveyors measured lineal distance based on those chains; the acre's area is one chain by ten chains (22 yards x 220 yards = 4,840 square yards which, with nine square feet in one square yard, totals to 4,840 x 9 = 43,560 square feet). A special compass that used the sun to measure true north was needed in the far upper Midwest, where extensive iron ore deposits rendered standard magnetic compasses useless.

In 1803 the U.S. government wanted to buy "New Orleans" (primarily what is now the state of Louisiana) from France, with American diplomats Robert Livingston and James Monroe authorized to pay up to $10 million. But French foreign minister Charles Talleyrand, needing money to finance Napoleon's war with Spain, surprised them by offering to sell the entire Louisiana territory, reaching to the Pacific Ocean, for $15 million. The Americans accepted that deal, with neither side quite knowing the quantity of land in, or much else about, the vast Louisiana tract (thus the Louis and Clark expedition). It turned out that 530 million acres were included, so the cost ended up being less than three cents per acre, at a time when the U.S. government was offering western land for about seventy times that amount; the 1796 act had specified that land was to be sold for $2.00 per acre in full section 640-acre parcels. When the $1,280 resulting total cost ended up being more than most potential settlers could afford to pay, the minimum allowed parcel sizes fell, over ensuing years, to 320, 160, 80 and, by 1832, 40 acres – the latter being the minimum plot size generally seen as big enough to support a family. Most of the Louisiana Purchase was added to the land to be surveyed, of course, as was all the southwestern U.S. land acquired later from Mexico in the 1840s.

The Government Rectangular Survey System's grid arrangement ultimately played a role in determining shapes of the states, notably in the Great Plains. Boundaries in that part of the U.S. tend to be either rivers or straight lines, and Colorado and Wyoming are completely rectangular in shape. The 48 lower states were not completely surveyed until the 1930s, and some areas in Alaska still have not been surveyed. Today the system is administered by the federal Bureau of Land Management, and is used in 30 states – primarily states other than those along eastern seaboard. Also excluded are Texas, which was a separate country during the period when the U.S. survey system would have been going on at that distance west; Louisiana, which was under French rule until 1803; and Hawaii, with a system based on native land holdings that was used before statehood occurred in 1959.

[Louisiana is surveyed largely under an old French system, based on a land measure called an *arpent* that is slightly less than an acre in size, and that was designed to be narrow and long to provide each owner with sufficient land for crops but also give more owners frontage on waterways. A French *pied* (foot) consisted of 12.789 inches, a *perche* (pole or rod) was 18 pieds, and 100 square perches constituted an arpent. That would be [(12.789 inches x 18)^2 x 100]/144 inches per square foot = 36,800.667 square feet, or about .845 of a 43,560 square foot acre. A few areas in states like Wisconsin and Michigan (and also Canadian province Quebec) that had early French settlements also have some land that is described under arpent surveys.]

Government policy generally is to rely on the survey even if it is found to be erroneous. It is not surprising that there are some errors; the early survey teams had to fell many trees to create clear lines of sight, and then attempt to follow completely straight lines over rugged wilderness terrain using primitive equipment (repeated measurements with the 22-yard long chains, meaning 80 times per mile). In addition to the sometimes-hostile native tribes, they had to deal with snakes and other wild animals.[9]

The Government Rectangular Survey System is based on "square" parcels of land:

> Quadrangles (24 miles by 24 miles) – it is interesting that the 24 square mile quadrangle is the largest measure used in the system, yet the quadrangle that a parcel is located in never is mentioned in its legal description. However, quadrangles do have names, often related to the largest town or some other feature included within the quadrangle's boundaries; at ISU we are in the Normal West quadrangle, I grew up in the Peoria East quadrangle, Fern Clyffe State Park in southern Illinois is in the Goreville quadrangle, and downtown Chicago is in the Chicago Loop quadrangle. But these quadrangle names are not explicitly stated; any reference to the Government Rectangular Survey System in one of these parcels' legal descriptions would begin with the township designation.

Townships (6 miles by 6 miles)
Sections (1 mile by 1 mile, a square mile; in rural areas you often see "section" roads spaced a mile apart)
Sections are further broken into square/rectangular fractions, such as:
Half section (320 acres)
Quarter section (160 acres)
Half of a quarter section (80 acres)/Quarter of quarter section (40 acres)
Half of quarter of quarter section (20 acres)/Quarter of quarter of quarter section (10 acres)

[As suggested above, these divisions of land are not all truly, exactly square. One reason is that, as we go farther north and approach the North Pole, northerly-running boundary lines get closer together. Another is that early surveyors may have faced physical barriers (*e.g.*, rivers), made errors, or ended up with unusually sized plots when they came to end of their surveying jurisdictions.] Our state's supreme court once ruled that "… the 'northwest quarter of the northeast quarter' was only a means of describing the location of defendants' tract and does not preclude plaintiff from proving that the recognized boundary line was other than the true government survey line."[10]

How do the various "square" divisions relate to each other?

- A quadrangle contains 16 townships
- A township contains 36 sections [Section 16 originally was to be set aside for schools]
- A section contains 640 acres
- An acre contains 43,560 square feet. A piece of ground one acre in size could be of any shape, and not merely a perfect square that measures $\sqrt[2]{43{,}560}$ = 208.710326 feet on each side. So an acre is a little smaller than the 160 x 300 = 48,000 square foot playing surface of a regulation-sized American football field – think of a football field, but 27.75 feet shorter. Or a soccer field, if it is the maximum possible regulation size of 240 feet x 360 feet, is 86,400 square feet, or just under two acres (which would be 87,120 square feet).

A parcel of land is identified as part of a township (recall that we ignore quadrangles in legal descriptions), which is located a certain distance:

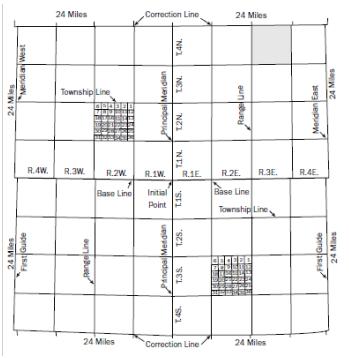
- East or west ("ranges") of a *Principal Meridian*, and
- North or south ("tiers") of the Principal Meridian's *Base Line*

[In the US, there are 37 principal meridians and 32 base lines. The Principal Meridian by which a parcel is described is not necessarily the closest in distance to that parcel.] "Guide Meridians" and "Standard Parallels" every 24 miles mark off the quadrangles, but again, we do not refer to these in legal descriptions. The principal meridians are not evenly spaced apart. The first seven principal meridians were given numerical names (including both Fourth and Fourth Extended PM's), but as surveying moved farther west the Sixth Principal Meridian was followed with geographic reference names like the Cimarron Meridian in Oklahoma and San Bernardino Meridian in California.

The First Principal Meridian runs north/south along the Indiana-Ohio border. The Second Principal Meridian runs through west-central Indiana (major road Meridian Avenue in Indianapolis is somewhat east of that principal meridian). Some land in the easternmost part of Illinois is described legally with reference to the Second Principal Meridian. Descriptions for land in both east-central and northeastern Illinois refer to the Third Principal Meridian, which runs north/south from where the Ohio River empties into the Mississippi at Cairo, and intersects its base line near Centralia (east and a little south of St. Louis). U.S. Route 51, running north from Cairo, used to be called the Meridian Highway.[11] In Bloomington-Normal Route 51, which is Main Street, is a bit farther east than 51's southern Illinois portion; in our area the Third Principal Meridian runs north/south near Carlock (several miles west of Normal). Heading west toward Peoria the Third P.M. remains the relevant reference point, up to the Illinois River. Then land on the west side of the river is described as being some distance east or west of the Fourth Principal Meridian, which runs north and south through the western part of the state and has its base line near Beardstown.

Downtown Chicago is something like Township (tier) 40 North, Range 8 East (T40N, R8E) of the Third Principal Meridian. At ISU, we are in Township (tier) 24 North, Range 2 East (T24N, R2E) of the Third Principal Meridian. Recall that a township is six miles "tall," so by that measure the ISU campus should be about 24 x 6 = 144 miles north of Centralia, and Chicago should be approximately (40 – 24) x 6 = 96 miles farther north than Normal.

There is a small problem in our laying out quadrangles that are 24 miles, or townships that are 6 miles, "square." As noted above, if the lines forming the east and west boundaries were all unbroken lines heading due north/south, they would converge as we went farther north. Possible solutions would be 1) to have townships keep getting smaller as we move farther north (probably not a very good idea), and 2) to provide for a periodic break in the north-running lines to keep all townships essentially the same size, but prorate the lost ground over selected townships in each quadrangle (perhaps a better idea). This adjustment generally is made along the north and west. Townships on the north and west boundaries of a quadrangle are made slightly smaller to accommodate that need to adjust to the earth's curvature. Early land speculators avoided buying parcels in the northwest corners of townships, where the parcels were smaller and results of measurement errors would be seen.[12] "Correction lines" are the broken lines that mark the eastern (western) boundaries of quadrangles east (west) of an applicable principal meridian. Correction lines can be seen in rural section roads, when a slight jog is encountered on a stretch of otherwise straight pavement.

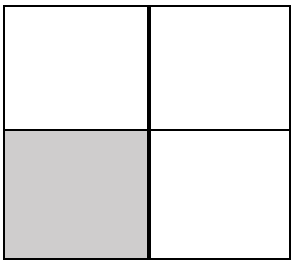


We can see how the survey system plays out at a macro level with this detail from a McLean County, IL map in the Milner Library map collection; the prominent digits (*e.g.*, 5, 8, 15) are section numbers.

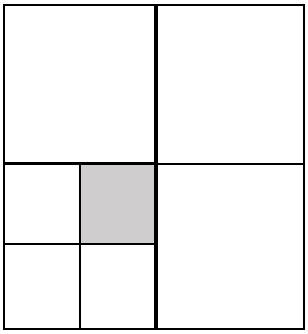
The key land measure ultimately used in a Rectangular Survey System legal description is the section. There are 36 one-mile by one-mile sections in a full-sized township, with the numbering system always starting with Section 1 in the northeast corner and working in a reversing, snake-like pattern to Section 36 in the southeast corner (Section 16, which is close to the middle, historically was reserved for school use):

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

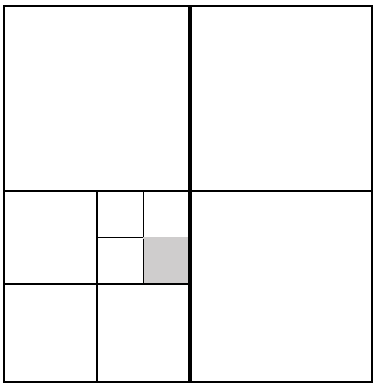
Then a section is further broken down into smaller rectangular pieces. Shown below are: the south-west quarter of a section (160 acres within the 640-acre section);



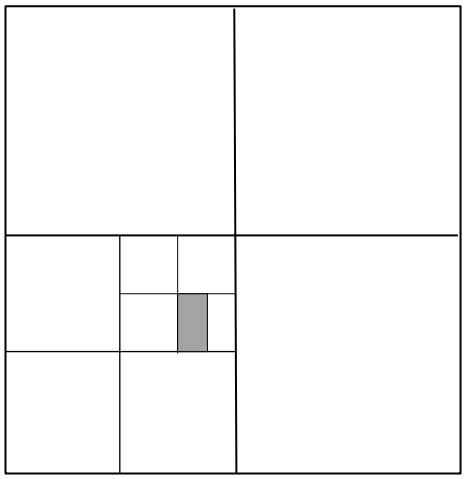
the north-east quarter of the south-west quarter of that section (40 acres);



and the south-east quarter of the north-east quarter of the south-west quarter of the section (10 acres).



So the legal description of the parcel below would be *the west half of the south-east quarter of the north-east quarter of the south-west quarter of Section 22 in Township 24 north, Range 2 east of the Third Principal Meridian*.



In the map or diagram above we start with the last item (the south-west quarter) listed in the description, which is the largest measure given, and work backwards to the smaller/more specific measures.

The January 23, 2022 *Pantagraph* advertised a farm land auction in Coles County in eastern Illinois (near EIU). Part of the land being sold was described as being in "Sec. 34 of Twp. 12N/R8E, and Sec. 3 of Twp. 11N/R8E" (of the Third Principal Meridian). That description might initially appear to indicate two distinct tracts located some distance apart, but on closer inspection it seems more likely to be one tract that straddles Sections 34 and 3 of the two indicated townships, somewhere within the area shaded gray in the diagram below:

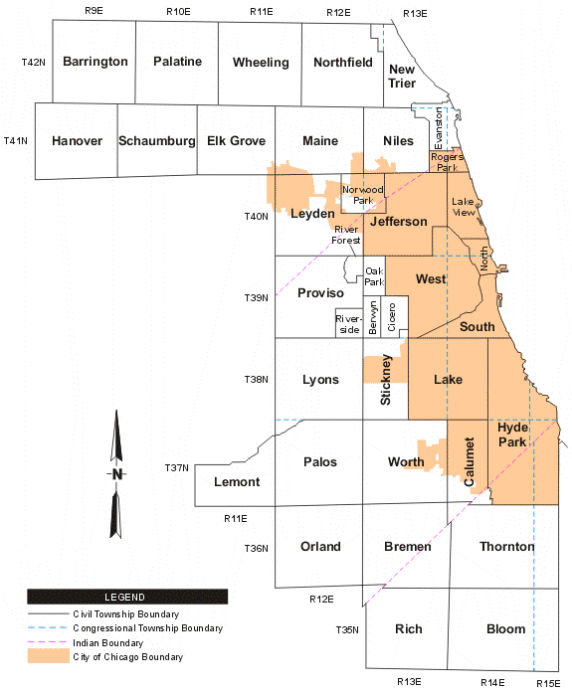
Township 12 North

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36
6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

Township 11 North

[Note: the term "township" has two meanings in real estate discussions. One is the (usually/approximately) six-mile square unit (with 36 one-square-mile sections) used to describe location in the U.S. Government Rectangular Survey System. The other, a "civic" township, is a unit of government within a county that provides particular public functions or services; in Illinois these include voter registration, aid to the poor, and *property tax assessment*. ISU is located in the Town of Normal (police and fire protection) and also in the somewhat larger Normal Township (you can go to the little Normal Township building across the street from Ace Hardware to register to vote, or to complain that they are treating your house as being worth more than it actually is and thus taxing you too much).

Civic or jurisdictional townships sometimes also administer an area's public school system, notably in Cook County outside Chicago (*e.g.*, Bloom, Leyden, Lyons, Maine, New Trier, Niles, Proviso, Rich, Thornton). Sometimes civic townships conform reasonably/somewhat to the six-mile survey townships (note those like Barrington, Lyons, and Orland in the Cook County map below), but often they do not (see townships in the city of Chicago, for example).

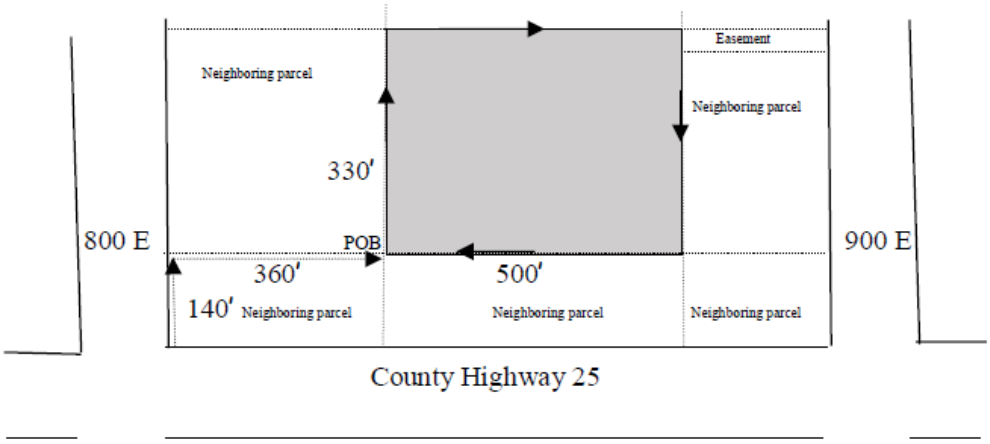


[One source says that no two civic or jurisdictional townships in Illinois can have the same name, and while it seems to be generally true I did locate a Washington Township in Tazewell County and another one in Will County.]

II. *Metes and Bounds*

Metes and bounds is the oldest method of describing property (other than simply naming a parcel, *e.g.*, "the William Davis farm"). Metes are distances (rounded to ⅒ or 1/100 of a foot), bounds (courses) are directions (with movement that is not due north or south stated as angles measured in degrees, minutes, and seconds and perhaps the length and radius of a curve). A metes and bounds description directs you to go so many feet in a particular direction, then so many feet clockwise in another direction, and so forth until you have described the parcel by tracing around all its boundaries. Early metes and bounds descriptions identified parcels based on where they met physical objects or other owners' land. It was natural for streams, ridges, and trees to serve as boundaries when the parcels being put together were to be described with metes and bounds. This legal description method worked reasonably well in the English countryside, but its use in wild American forests, where boundary marker locations could be inaccurately described and markers could be lost to fire or flood, caused problems whose effects still can be seen today.[13] Areas within the United States settled before 1785 utilize metes and bounds as their primary method of legal description. Metes and bounds is also used extensively for small parcels in areas covered by the Rectangular Survey System, but not yet platted (*e.g.*, an old farm that has been broken into several large home sites), serving especially well for non-platted tracts that are not rectangular and/or whose borders are not straight lines.

Parcels actually do tend to have straight boundaries when there are not barriers like streams or rivers, but there can be curves (along roads, for example) that would have to be described based on radii, arcs, chords, and tangents – fortunately, surveyors know how to handle such measures. Describing a parcel with metes and bounds requires a point of beginning [POB] (you may have to go through a few metes and bounds steps to get there). The initial reference point should not be subject to decay or easily moved (the intersection of two public roads can be good, albeit not perfect, as that location might become unclear over time if the roads deteriorate through insufficient maintenance). Start at the POB, and then move clockwise around the property, working back to the POB. The diagram below shows a parcel that would be described with metes and bounds something as follows: From the north-east intersection of County Highway 25 and Township Road 800 East proceed north 140 feet, then east 360 feet to the Point of Beginning, then north 330 feet, then east 500 feet, then south 330 feet, then west 500 feet to the Point of Beginning. (The township, county, and state also might be noted for clarity, and the number of acres included, or at least an estimate of the acreage, could also be included.)



If a metes and bounds description is ambiguous, the disagreement is settled based on:

1) Natural landmarks, or known boundaries of adjacent properties
2) Artificial landmarks (like a stake driven into the ground)
3) Directions
4) Distances (more likely that the long-ago surveyor knew the direction was north but got the distance wrong)
5) The stated quantity of acreage – ranked last, because the quantity approximations that accompany legal descriptions are so often inaccurate. Example: an issue in a 2021 Illinois property tax assessment case was whether the amount of land a nursing home was located on contained the 2.32 acres noted in a deed or 2.44 acres shown in township land records.[14] And in 2003 an Indiana court held that a seller could not cancel the sale when a later survey showed the tract to be 96 acres rather than 81 shown in the deed received when the seller had inherited the land; a point the court raised was that acreages stated in metes and bounds descriptions are frequently incorrect.[15] If a metes and bounds description in a land purchase contract ended with words such as "containing ten acres, more or less" but the parcel as clearly described with reference to permanent natural landmarks contained only seven acres, the ten acres noted in this "in gross" statement of quantity usually would simply be ignored – on the logic that if the number of acres rather than the parcel's general characteristics had been critical, the buyer would have had a survey done. (If a buyer paid a stated per-acre price for ten described acres without the "more or less" qualifier, and the actual quantity turned out to be seven acres, a court would likely order an appropriate price refund.)

In one court case, an owner accidentally built a structure two feet onto his neighbor's land. The metes and bounds description in the deed he received when he purchased showed "210 feet," but also said "to the oak tree," which was only 207 feet away from the boundary. Ruling: the tree marked the lot line, the 210 foot mark did not.

A confusing metes and bounds description in a deed conveying ownership has *latent* ambiguities if other written documents can clear up the confusion. *Patent* ambiguities are present when no other written documents exist to give clarification (oral or "parol" evidence would not be accepted); a court would likely rule that the sale is void.

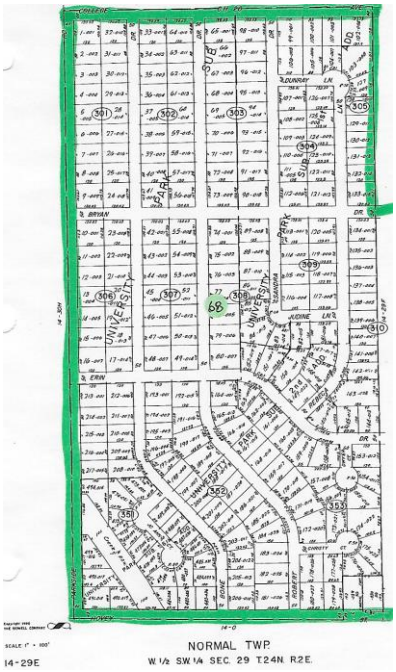
The overriding concern is actually the intent of the parties in earlier transactions, but that is hard to measure directly. Of course, if a description said "starting at the northeast corner of the intersection of country roads 10 and 25, then proceeding 400 feet north, then 300 feet east, then 400 feet south, and then 300 feet east, to the point of beginning," a court would likely hold that the second "east" means west so that the description returns to the specified point of beginning and encloses the tract.

III. *Subdivision Plat*

In established residential areas, we generally find that all parcels have been surveyed and assigned lot numbers. Detailed maps that were created by the engineering firm that did the survey (and are held on file in county government offices) show exact sizes and locations of all streets and lots. Because such a map shows directions and each lot's dimensions, the method of reference to subdivision plat for legally describing land sometimes is seen as essentially a refinement of metes and bounds (although a plat map always shows the township and section the property is located in, so the subdivision plat method also incorporates features of the Government Rectangular Survey method in applicable geographic areas). In older residential areas, there typically are "Block" and "Lot" number designations for all platted lots in a specified subdivision. In newer areas (platted sometime around the year 1960 or later), there often are only lot numbers.

A lot number, as shown on the plat map, usually suffices as a complete legal description. In an older area we might see something like "Lot 12 in Block 3 of Birkett's 3rd Addition to the City of Peoria, Illinois." The accompanying plat map would probably show very uniformly sized rectangular blocks, set apart by a very straight and grid-like street pattern, with all blocks containing equal numbers of very uniformly sized rectangular lots, and with an alley running through the middle of each block – see the historic plat map of part of the City of Chicago below.

In a newer area we might see something like "Lot 59 in University Park Subdivision in the Town of Normal, Illinois." (The accompanying plat map would probably show winding streets, and at least some lots shaped irregularly to conform to the street layout.) In either case, the description might further note that the property is part of some township, such as Township 24 North, Range 2 East of the Third Principal Meridian (recall that the township designation is always shown at the top or bottom of each page in the book of plat maps).



The plat map also should always show the state and county that the parcel is located in, or at least identify the state and county where the plat map is on file (the diagram shown above is a portion from a larger page).

After engineers do the surveys the plat maps and the lots' sizes and designations will not change. Yet while parcels that sell (especially in more developed or populated areas) often consist simply of one or more entire platted lots they do not have to; subsequent buyers and sellers of land are not restricted to transacting in whole lots. In a case we will discuss again later from the Illinois town of Tiskilwa, a buyer in 1924 negotiated to buy, from a big local land owner (who probably had bought a large tract of farm land to develop for residential use as the town grew), all of lot 11 on the south edge of one subdivision, and then the east half of 66-foot wide lot 205, all of 66-foot wide lot 206, and the west 11 feet of 66-foot wide lot 207 at the north end of the subdivision directly south (wanted the 11-foot strip to use as a driveway leading to Main Street from lot 11). The lower shaded area was not redesignated to

be a larger, inclusive "Lot 205" or "Lot 206;" the official legal description included the applicable portions of all of those officially platted lot numbers, as stated above. Of course the seller had to willingly accept being left with odd portions of lots 205 and 207 to try selling to later buyers, probably in connection with other contiguous land (like selling another party the east 55 feet of lot 207 along with unshown 66-foot wide lot 208 to the east).

The three methods can be combined into one legal description. This situation might occur for a parcel in an unincorporated area near the edge of a city. An example might read something like the following, with lot 2 representing a fairly large piece of ground that has been broken into several individual residential parcels.

> "Part of lot 2 in Smith's Acres Subdivision located in Township 24 north, range 2 east of the 3rd Principal Meridian and further described as follows: From the northeast corner of the intersection of McLean County Roads 21 and 34 proceed north 240 feet then east 100 feet to the point of beginning, then proceed north 175 feet, then east 300 feet, then south 175 feet, then west 300 feet to the point of beginning, containing 1.2 acres more or less."

IV. *Miscellaneous points*

A. If the description of land based on one or more of the systems described above is unclear – for example, if slightly different descriptions appear in the contract for sale and the deed provided to the buyer – ambiguities are interpreted in the buyer's favor, since the seller knew the property and the seller's attorney drafted the deed. In addition, specific statements dominate more vague representations, a platted lot number would prevail over an accompanying metes and bounds description, permanent reference points would take priority over reference points that could be moved, and a metes and bounds description would be seen as more reliable than an estimated amount of land. (Incidentally, an *overlap* is an area of land that falls within the reported legal descriptions of both of two adjoining parcels; a *gore* is an area not found in the legal description of either of two tracts said to be adjoining. The surveyor who made such an error could potentially be subject to a lawsuit for professional negligence.) [A January 27, 2023 Bloomington *Pantagraph* article indicated that it should cost approximately $525 to have an individual lot surveyed.]

B. Using plat maps is not fool-proof. A house was accidentally built on part of lot 16, rather than part of adjacent lot 17 that the home owner had actually purchased, in a large new Florida subdivision of platted vacant lots. Because the home owner could not afford to move the house or buy the correct lot, a court ruled that the most equitable result would be to have the adjacent owners trade lots. It noted that every parcel of real estate is unique so there can be problems with forcing someone to accept land they never wanted to own, but in that instance the lots were in the same location, and lot 17's owner was paid the $100 difference in appraised values and reimbursed for survey costs.[16] A more recent case in Chicago had a different outcome. In 2005 a contractor built a house on lot 38 in a Lawndale neighborhood subdivision when clients the Miller family had actually bought lot 39, which remained vacant. Cook County sent the Millers annual tax bills for lot 39, with taxes based on a house and lot. But then when the county caught its error and the tax bill received in 2017 was far lower the Millers knew there was a problem. They had never paid (or been billed for) taxes on lot 38, and in 2019 learned that a firm that had paid the delinquent taxes was claiming ownership of the house. By early 2023 they had spent $65,000 on attorney fees and settling with the party that had paid the lot 38 taxes. The builder has long been out of business and can not be sued, but at least the Millers were awarded both lots 38 and 39.[17]

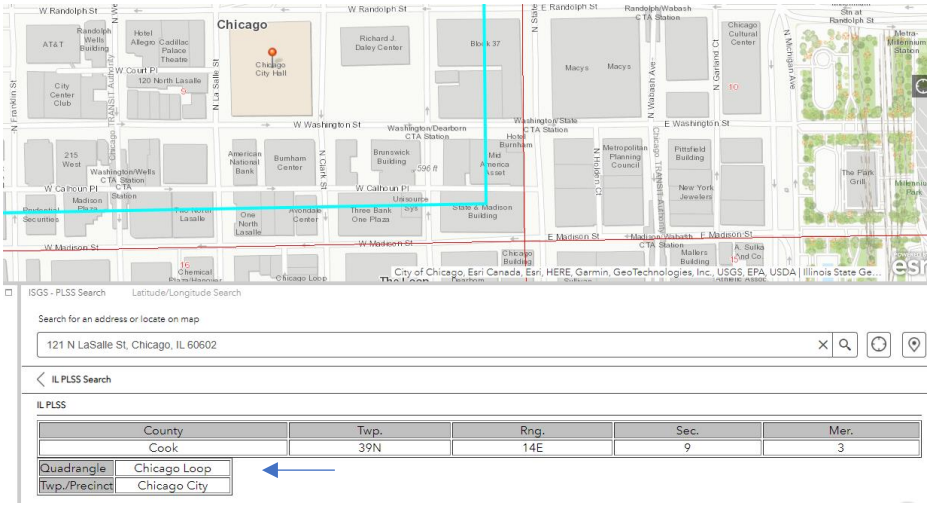
C. In the early-mid part of the 20th century the federal government made efforts to place permanent markers to identify locations under the Government Rectangular Survey System, starting with the Works Progress Administration during the great depression of the 1930s. This 1941 metal marker shows the spot where four sections meet.

D. It was noted earlier that skilled land surveyor George Washington was among critics when the Rectangular Survey System was proposed. One problem with the system is that sections are bordered by roads that run straight north/south and east/west, while elements of the natural terrain do not. Parcels created under metes and bounds regimes were more likely to conform to the affected land's natural features. So while a metes and bounds arrangement might use a stream as a parcel's boundary, a road that results from the survey system's rectangular parcels might cross that same meandering stream multiple times – with an expensive bridge needed at each crossing.[18]

E. The Illinois State Geological Survey has a web site for the Illinois Public Land Survey System:

https://isgs.illinois.edu/plss

which applies the Government Rectangular Survey System to land in the state. A link allows you to enter any address in the state and see the quadrangle, township, and section where it is located. For example, the result you get (note that it shows the Chicago Loop quadrangle) after typing in Chicago City Hall's address is



F. A land parcel's acreage based on its legal description is the area it would contain if the tract were completely flat. If the terrain is hilly the surface amount of land is greater than what the legal description would suggest. This difference between reported acreage and surface area is one reason why, in a metes and bounds legal description, the reported directions and distances are considered more reliable than a possibly stated number of included acres.

G. There is actually a system that predates metes and bounds, although it is so imprecise a tool that we might be stretching things to call it a "system." The "zygocephalum" system was a land description tool based on the hard-to-nail-down measure of the quantity of land a team of oxen could plow in a day. (Zygo is Greek for yoke.) An ox team's daily plowing capacity was also the basis for the number of square feet in an acre. (A "chain" measured 66 feet, ten chains = 660 feet constituted a "furlong," and a chain times a furlong = one acre = 66 x 660 = 43,560 square feet.)

Recall also that one mile = eight furlongs = 8 x 660 feet = 5,280 feet. One mile x one mile = one square mile = a section = $(5{,}280)^2$ = 27,878,400 square feet, such that a square mile contains (27,878,400 ÷ 43,560) = 640 acres. Thus an acre (recall a bit smaller than a football field in size) is 1/640 of a square mile. We might note that Italian land is measured in *acros* (the same as our acres), while German land is measured by the *Morgen* (about .6 acres), Swedish land by the *tunnland* (1.2 acres), and Austrian land by the *Joch* (1.4 acres).[19]

Interesting non-real estate point: in 19th-century rural England a horse-drawn wooden cart that held 48 bushels was called a "butt." A large wooden barrel that holds 108 imperial gallons (approximately 130 U.S. gallons) also is a "butt." Thus the dry measure of 48 bushels or liquid measure of 108 imperial gallons genuinely is a "buttload." (Your aging instructor is convinced that variations of "crapload" are entirely made-up terms.)

H. A variation on metes and bounds is the *monuments* description system. This informal system, which denotes monuments at various corners of the parcel, is sometimes used for small lots.

I. Occasionally transactions describe real estate by a popular name, such as "The J.D. Davidson Farm, located near Heyworth in McLean County, Illinois." To give more clarity this type of description might include the names of owners of bordering properties. But there are many potential problems with this type of legal description. As noted, this type description would more likely be acceptable in a contract (initial agreement) than in a deed. Since a contract primarily affects just the parties involved a judge would try to determine those parties' intent.

A Wisconsin seller provided a deed that described the real estate being sold as his farm, but the seller's land included both tillable acreage and a separate parcel with a house the seller had lived in. After the seller died his daughter filed a suit claiming the property transferred should not have included the house, even though the contract had specified when the seller was to vacate the house. An appellate court found that the description was unclear and nullified the sale.

J. A fourth method for providing accurate legal descriptions, the "*plane/coordinate*" system, is based on longitudinal and latitudinal measures, with reference points in each state. The benefit is that physical markers are not needed. But this method is fairly complex, and is not used much in standard transactions. Highway departments and utility companies sometimes make use of it.

K. Speaking of planes (albeit of a different kind): during the 1930s Great Depression the federal government enacted the National Aerial Photography Program, through which aerial pictures of all U.S. land were taken – 35,000 just in Illinois. A major goal was to document locations of U.S. farmland at a time when many farmers were losing their properties to foreclosure. When your superannuated instructor did a practice appraisal of an eastern Illinois farm as a college agricultural appraisal course project in 1977, I bought an aerial photo of the subject farm and its surrounding area, based on a Government Rectangular Survey System description, from a local U.S. Department of Agriculture office. Many of the original pictures have been digitized (though many of the old negatives have deteriorated or been lost over the years), and a modern era National Aerial Imagery Program regularly produces aerial farmland pictures to measure crop yields.

L. Sometimes we also need *altitudinal* measures (*e.g.*, for describing a condominium unit's location). So the description would relate to a tract of land and a distance above the ground's surface. When such measures are needed, they sometimes are based on a "datum," or base altitude, of sea level in New York City harbor. For such measures we obviously are legally describing something relating primarily to improvements, not land.

M. A high-tech era tool for uniquely identifying real estate is Geographic Information Systems (GIS). GIS uses computer and laser technology to create and manage information based on geographical location, using global reference points. (Google Maps is a GIS application, and Google Earth uses GPS.) An important use of GIS is converting street addresses into latitudinal and longitudinal coordinates that identify property more precisely than the Government Rectangular Survey system can, since the latter is hampered by all the imperfections of surveys done two centuries ago. The U.S. government's Bureau of Land Management has developed a National Integrated Land System that uses GIS with surveys and legal descriptions, largely with government-owned lands in the western states but a goal seems to be improving the accuracy of longstanding land records nationwide. •

All figures appearing in the discussion above were copied from government web sites or produced by the instructor.

[1] *Boehringer v. Montalto* (New York trial court, 1931); the judge was loosely translating from a Latin term used in the earlier case *Butler v. Frontier Telephone* (New York appellate court, 1906).
[2] *U.S. v. Causby* (U.S. Supreme Court, 1946).
[3] Much of the material on the following couple of pages is drawn from the exceptional book *Measuring America* by Andro Linklater, New York: Plume (Penguin), 2002, threaded in among points from other reference sources cited. Your FIL 260 instructor has tried to synthesize from material throughout that book to tell a coherent, brief story about the Government Rectangular Survey System and some related history. Readers who need specific page references from the Linklater book should contact the instructor.
[4] Prominent American economist and former Harvard University president Lawrence Summers has said, "In an earlier era, when many people were involved in surveying land, it made sense to require that almost every student entering a top college know something of trigonometry. Today, a basic grounding in probability, statistics, and decision analysis makes far more sense." See Nisbett, Richard E. *Mindware: Tools for Smart Thinking.* New York: Farrar, Straus, & Giroux, 2015, 3.
[5] See Sakolski, Aaron. *The Great American Land Bubble*. New York & London: Harper and Brothers, 1932, various pages. Reprinted by Martino Publishing, 2011.
[6] See Sakolski, cited earlier, 119-121.
[7] Budiansky, Stephen. "A Plan That Crossed a Continent." *The Wall Street Journal*, May 25-26, 2024, C5, C6. The article is a review of the 2024 book *Liberty's Grid*, by Amir Alexander.)
[8] See Sakolski, cited earlier, 100.
[9] See Budiansky, cited earlier.
[10] *McLeod v. Lambdin* (Illinois supreme court, 1961).
[11] Flick, Bill. "Today's Flick Fact." *The Pantagraph*, January 2, 2024, A2.
[12] Linklater, 168.
[13] Linklater, 8, 40, 153.
[14] *Joliet Township v. Illinois Property Tax Appeal Board* (Illinois appellate court, 2021).
[15] *Perfect v. McAndrew* (Indiana appellate court, 2003).
[16] *Brown v. Davis* (Florida supreme court, 1987).
[17] Knowles, Jason and Ann Pistone. "Chicago Family Pays $65K to Keep Lawndale Home Accidentally Built on Wrong Lot Years Ago." *ABC 7 Eyewitness News*, April 27, 2023.
[18] See Budiansky, cited earlier.
[19] Linklater, Andro. *Measuring America*. New York: Plume (Penguin). 2002. 253.