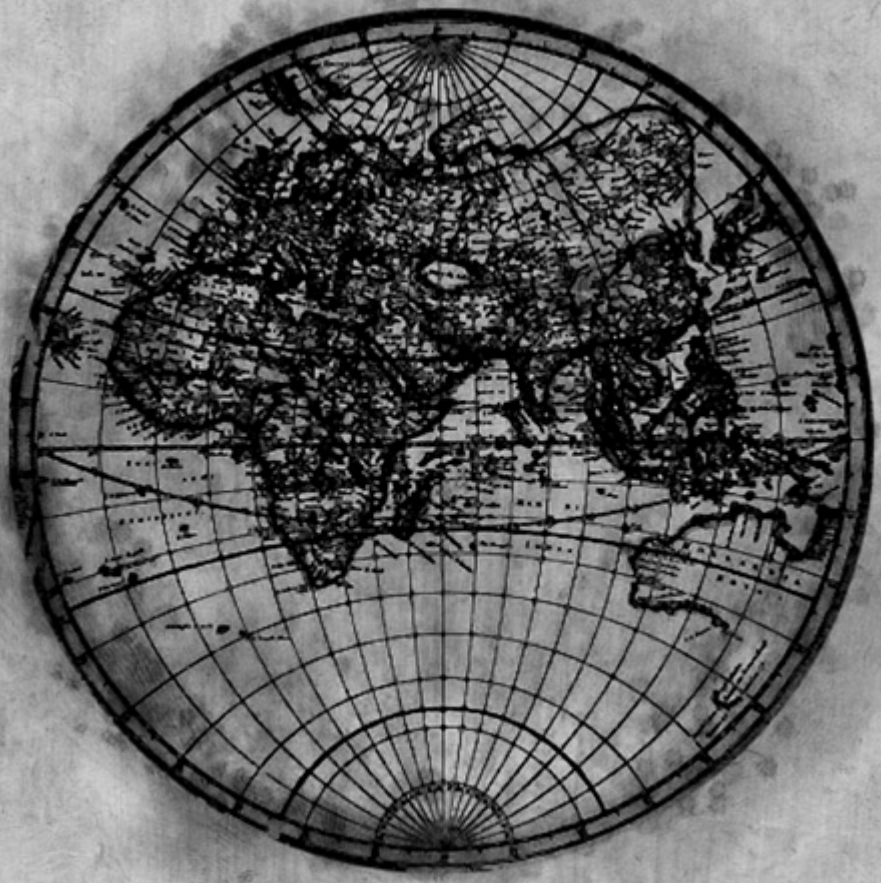
A Magical Society: Guide to Mapping



Expeditious Retreat Press

Author Joseph Browning
Interior Art by Ravindra Rana
Editing and Layout by Suzi Yee

WWW.EXP.CITYMAX.COM

Words from the Publisher

Welcome to A Magical Society: Guide to Mapping, a free 37-page PDF that helps people make maps for plausible worlds. Taken from a macro prospective, the mapping guide goes through nine steps, each step illustrated with examples, supporting text, and a sample world map.

This free product is a collection of the three mapping sections in a larger work, A Magical Society: Ecology and Culture. Within those covers you will find help filling your world with biomes, ecological wonders, and cultural groups

If you want to expand upon the ideas presented in this free PDF, pick up A Magical Society: Ecology and Culture from your FLGS or from rpgnow.com. The book will be available in April 2004, and the PDF will be available on March 4th, [March Fo(u)rth to GM's Day!]. If you buy the book directly from our website (www.exp.citymax.com), you'll receive a $5 off coupon for the pdf at RPGnow.com.

We hope you enjoy this product and continue to support Expeditious Retreat Press. We work slowly so you don't have to. J

Good Gaming,
Joseph Browning and Suzi Yee
Expeditious Retreat Press

Note: Page 3 displays the Table of Contents from A Magical Society: Ecology and Culture.

Table of Contents

To members of the Council and those who audience these pages,

This treatise presents a collection of ideas, conditions, and advice on world building for others who follow me, may they glean insight from my experiences. I have chosen this path of recording over more extraordinary methods in hopes that, should I complete the task satisfactorily, it may act as a guide for godlings that follow.

Split into three distinct but related parts, the unifying theme of this work is mapping a new world. Book the first concerns the rudimentary decisions in world building and their implications, including but not limited to the manner in which landforms appear, why they appear in that fashion, and advice on creating maps based upon sound physical geography. Book the second concerns ecologies, various biomes and environments created by the interaction of weather and physical geography, the creatures occupying these various environments, and advice on mapping these places. Book the third concerns the limitations environment places on intelligent races, tools of culture that intelligent races use to overcome their environment, and advice on mapping cultures. Following these three sections is a collection of useful reference appendices.

The base world for comparison and reference is Earth, which functions without major magical intercession. All discussed deviations are from the perspective of Earth-like worlds, and numerous examples are drawn from Earth. In this work, magic – a complex factor in world creation—is treated as another source of accessible energy. Like sunlight and geothermal energy, magic is a building block for life and links the traditional features of many fantastic worlds to the intricate mundane web of life: vast underground populations; amazingly lush, fertile, and inexhaustible environments; and a plethora of massive predators whose existence must be magical.

Some argue that gods create worlds. Period. Others point out that gods may be living in a closed system created by a greater force, as godlings' creations are no more real except to those living in the creation. Regardless of how things are made, our primary goal is proper functioning. Things must work on their own without the constant intercession of their creators, other gods, and their magic. That being said, gods still interfere; however in the best of worlds, it is minimally necessary. With all these considerations, I humbly submit my observances for your enjoyment, scrutiny, and perusal.

Kierian the Bold
Petitioner for God of War and Bringer of Justice

Satisfactory
*See back for comments

Interlude

Kierian moaned at the first tinges of consciousness. He opened his eyes and rubbed the sleep from them. As his senses awakened, he noted the strangeness of his surroundings. The air was stiff like a skin pulled over a drum—still, yet stretched with taut energy. The light was neither dim nor luminescent, but it glowed vibrantly. The room was hardly a room, absent of walls, ceiling, and floor. Then there was the gnome sitting ten feet away from him, reclining with a pipe and making scribbles in a little pocket book. Looking up from his writings, he smiled warmly.

"You're up then," Noj spoke matter-of-factly as he closed his book. "Good. We have lots of work to do."

"Where am I?" Kierian asked in confusion. "And who are you?" He placed an anxious hand on the hilt of his blade.

The fastidious gnome's smile faded. "You don't know?"

Kierian rose to his full height, surveying his surroundings. "No. This place is not known to me."

"Oh dear." Noj sat down again and motioned for Kierian to take a seat. To Kierian's surprise, there was a chair for him where there had not been before.

"What sorcery is this?" Kierian drew his sword and looked around. He sensed a change in his blade. The sword was different in his grasp, lighter and weightier at the same time.

Noj looked up muttering Gnomish curses. "Please, just sit down, and we'll straighten this out." He opened his brown plaid waistcoat to reveal his possessions, of which were no weapons or devices of sorcery. "As you can see, there is little need for your sword."

Kierian cautiously took a seat but refused to sheath his sword, resting it beside his leg. The gnome flipped to an earmarked page and produced a pencil from his breast pocket. "Are you Kierian of Rockmoor?"

"Yes," answered the surprised fighter.

Noj looked up and nodded in confirmation. He moved the tip of his pencil down the page. "And you slew Korgol the Destroyer, God of War, Bringer of Chaos, Widow Maker, Devourer of Souls, etc?"

Flashes of memory sparked a recollection. There was a battle, a victory, then lightening; it wasn't natural, but powerful. "Yes. I suppose I did," conceded Kierian.

Noj closed his book with a reaffirming smile. "Then there is no mistake. You are Kierian of Rockmoor, God of War, Bringer of Justice." The satisfied gnome noted Kierian's blank expression. "Don't worry. Everyone starts out with a short title. You'll get more as time goes on, though most gods would abandon 'of Rockmoor' for something less... common."

Kierian stood, pacing back and forth for a few moments. "So let me get this straight." Kierian's precise steps echoed crisply in the emptiness. "I kill a god, and I take his place. Easy as that?"

"Yes and no," Noj replied with a hint of scholasticism. "The position is temporarily empty, and a period of chaos will reign until the new God of War asserts him or herself. Since you killed the last God of War, you have precedence to fill the position, provided you prove ready."

Kierian's brow furrowed, and he took his seat again. Pacing on a non-existent floor unsettled him while the lingering traces of mortal suspicion and doubt interfered with his divine intelligence. "Ready?"

"Yes. There is the small matter of the task." Noj relit his pipe, realizing this was going to take a while.

Kierian leaned toward the gnome. "What's 'The Task'?"

"The trial of the gods where you must prove able to wield your divinity."

Kierian loosed his sword from its sheath. Shining in the eerie glow of this place, the godling decided to call it the Blade of Righteousness. "Bring whatever foe or beast the gods dare pit against me."

Noj shook his head and stifled his laughter. "No, nothing of that sort. You killed Korgol the Destroyer, Spiller of Blood, Foe of Peace, Friend of Death, etc. That alone proves your prowess, regardless through might, wisdom, or trickery. Now you must prove your understanding."

Kierian was well over six feet tall, seventeen stone, encased in gleaming metal armor, and bore the Blade of Righteousness. This was all the understanding he had ever needed. "What must I do?" he asked in a dubious tone.

Noj answered plainly, "You must create a world."

Kierian roared, releasing peels of laughter in the expansive space. "You really had me going for a moment. 'You are the new God of War.' That's great. Who put you up to this? Was it Cora? 'Cause I didn't mean to leave her in the pit trap. I just got sidetracked on the way for help, and by the time I got back, she was already in town."

"Why do I get the difficult ones?" Noj thought to himself. "Suit yourself. Create something. Think of something, and shape it in your mind. You can give it smells and texture and taste. Go ahead." The terse edge in the gnome's tone and the imperious wave of his hand did not escape Kierian's notice. He closed his eyes and began creating. It was quiet and still. Then the smell of meat pie filled the air. Kierian opened his eyes to a golden-brown meat pie whose juices were bubbling through the buttery crust along side a frothing mug of ale.

"Did I do that?" Kierian asked incredulously.

"It wasn't me," answered Noj. "I'm a vegetarian." Kierian crept forward and held the warm pie in his hands. "It's not real, you know," injected the gnome. "Nothing created here is, except for those living within the creation itself."

The famished warrior bit into the pie. It felt like he hadn't eaten in ages. Warm juice and ale dribbled down his chin as he washed it down with a deep drink. It was the best tasting meat pie and ale he had ever eaten, but something was strange. It was a bit off. No, it was entirely wrong. "Where are we?" Kierian asked with a new intensity.

Noj straightened upon hearing the Voice of Divine manifest in the fighter's tone. "The testing ground. It's where godlings practice creating and test their theories on world building."

"And who are you?" Kierian's mind focused into a singularity. The food vanished like a memory.

The gnome stood and bowed to his new lord. "Noj Danask, well versed in the knowledge and engineering of building worlds. I am here to assist you. I put into motion that which you desire for your world. You will record your findings, and should the Council approve your process, you will come into your full divinity."

"And if I refuse?" Kierian's serious demeanor gave him a ferocity that Noj hadn't seen as of yet.

"Then you are neither here nor there, neither mortal nor god, shunned from enjoying the innocence of one and the power of the other."

They sat in silence together until Kierian rose and cleared his throat. "Right then. Where do we start?"

Noj opened his book. "At the beginning."

Mapping Your World

Maps are home to the stuff of legends and nightmares: Atlantis, Xanadu, terra incognita, "Here there be dragons!" A wise gnome once said, "A good map is almost a history." Maps show the past: treasure maps, maps of dead empires, and maps of sunken ancient lands. Maps show the present possibilities: harsh deserts, fertile meandering rivers, steamy jungles, and barrier mountains populated by fiercely independent people. Maps also show the future, for well I know that every conquer looks towards a map and dreams of empire. Maps may represent a world clearly like the finest prose or as cryptically as the best of poetry. It is because of this that I have chosen to use maps in creating my world.

Though maps of pen and paper do not require much in divine power, they are not so easily made. Most are unaware of all the landforms and physical geography worlds demand. Where to place mountains, rivers, swamps and deserts are important questions that must be answered, even for worlds which deviate from our given base planet, Earth. The more a world mimics the basic forces of nature, the more engrossing the world becomes for those living in the creation. The goal then becomes a map of the world that can run itself without magic, for if we create such a world, any magic we do implement simply adds to its charm.

Originally I found building a planet that requires as little magic as possible an odd request, especially considering my new abilities. Now I know it a valuable lesson. Once we godlings know how a mostly non-magical planet works, we can step away from the basic design into more complex and fulfilling ones. Bears, tigers, and even dinosaurs may be interesting, but they all pale in comparison to the complexity of a fully functioning magical world inhabited by orcs, ankheg, and dragons.

Beginning Considerations

It's tempting to run into world creation before thinking about the world as a whole, hastily plopping down mountains, rivers, deserts, and jungles. When enthusiasm gets the best of patience, however, godlings end up with ragtag worlds whose geography and biomes make no sense and must be supported by magic. Although magic is an important part of every world, magic shouldn't be used to explain how a river flows over a mountain, except in very special circumstances. Magical geography should be used to intensify experiences, not explain everyday phenomenon. Remember godling, the initial magic allowance for building first worlds is slim; maximize your potential by minimizing your mistakes. Such mindful consideration may one day lead to building whole planes created entirely through magic. But as of yet, that is the future.

One of the best ways to minimize mistakes is through observation. Any artist will tell you that seeing the world properly is the first step in creation. Before making maps, spend some time with a good world atlas; it contains everything we need to know about making independent, viable worlds and realistic maps. Hopefully the remainder of this tome expands your knowledge base, allowing you a new sight in how the world works through an atlas. For example, consider continents. Though we have all been taught seven traditional continents, this artificial division impedes accurate physical vision. There are really only four giant landmasses on Earth, along with several smaller islands. Of these four giant landmasses, two of them have very small isthmuses separating them roughly in half.

In this quest for proper vision, every step of the mapping process should involve some visual aid, even if you are planning a deviant, themed world, such as an archipelago world. You will benefit from time spent looking at Earth. Accurate vision prevents jarring inaccuracies and makes new worlds require less magic. If you're of

the scholarly bent or find your gnome to be lacking in forthrightness, find an ancient tome concerning geology or physical geography. Look for one in the library. There are several available, and they will cover the processes of creation to minute details. Sometimes details are exactly what you want. Please read through this whole section before beginning your map. It will help you create a better world.

Step One: The Big Picture

The Heavenly Spheres

Before starting a new world map, a creator must make decisions about what the world looks like and how it interacts with the matter outside of its atmosphere. Is the universe just like the base material one, but with more or less magic? Is the new planet the center of the solar system? Do crystal spheres hold everything in their unchanging order, or do the gods move the planets and sun? Perhaps the world rides along on the back of a giant turtle? These types of questions and their answers are part of the fun in creating new worlds.

Ironically, it is here that we have the most flexibility with new worlds. The same intelligent creatures that don't like rivers flowing uphill have no problems accepting a world surrounded by crystal spheres that move the celestial bodies across the sky while intersecting the many planes. Magic on a massive, universal scale is more easily accepted than on a small scale because creatures don't interact with astrophysics as much as they interact with gravity. Sometimes the big miracle is the most believable.

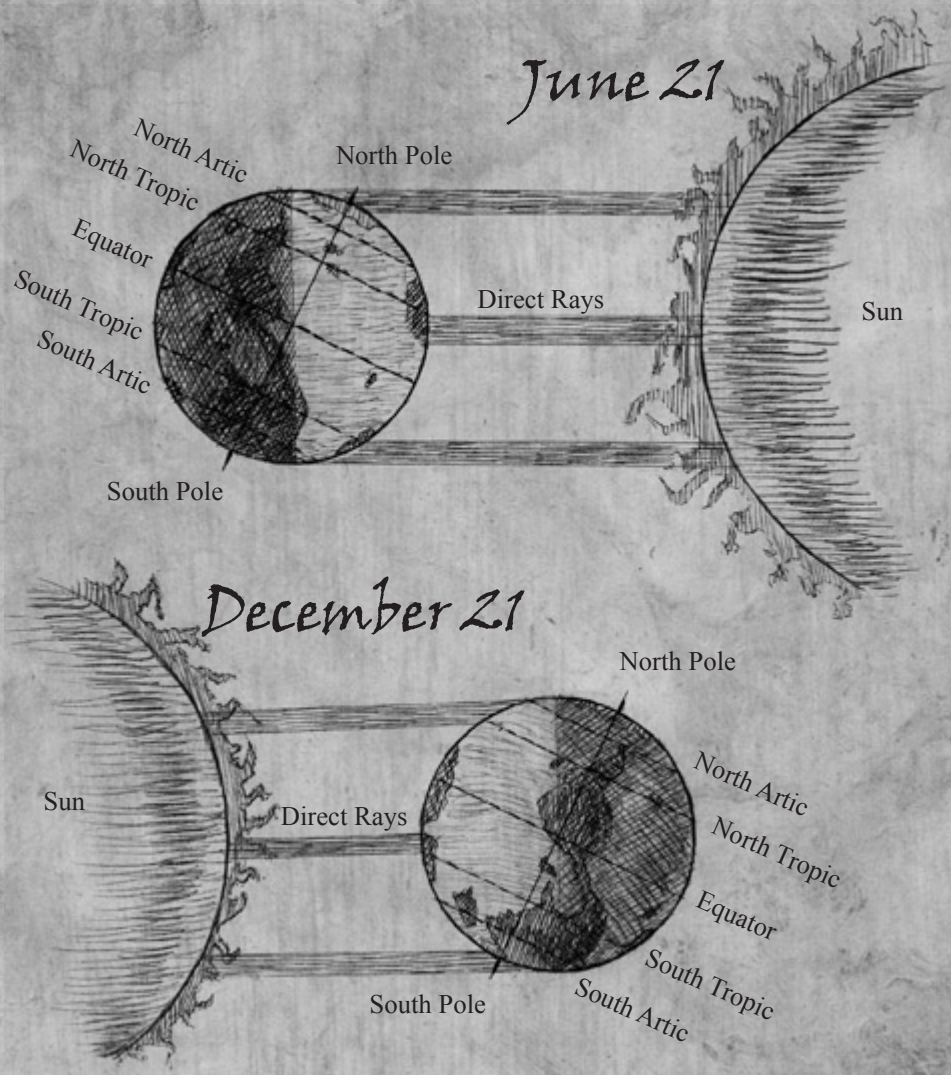
Dealing with the various cosmological and world-shaping possibilities is beyond the scope of this treatise. Flat worlds, water worlds, and hollow worlds all have their place in the metaverse, but their unique patterns require serious dedication to their exploration and power beyond what godlings possess. Our focus is on Earth-like worlds, but that's far from limited. Even on the strangest prime material planes, standard types of weather and erosion usually play their part upon landmasses, just like they do on Earth. It's just the way the multiverse likes to work.

Axial Tilt and Seasons

Earth sits slightly tilted at 23.5° and rotates around this axis every 24 hours, forming a day. It also revolves around the sun every 365.25 days, forming a year. These three simple things—axial tilt, length of a day, and length of a year—are some of the most important aspects of any new world. They will have the greatest effect upon what a new world looks like.

Planets maintain their axial tilt and rotation, regardless of where they are in their annual cycle. A planet's rotation around its axis creates day and night, shifting exposure to the sun's rays in its rotation. Axial tilt determines seasons with winter occurring when the planet is tilted away from the sun and summer when the planet is tilted toward the sun. When one hemisphere is tilted away from the sun, the other is tilted toward the sun, meaning that while it's winter in one hemisphere, it's summer in the other. Axial tilt also influences the length of day and night through the creation of seasons. The amount of time the hemisphere is subject to the sun's rays determines the number of daylight hours. During the winter, the days are short, and the nights long, while during summer the reverse is true.

You can create a grid by identifying the points on the top and bottom of the planet around which the plant rotates, known as the poles. This grid allows you to pinpoint any specific location in relation to the poles, which are fixed points. Latitude is the distance measured north and south of the equator, with the equator at 0° and the poles at 90°. On Earth (or any planet 8,000 miles in diameter), each degree of latitude is roughly 69 miles, which varies due polar flattening, but only by about 0.5 a mile. Since axial tilt provides us both with seasons and a way of locating specific places on a



planet, it also provides us a useful way of measuring daylight times. Using latitude in conjunction with axial tilt conveys a lot of information about a planet's daylight hours and climate.

Axial tilt determines the lower and upper limit of daylight on your planet. The lower limit of daylight is the place that experiences at least one complete day of darkness and one complete day of light a year. On Earth, this takes place at 66.5° latitude, which also correlates with the artic regions of the planet (66.5°-90°). As you travel closer to the poles, you experience more days of continuous light and continuous dark. Around the poles, day or night can last weeks. The upper limit of daylight is the place where the sun is directly overhead for at least one day of the year. On Earth, this takes place at 23.5° latitude, exactly 23.5° from the equator, which correlates with the tropical zones (0°-23.5°). As you approach the equator, you experience more days with the sun directly overhead.

Notes on Deviant Axial Tilts

When you chose the axial tilt of a new planet, you are also determining the location of the artic circles and the tropics, which influence basic climate. For planets to be Earth-like, axial tilts must be close to Earth's range (15°-32°), depending on how much seasonal variation a godling wants. The greater the axial tilt, the more seasonal

variation. Keep in mind that a lot of the temperate climates rely upon snowmelt for much of their water. A smaller axial tilt may result in more widely spread deserts than on our base planet because not enough snow melts. On the other hand, too much tilt could result in more widely spread deserts because not enough snow falls.

Deviations in the axial tilt also change the distribution of surface heat on the planet: the larger the tilt, the more even the distribution of heat. With a tilt of 23.5°, Earth's heat is more evenly spread than if its tilt was 15°. To build a planet where heat is evenly distributed over the surface, a tilt of around 54° is required. This extreme tilt, however, would lead to a world very different than Earth. But there are also methods of changing climate without choosing a drastic axial tilt and all the implications that result from such a decision. For example, if you want a colder plant, perhaps your world has a larger orbit around the sun. Of your planet is exactly like Earth, but is currently experiencing an ice age.

Planetary climatology is one of the most complex subjects in world creation, so no godling should feel inadequate at a world whose climate is not 100% accurate. Although striving for perfection and realism brings its own sort of accomplishment, you should always weight the effort verses the return on every part of world building.

Step One: Example

I'll record my thoughts while creating my world along with each step. Step one is easy for me, as I don't want to add any more complications than necessary. I'll create a world that's the same diameter as earth, the same distance from its sun, the same daily and yearly cycles, and with an axial tilt of 24°. This allows me to focus on other matters right now. My flat world will have to wait.

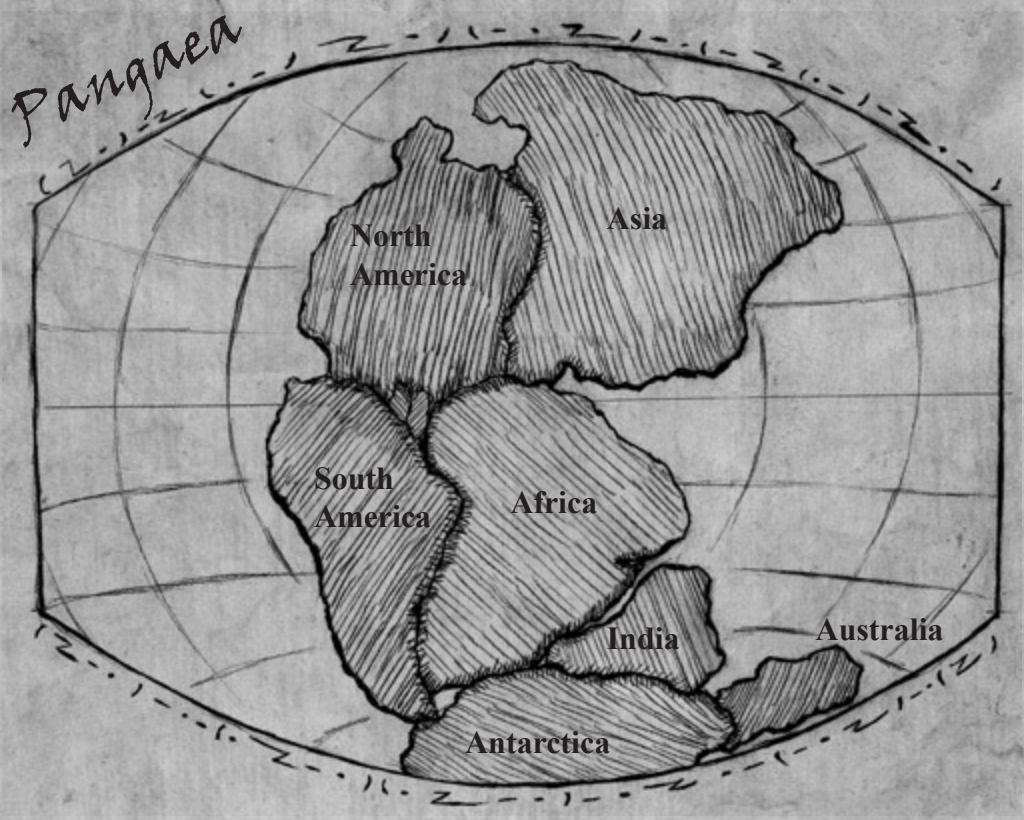
Step Two: Continents

Continents are striking features of any map, but they are merely the tips of larger plates that float along the world's surface. Plate tectonics describe the very slow thermal convection system at work inside the planet. This slow convection brings deep magma to the surface while pulling crustal material down. In this process, continents slowly move over the surface of the world. Tectonics elegantly create many geological phenomenon, most notably mountain formation, and allow us the joy of watching our continents move around like the hardening crust of cooling gravy. You may, of course, create a world where continents move for reasons other than tectonic activity, but you will have to supplement the natural geothermal forces with your own magic. I would not suggest

No Seasons or Hyper Seasons?

Axial tilt determines many vital aspects of a world. Choosing a tilt far from Earth's leads to a very different world. A world with a 0° tilt has no seasons because the sun is always in the same place in relation to the planet. Each individual location on the planet receives the same amount of sunlight all year round, making day and night the only temporal variations in solar energy. In order to achieve a 0° tilt, the equator lines up with the plane of ecliptic, the plane that passes though the sun and the every point of the planet's orbit around the sun. This would radically change the appearance your world, given Earth's reliance on deferential temperatures in climate, erosion, and other world-shaping phenomenon.

A world where the poles lie upon the plane of the ecliptic (90° tilt) is in even worse shape. Nearly half of the planet has a never-setting summer sun while the other half has a never-rising sun. Spring and fall are the time of rising and setting suns, and the equator is the best place for the growth of glaciers. Mass migration is a possible solution for Earth-like life to survive in such a world, though inhabitants of this type of world probably rely on magical energy to provide other survival methods.



such a course of action. Besides larger expenditure of magic, removing tectonics also affects the ecological aspects of your world.

How do you start building a world? Start drawing shapes. Don't focus on making good coastlines or craggy fjords. Just start placing general blobs where your landmasses are at the current time. To mimic Earth, focus on three to five large landmasses with one to three of them having small isthmuses connecting two larger "continents." This instantly provides a new world with the "right" feel with very little effort on the part of the creator. If something isn't pleasing, simply move on to the next idea.

After placing landmasses, consider the plates they rest on and how they could have moved through time. Every landmass is the part of a plate of rock that "floats" along at the surface of the planet. Plates generally extend miles into the ocean before ending. For reference from the base world, South America abutted North America and Africa; Africa abutted Eurasia, North America, India, and Antarctica; and Australia abutted India and Antartica.

To simulate this effect in your world, take the landmasses you created and fit them together like pieces of a puzzle. Don't worry if you have to shave pieces off or add a land bridge somewhere. In geologic time, oceans rise and fall, continents crash into each other, pieces cleave off larger plates, and plates separate. When creating a world, you have the advantage of dictating history rather than recording it. After making these modifications, notice the boundaries where the plates previously intersected. There's a good chance that mountains form at these intersections. If mountains aren't there, hills may be. This is not the only method of creation, though creating a new world "with age" is fairly common. Most gods have little desire to wait the billions of years it takes the universe to naturally create intelligent life.

Step Two: Example

Please reference the map provided. I've drawn out some hasty coastlines for two large landmasses connected by small isthmuses along with a single large island/continent. You'll notice the peninsula on continent B jutting out westward. I drew this because I like the shape. However, this probably means that that peninsula is mountainous since almost all such peninsulas from our base planet are mountainous. There are some exceptions (Florida), but most peninsulas are mountainous (Italian, Iberian, Malaysian, Kamchatka, Scandinavian, Korean, Baja). This also means that I've probably got a subduction zone offshore because most of these peninsulas do as well. I'll keep that in mind as I go along.

I've also drawn dotted lines showing where my continents linked up in their pangea stage. This will help me place my mountains in the next step. If you'll note, I've placed the equator, the tropic lines, and the artic lines (24° from the equator and 24° from the poles respectively) based upon the tilt decided upon in step one. This isn't important now, but it does impact on weather later on.

Step Three: Mountains

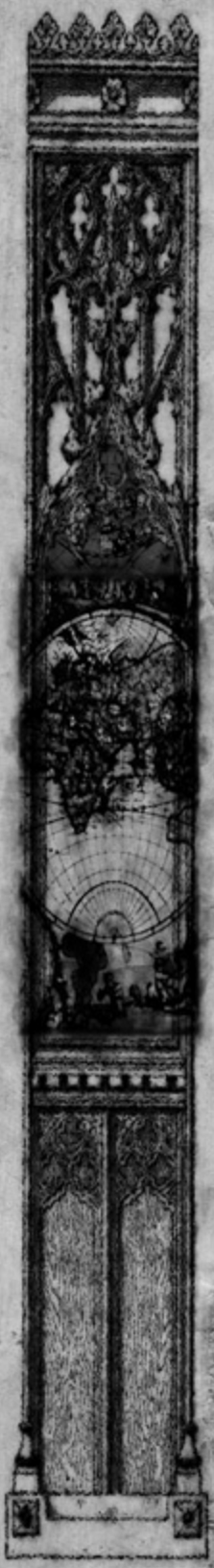
Once continents have been roughly outlined, and you've gone back in time to crunch all the continents together, placing mountains becomes a lot easier. Mountains form in a number of ways, the majority of which result from tectonic plate collision. Plates collide in three different mountain-building ways: oceanic plates collide with continental plates, oceanic plates collide with oceanic plates, or continental plates collide with continental plates. Mountain creation is generally a coastal affair. The majority of inland mountains were once near a coast, although some are the result of uplifting or folding.

Mountains Formed by Collision

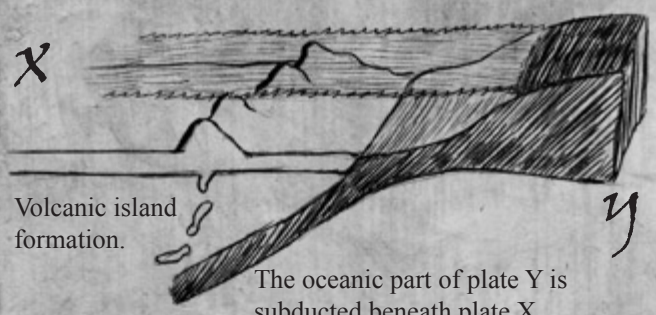
Whenever a continental plate meets an oceanic plate, the continental plate pushes the oceanic plate underneath it because continental material is less dense. This collision, known as subduction, thrusts the continental plate upward and creates mountains. At the same time, subduction forces the oceanic plate downward, creating subduction zones, the deepest of which are called trenches. As the oceanic plate moves down, oceanic material re-melts and often works its way to the continental surface, forming volcanoes. Shallow-focus and deep-focus earthquakes usually accompany oceanic-continental mountain building, so don't put your favored race there unless you're willing to periodically watch everything they build fall down or get covered with lava. When two oceanic plates meet, either plate could be the one subducted, depending on the direction of movement. The subduction zones of two oceanic plates usually result in deeper oceanic trenches. Instead of forming mountains, two colliding oceanic plates form a string of volcanically created islands. When two continental plates collide, known as suturing, both crustal plates resist subduction, but eventually one yields, forming massive mountains. Continental collisions don't form volcanic ranges, but they create many shallow-focus earthquakes.

Mountains Formed by Vulcanism

Mountains also form independent of tectonics, based solely upon vulcanism. Vulcanism is the movement of magma from the interior of a planet to the exterior. One common type of volcanically formed mountain is the dome mountain, which forms when magma pushes upward into the crust of the earth. Laccoliths, large bodies of slow-moving magma, form between horizontal layers of preexisting rock. The magma is so thick that it resists flowing. Meanwhile more viscous magma feeds into the mushroom-shaped laccolithic dome and forces the thick magma upward. The dome

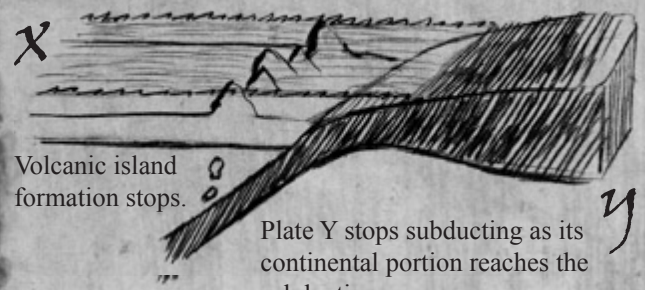


Suturing and Mountain Building



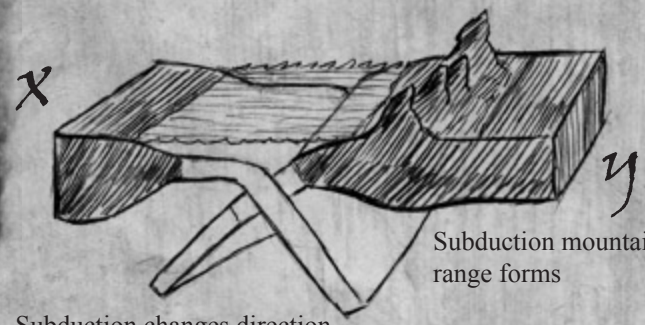
Volcanic island formation.

The oceanic part of plate Y is subducted beneath plate X.



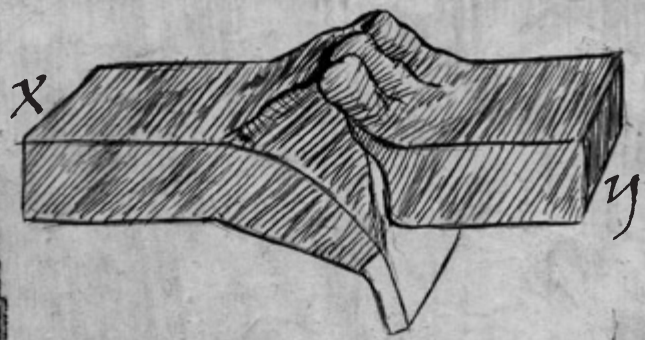
Volcanic island formation stops.

Plate Y stops subducting as its continental portion reaches the subduction zone.



Subduction mountain range forms

Subduction changes direction. Now X subducts under Y.



Continents X and Y crash together, increasing the subduction mountain range.

mountain's creation process produces rounded-top chains, the Black Hills of South Dakota serving as a good example.

Vulcanism also results in the most obvious mountain creation—volcanoes. Although volcanoes are usually associated with subduction of tectonic plates, some places are simply "hot spots," or places that allow magma to rise near the surface. Although volcanoes are spectacular and dangerous, they are not very good mountain builders. Mountains chains built predominately by volcanic activity are usually shorter (in length and height) than mountains built in plate collision.

Rifting

With plates crashing into each other and forming mountains, it stands to reason that there are other places where plates are drifting apart and forming new crustal material. Divergent boundaries are highly volcanic areas, and they form rift valleys lined with mountains when a continental plate splits. Divergent boundaries are responsible for breaking Earth's Pangea around 200-135 million years ago, setting the pieces adrift into their current locations.

Mountains to Molehills

Mountains compose 11% of the continental surface. There are unlimited possibilities when creating the geologic history of your world, but this work directs the focus on mapping the mountains. For more information and detail, consult your gnome or a historical geography tome. Armed with the knowledge of where and how mountains form, you now have the tools to map mountains in your world.

First, consider the giant proto-continent you formed from smashing your current continents together. Consider placing mountains where two continental masses collided in the imaginary proto-continent's history. Also look at the intersections or boundaries that later formed unique continents from the proto-continent. 20-40% of these boundaries have mountain ranges associated with them. Many mountains form after the proto-continent breaks up. For example, smaller continental plates calve off the major plates, which then crash into a larger continental plate. Both the Alps and the Himalayas formed in this manner.

Now consider the continents' current coastlines and decide which of them have mountains due to oceanic plate subduction. Roughly 25-50% of all mountains are associated with oceanic plate subduction. To give a familiar flavor from Earth, try to place your subduction mountains north to south. The two major subduction mountains on Earth (Rockies and Andes) run north to south.

The remaining mountains formed in proto-continent period are more difficult to place. Older mountains, like the Appalachians, often result from complex series of collisions, subductions, and accretions. Older mountains may be placed just about anywhere on the map, and their placement goes hand-in-hand with the placement of uplift or volcanic mountains. A godling must rely upon his good sense when placing the remaining mountains. Again, mountains compose about 11% of the continental surface.

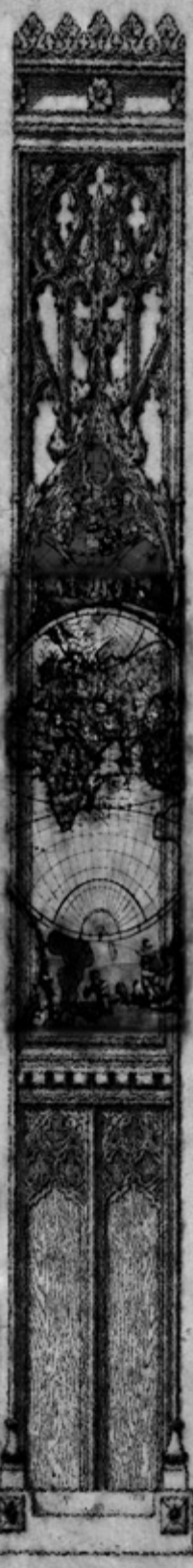
The final thing to consider when mapping mountains is their height. Which mountain ranges are rocky, tall, and forbidding, and which mountain ranges are rounded, shorter, and more passable? Mountains that are currently growing due to oceanic subduction or continental suturing are rocky and tall, becoming less so as they age. The mountains that are not growing may be rocky and tall or rounded and low, though only the oldest mountains, whose growth stopped prior to the break up of a proto-continent, become rounded. Mountains created by volcanism are usually rounded and shorter, regardless of their age. It's also not unusual for a mountain range to undergo several different phases of mountain growth, like the Andes. The Andes are rather old mountains, some parts six times as old as the Alps, but they look "brand new" due to current growth from oceanic subduction.

To use more examples from Earth, the Alps are older than the Himalayas, yet both ranges are rough and rugged, although the Himalayas are much more so. The Appalachians are very old, and they show their age. Incidentally, the Appalachians experienced various mountain-building periods similar to the Andes, but it has been a very long time since the last of the series of mountain-building episodes occurred in the Appalachians, which accounts for its aging appearance.

Step Three: Example

I've filled in the mountains on the map. Mountain ranges A and D are formed by the collision of continents A and D. Range B results from continent A and B splitting as well as from subduction. When a rift occurs, one plate usually goes off in one direct and the other continues its path. This often creates a new subduction zone since one of the two plates isn't moving exactly along with the rift's movement. Mountain range C is pure subduction while mountain range E is a mixture of separation and collision. The split of continent E and D formed the north-south part, and the east-west part is from a plate that separated from E and then returned again. Range BE is subduction created.

But I'm jumping ahead of myself here. What I really did was put down the mountains where I thought they looked good, where they pleased my eye after looking at atlases for a long time. I came up with how they were formed after I already put them on the map. This is the great freedom of trusting your eye when placing mountains. If you look at atlases, find their patterns, and mimic them somewhat, the reasons for your mountains' existence become almost self-explanatory.



Step Four: Islands and Archipelagoes

Islands play integral parts in every world, teeming with exotic locals, expensive spices, treacherous misty rocks, and unique flora and fauna. Islands come in different sizes. Some are practically continents in and of themselves, while others are nothing more than the eroding tops of volcanoes that managed to break the water's surface.

Islands Connected to Continents

Larger islands are commonly caused by variations in sea level. These islands are actually part of a large continental plate, but they appear to be separate due to the current water level. The UK islands are a great example. They are on the same plate with the rest of northern Europe, but they are separated by water due to the current ocean level. Should water levels drop, as in the last Ice Age, a land bridge forms between England and France. Another good example is some of the islands off the Southeast Asian coast. To place this type of island in your world, slightly expand the continents in certain areas and create islands by inserting a shallow causeway or sea between them and the main continent.

Islands Formed By Rifting

Some of the largest islands are small sections that broke off larger continental landmasses, forming their own plate. The distance between islands on rifted plates and their parent continent indicate how old they are, the oldest islands farther away from their parent continent. Madagascar and Greenland are good examples of islands that were once part of a continental landmass. Another good example is the Indian Sub-Continent. At one time it was an island calved off of Africa, which collided with Asia, building the Himalayas. Place these islands by cleaving off part of a continent and drift the plate away from its parent continent, the oldest rifted islands traveling the farthest from their parent continent. Rifted islands cannot travel over oceanic subduction zones to get to their present location. Occasionally islands migrate long distances to eventually accrete into new continents and form mountains, and such rifted islands may have subduction zones between them and their new continents in the period before they accrete. In general, the farther an island drifts from their parent island, the more unique their flora and fauna, but this is better addressed in the ecology section of this work.

Islands Formed by Volcanic Activity

Volcanic activity is responsible for the majority of the islands, either at subduction zones or hotspots. At subduction zones, where an oceanic plate is subducting under a continental plate or another oceanic plate, volcanic activity often creates a string of islands. These island chains and their volcanoes usually curve due to the spherical nature of planets. Just as pressure applied to a ball creates a rounded dimple, the pressure of colliding plates on a spherical planet results in curved subduction zones, volcanoes, and islands. To place this type of island, look for areas where subduction occurs, especially around oceanic trenches, where two oceanic plates collide. Continental plates often extend out into the ocean, sometimes hundreds of miles. When islands form in the subduction zone of extended continental plates and oceanic plates, the island chains also curve. Many great island chains form this way on Earth; Japan, the Philippines, the Aleutians, the Caribbean islands, New Zealand, and most of Indonesia are creations of volcanic activity in subduction zones.

Volcanic activity in oceanic hot spots also create islands, though must smaller in scope. Most hot spot islands and island chains are less than 100 miles in diameter, usually around 20 miles in diameter. Since hot spots are stationary and oceanic plates are not, island chains form as volcanoes go through active and dormant stages while

Though a popular idea among godlings, a world consisting entirely of islands is extremely difficult to achieve without great expenditures of magic. The majority of continental landmass is felsic rock, so light that once it is extruded from the earth, it strongly resists subduction. On the other hand, oceanic crust is made from dense mafic rock, which is why oceanic crusts usually subduct under continental rock. Felsic rock's lesser density results in continental landmasses because extruded felsic rock stays on the outside of the crust.

Though this process makes justifying archipelago worlds more difficult, here are a few non-magical suggestions. Perhaps the world is very young, and all the felsic rock has yet to surface and form large continents. Perhaps only the known world is an archipelago. For example, thousands of miles filled with islands form where two or three oceanic plates meet in the middle of a large ocean, and their inhabitants do not know of the outside world. How the intelligent creatures got there, and how they forgot about the world they came from is at your discretion, but such is the art of composing great creations.

the island's plate moves over the hot spot. Hawaii is an excellent example: as the oceanic plate moves, the hot spot remains stationary, creating the islands in sequence. The oldest Hawaiian island is Kauai (5.6 million years), and the youngest is Hawaii proper (less than 1 million years). The youngest island tends to be the largest, while older islands are usually smaller. Since most are formed by volcanic activity, oceanic islands tend to be rather mountainous. The newest islands are the rockiest, while older ones are less rocky.

Hot spots are places where the crust is thinner, allowing the magma to escape to the surface. Oceanic island-forming hot spots are easy to locate because no one is certain why they form in the first place. Simply put them where you like. I recommend placing hot spot islands, like Hawaii, at serendipitously convenient places for ship travel. Nothing quite beats the excitement of a long voyage by ship to a strange new island. Unlike Hawaii however, the majority of hot spot islands form in more volcanically active areas closer to subduction zones.

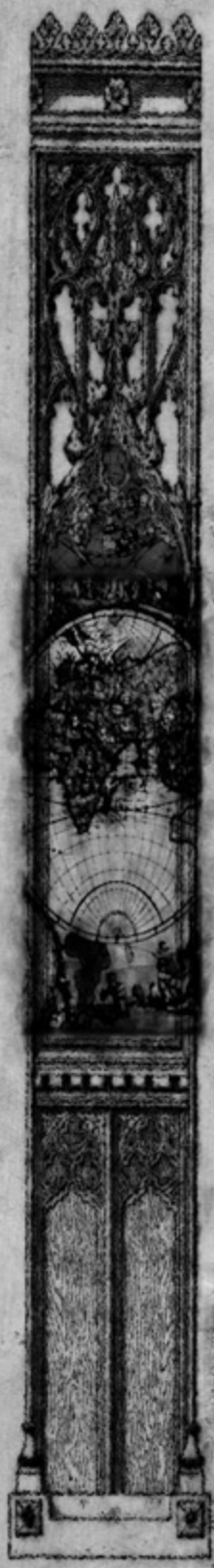
Hot spots also occur on continental plates, though 75% of Earth's 40+ hot spots are oceanic. Yellowstone is an example of continental hot spots, where they create surreal landscapes full of geysers, hot mud pits, and volcanoes. Again, wonderful places for adventure.

Archipelagoes

Archipelagoes are collections of islands that extend from larger bodies of land. The term applies to both massive collections of islands, such as the western portion of Indonesia, as well as long extensions of smaller islands, such as the Aleutians. Archipelagoes are usually island chains resulting from volcanic activity in subduction zones, although a few are the result of sea level variation. Really large collections of islands are the result of several subduction zones in close proximity to each other. For example, volcanic activity from three major subduction zones formed the thousands of islands that constitute the Indonesian islands. They are usually mountainous since most archipelagoes are created through volcanic activity in subduction zones.

Plates

Though we have been discussing tectonic plates and their role in mountain and island formation, it is far easier to put the plates in after placing major mountains, islands, and archipelagoes in your world. Remember that your responsibility is mapping the world in its current time. All geologic history may be retro-engineered. First place subduction zones on the map beside the mountains, islands, and archipelagoes they created.



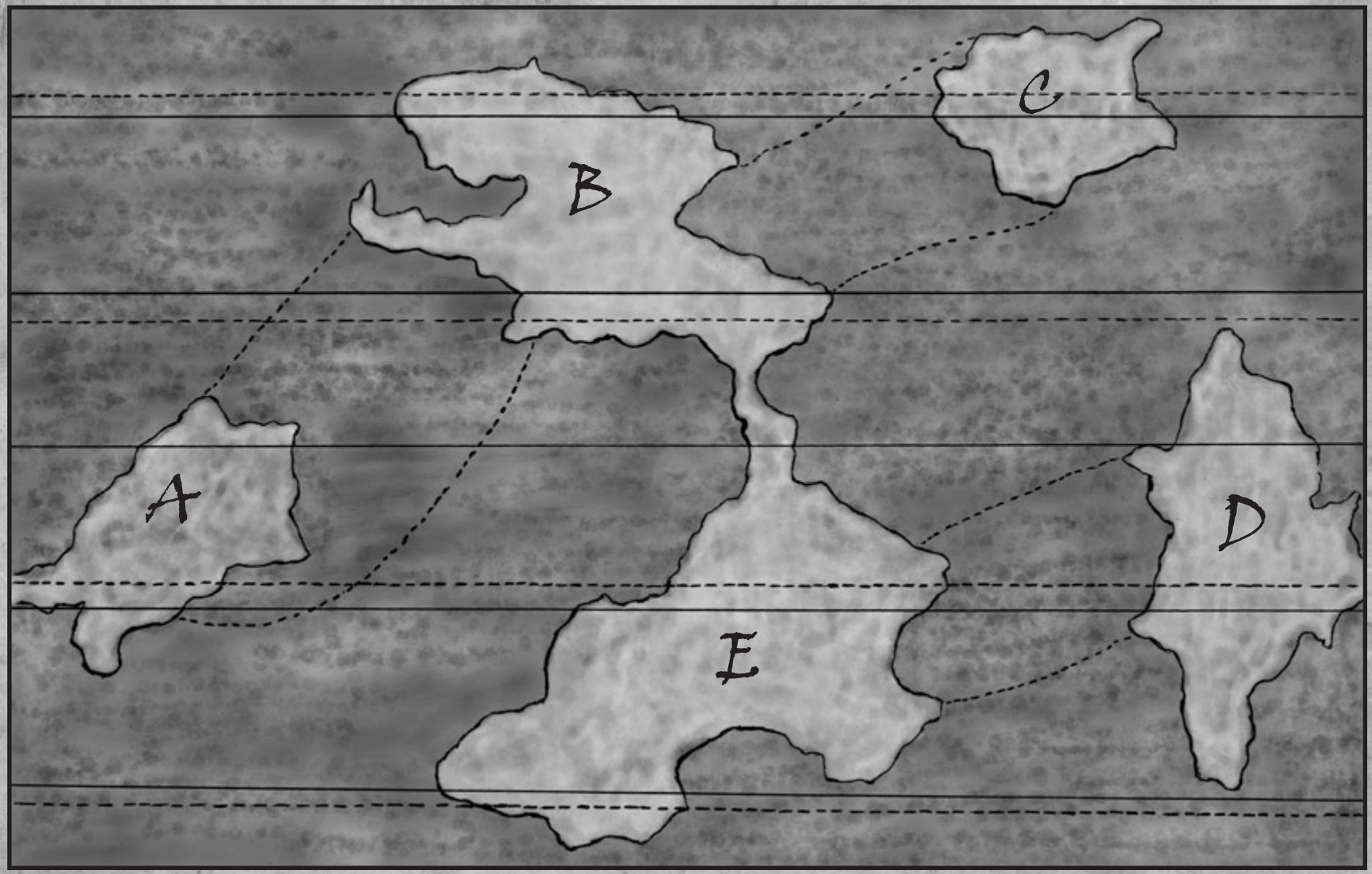
Then identify the areas where upwelling magma forms new crustal material and drives two plates apart or splits one plate apart. This rifting creates ridges as two parallel mountainous lines form on either side of the new crust. Most of the ridges on a planet are oceanic (roughly 90%), though continental rifting is responsible for forcing the continents apart. Continental rift valleys widen and eventually fill up with water, creating separate independent continents. As new material expands a rift valley, plates move away from the ridges. Place major ridges in the ocean, usually where subduction zones occur on both sides of the rift. In the Pacific Ocean, the ridge pushes new oceanic plate material into subduction zones all around the ocean, creating the Andes, Japan, and the Aleutians.

Oceanic plates moving away from rift valleys do not always subduct under another plate. Sometimes they travel together in the same direction. For example, the growing Mid-Atlantic ridge pushes both American continents west and Africa northeast, but no mountains are forming along the east coast of South America and the west coast of Africa because those continental plates are traveling in the same direction as the oceanic plate. In some cases, oceanic and continental plates slip alongside each other when moving in a similar direction. This creates great slip faults like the San Andreas Fault and produces a lot of earthquake activity. Oceanic ridges are not as important as other plate activity, but they cement what is going on tectonically on a new world and point out areas that experience a significant number of earthquakes.

Step Four: Example

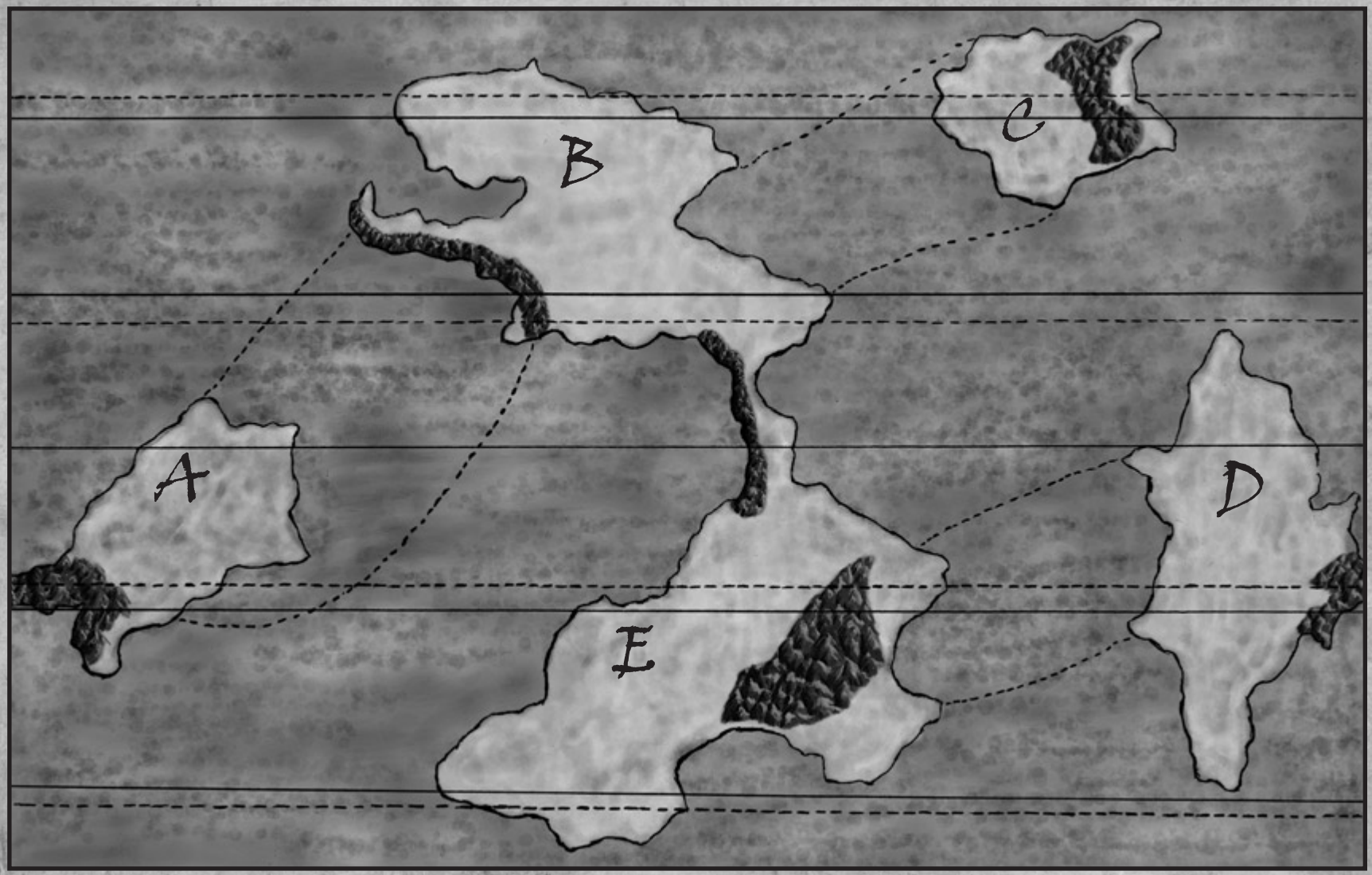
I've determined the basic (very basic) plate structure of my world. There's a large rift (oceanic ridge) between continents BE and CD. This follows along with how they fit in the pangea stage. There's also a ridge between A and B for pretty much the same reason. The subduction zone off B's peninsula is where the oceanic crust (created at the rift) is pushed under B's continental plate. This means that mountain range A formed both by rifting as well as subduction. I've also added the two subduction zones that are creating mountain ranges BE and C. This could mean that at one time continents B and E were separated and the subduction zone linked them together through its mountain building, but it doesn't have to. I've also included a small oceanic subduction zone offshore of E. This is where the ridge is subducted under the continental shelf of E (which extends under the water). I've only placed one slip plate in the ocean between continents AB and E. I've also indicated the suturing on continent E where its calved island is crashing back and the suturing between continents D and A where they're coming together.

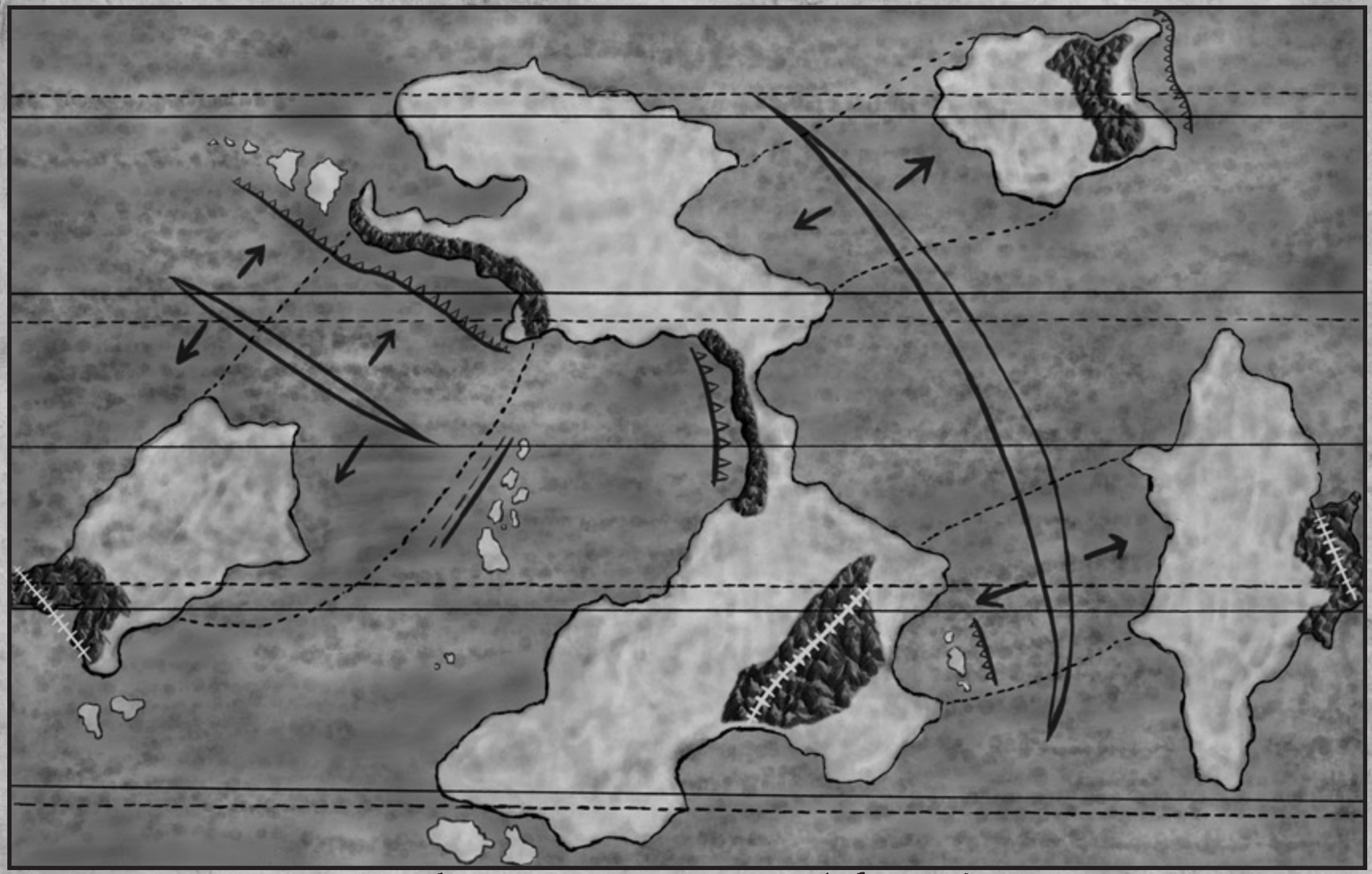
With this in mind, placing islands on the map is fairly simple. The large peninsula on B gains an archipelago, and islands form over the subduction zone offshore of E. More islands form along the slip plate. I've also placed some continentally connected islands (like England) and a few hotspot islands (like Hawaii). This gives you rough guidelines when you actually place your islands in creation. Namely, this lets me know where to put larger islands and why they are there. A more thorough look at plate structures would also provide more islands, but I'm only summarily addressing the plate details.



Mapping your World~ Steps 1 & 2

Mapping your World~ Step 3





Mapping your World~ Step 4

Mapping Your World (Part II)

Step Five: Weather

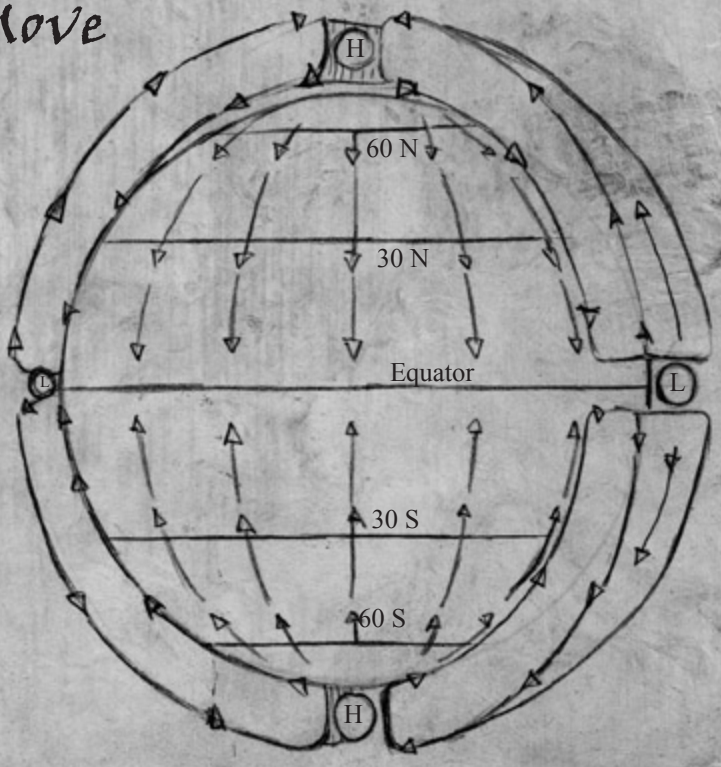
Generative Forces

Mapping weather patterns is the most complex subject so far and requires more information than the previous steps. Only after we place all the landmasses can we infer global weather patterns. Assuming a world relatively similar to Earth in tilt and orbit around the sun, global weather patterns follow a few basic rules. Weather is a planet's attempt to equalize the heat it receives from the sun. The sun's rays warm oceans and lakes, and heat rises off land and water into the atmosphere. The warming of the atmosphere results in weather. Hotter air becomes less dense, rises, and displaces the cooler air in the atmosphere. The poles are cooler because the sun's rays transfer less heat due to their low angle near the poles. Near the equator, the sun's rays strike the planet more directly and transfer more heat. This difference in heat distribution drives air currents and ocean currents in a pattern of motion called convection.

Besides this heat imbalance, there is one other major creator in weather patterns: the Coriolis effect. The Coriolis effect is the curving of the air and water currents due to a planet's rotation. Since most planets rotate, you can thank the universe's preference for circular movement for making your work more complex. As the cooler air from the poles makes its way towards the equator, the planet rotates eastward. The air current thus bends towards the west with respect to the surface and continues to bend because the speed of the surface increases the closer the air gets to the equator. The reverse happens with the warm air that rises from the equator and makes it way to the poles.

It Does Not Move

Weather is less complex on planets that do not rotate on an axis. Planets rectify the heat imbalance with a simple airflow and a water flow. Generally, a cool wind blows from the poles to the equator in a straight line. At the tropics, the air warms and moves to the top of the atmosphere, heading back to the pole from which it came. Water currents follow the same general pattern. Deep cold waters flow to the tropics, and warm tropical waters flow back to the poles. The only changes in airflow result from mountains or large bodies of water, while continents stand as the sole disruptors to water flow.

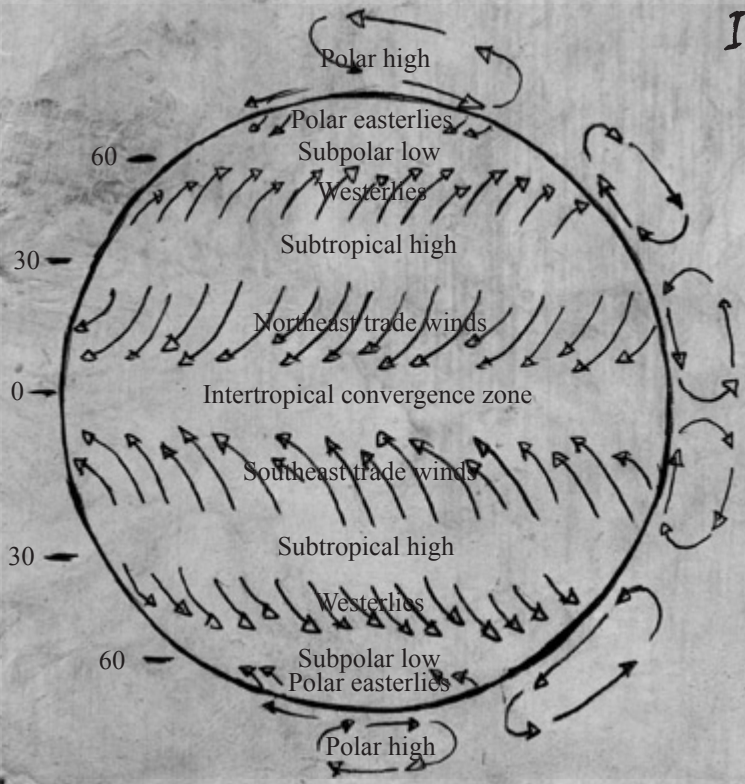


The Coriolis effect forces "pile-ups" of this upper level air because it can't make it's way unimpeded back to the pole. The air north and south of the equator (at around 20°-30° north and south) can't escape to the poles fast enough. High-pressure areas build up, push down on the planet, and create winds towards the north and south. These winds are also deflected because of the Coriolis effect and move diagonally westward. This equatorial gyre is repeated twice more until they reach the poles. Each gyre creates an alternating wind pattern. The trade winds move west, the westerlies move east (given that name because the wind blows from the west as it moves east), and the easterlies move west.

Air and water gyres are the final things created by the Coriolis. Water and air are both affected by the planet's rotation and develop not only convection currents (the currents established by temperature differences), but also giant rotation currents. North of the equator, water and air circle in a clockwise pattern: south of the equator, water and air circle in a counter-clockwise pattern. The air currents heavily influence the surface-water currents, but deeper ocean currents (similar to the upper air currents) do play a small role in water patterns. Bodies of water, landmasses, and mountains further complicate these general air and water patterns.

Water and Land

Although the sun is weather's primary driver, the oceans provide the life-giving water that the sun's heat moves through the planet. The movement of water on a planet is fairly complex, but it can be easily simplified for mapping purposes. Water evaporates under the sun's heat and collects in the air forming clouds. When the moisture level of the air becomes greater than it can hold (usually because a temperature change) rain falls back on the surface of the planet. The movement of air carries this water vapor off the oceans and onto the land (most of the rain on a planet comes from oceanic evaporation) and into the life on the land.



It Does Move

This diagram shows the Coriolis effect at work on Earth and can be applied on any other planet of similar make. Notice how surface air is flowing up at the equator and at the subpolar lows. High-altitude air is flowing to the surface at the subtropical highs and the polar highs. This also shows the gyres going clockwise in the north and counterclockwise in the south. The polar highs produce a very strong and steady wind, called the katabatic.

Water is generally subject to the air currents and their subsequent rain patterns, but it also influences them. The oceans heat and cool slower and to a lesser degree than land. This difference is very important. Water can store about five times the heat energy that land can store, which means water can absorb about five times more energy without its temperature increasing. The sun's rays are also diffused over a much greater area of water (since light can penetrate water), which further reduces the maximum temperature water reaches in comparison with land. Water is also mobile allowing convection to distribute uneven heating easier than land and the unlimited amount of moisture in water means it can evaporate (and hence cool) unlimitedly when compared to land. All of this means that because water retains more heat, it cools slower during winter than land; conversely it takes longer to heat up once summer arrives again.

All of water's unique properties have significant effects upon weather, and over time, climate because it changes temperatures. The hottest and coldest places on a planet will be on the interior of continents, far away from the influence of the oceans. The oceans act as a great heat sink; absorbing heat in summer and releasing it in winter. You should look at the amount of water in the northern and southern hemispheres of your new planet. The hemisphere with the most water will have less variance in annual temperature ranges for each latitude. On Earth, the Northern Hemisphere is 39% land while the Southern Hemisphere is 19% land. This causes the more extreme temperatures typical of the Northern Hemisphere.

Land has just as great an impact upon weather and climate as water. Unlike water, land quickly gains and loses heat. This leads to generally more erratic winds over landmasses than over oceans as the land cools quickly and in different proportions depending on its vegetative cover (the more plants, the slower it gains and loses heat; the fewer plants the quicker the process). This difference in cooling is noticeable in mountainous areas as mountains have more surface area per square mile than most other terrain types and particularly noticeable in deserts, which lose their day's heat very quickly. Another important difference in weather over the land and over water is humidity. More evaporation occurs over water, so most humid air (the air that brings rain) comes from evaporation over oceans or other large bodies of water, like the Great Lakes. Most of the rain falling on the continents comes from evaporation off the oceans. Thus, if a continent is large, the centers will be very dry because most of the moisture has already dropped out of the wind. Central Asia (Gobi Desert) is a good example of this.

Terrain types and their respective vegetation levels influence weather through their respective heat absorption and release levels, but mountains are the only geographical features capable of affecting weather patterns outside of the sun's influence. Mountains are physical barriers to wind and the cause massive disturbances in weather patterns, particularly rainfall. Air rises as it goes up a mountain, cooling it. This cooling reduces the amount of moisture the air can hold and often results in rain. This means, that in general, a mountain range will have a wet and a dry side. If the range is a large one and winds are fairly consistent in their direction, the mountain can create a rain shadow, effectively creating a desert. This can even happen on a smaller scale, like the island of Hawaii, where the eastern side receives the trade winds and an annual rainfall of 150 inches while the other side of the island only receives 9 inches of rain a year. A few (or a pair in the case of Hawaii) mountains can dramatically change weather.

Mapping the Phenomenon

Mapping all of the complexities of weather is something simply beyond the need of most new worlds. The general principles discussed above should provide you with enough raw information to look at your maps and make some decisions.

First, you should basically mimic the air patterns as influenced by the Coriolis effect. This provides a baseline that is agreeable to every other assumption about the working of weather. Adopting the basic ocean currents to the new world is the next step. Continental placement will affect this more than air patterns, but as long as the same general patterns of movement (gyres, areas of lows and highs) are maintained, the currents should closely mimic the Earth's because they're also influenced by heat and rotation. Our goal is to make a map that takes into account the natural functions of the universe. Before we can put down an ancient jungle kingdom, we'd best make sure it's where the planet is going to naturally create a jungle. We can use magic to do it, but pre-planning avoids a lot of post-creation headaches.

Around the equator and around 60° N and S there are wet zones. Around 30° N and S (and more exactly the tropics) will be dry areas. This is a gross simplification, but it'll get us where we need to go for right now. Mountains will affect the degree of rain, so be certain to indicate rain shadows based upon wind movement.

Step Five: Example

To map the weather, I used the equator, the tropics, artic circles, and latitudes 30º and 60º. Since my tilt is very Earth-like, I don't have to worry about weather patterns drastically diverging from Earth norms. I drew in the wind patterns based upon the Coriolis effect. After the air, I mapped the water currents, showing the typical gyre patterns. This is fairly straightforward, even though it's a very complex physical process. I then mapped in the wet and dry latitudinal zones, again based upon the Coriolis effect.

Throughout this process, I've made a lot of arbitrary, but plausible, decisions. The movement of the wind is more complex than I've shown, but again, the pattern generally follows what I've put down. The same is true of ocean currents. They almost all follow the gyres according to their hemisphere (clockwise in the north, counterclockwise in the south), but there are some exceptions. I have a few currents that split and head in differing directions, but even these currents eventually follow the overall pattern. For example, the current off the east coast of continent B splits and flows up the coastline while the other part gyres up to continent C. The coastal flow up continent B eventually gyres back and rejoins at continent C. A good example of split currents is the Atlantic Equatorial Current. It travels from Africa to South American and splits. One flow goes south along the east coast of South America, and the other flows along the northern coast of South America. The southern split maintains the traditional counterclockwise gyre, but the northern current crosses the equator and eventually gyres clockwise as part of the Florida Current and the Gulf Stream. Generally, cold currents are moving from high latitudes to low latitudes, while warm currents are moving from low latitudes to high latitudes. On my world, a strong cold current flows from the south to the north along the west coast of continent E while a warm current moves north along the east coast of continent B.

Step Six: Climate Zones and Rivers

Climate is where rain and temperature mix, therefore latitude, altitude, and wind pattern all shape climates. An idealized world has the pattern shown in the List of Climate zones. Place each type of climate on your map in roughly the same manner. Again, pay attention to where the wind blows and where the mountains are. General elevation may play a role depending on how vast an area you've elevated. The Tibetan plateau is a good example of an elevated area changing the expected climate. More than elevated areas, ocean currents play an important role in determining climate. Warm currents heat the air around them, making Europe very habitable for example, while cold currents can temper a warm climate. Cold currents sometimes reduce rainfall along

coastlines because they cool the air above them, restricting the amount of water the air can carry.

Rivers are easy to place at this scope; we're just looking to place a few major rivers on each continent. Remember that water flows downhill and wet areas have more water than dry areas. Rivers are the easiest part of this step, so have fun and pay attention to where they're going, because they'll be the cradles of your forthcoming civilizations. Overall, this step is the most complex of all the mapping steps. The vast diversity of climate and the intricacies that make up each climate can't be modeled without extraordinary effort. But even this very basic climate map of the world will help when discussing cultural development.

List of Climate Zones

Artic/Polar Region-North of Artic Circle
Wet Zone- Mostly south of 60 N
Transition from Dry to Wet Zone
Transition to Desert Zone
Desert Zone-Tropic Circle and 30N
Transition to Desert Zone
Transition from Wet to Dry Zone
Very Wet Zone- Equator
Transition from Wet to Dry Zone
Transition to Desert Zone
Desert Zone-Tropic Circle and 30S
Transition to Desert Zone
Transition from Dry to Wet Zone
Wet Zone-Mostly north of 60 S
Artic/Polar Region-South of Artic Circle

Step Six: Example

Following the general wind patterns, I first placed equatorial areas with heavy rain. The mountain range BE is packed with water because it's not only on the equator, but the mountains catch the water and send it downstream in torrents. The northern part of continent D is very wet since there's nothing interfering with winds, as is the northern part of continent A. These areas are probably rainforests because they have a lot of rain and plenty of sun.

The next step is to place the transitional areas that are more wet than dry. These were placed north and south of the very wet areas. Most are probably deciduous forests mixed with the remnants of rainforests, grasslands mixed with deciduous forests, and the beginning of the dryer lands. They could be simply grassland as well. Notice that these two zones are mostly within the tropic bands. Their placement also reflects what the wind is doing. On continent A, this zone loops around because the wind is coming from a particular direction while on continent D, the zone remains more horizontal for generally the same reason. You could change these zones based upon what you wish to happen. As long as they're relatively in the same location, such change can easily be supported.

The next step moves into dryer lands by placing the transitional dry zone. These are mostly grasslands/scrublands, and they generally abut the transitional wet zones. Such zones are plentiful throughout the dry latitudinal zone and often abut a dessert zone. I didn't place these zones next on the map, however. It's easier if you go right to the deserts, and then look to see where these zones fit best.

Deserts are almost always along 30° N, 30° S, or the tropic lines. I placed my deserts along these areas and paid particular attention to wind direction. The desert on continent A is in a dry zone, but it also has a range of mountains that interfere with rain,

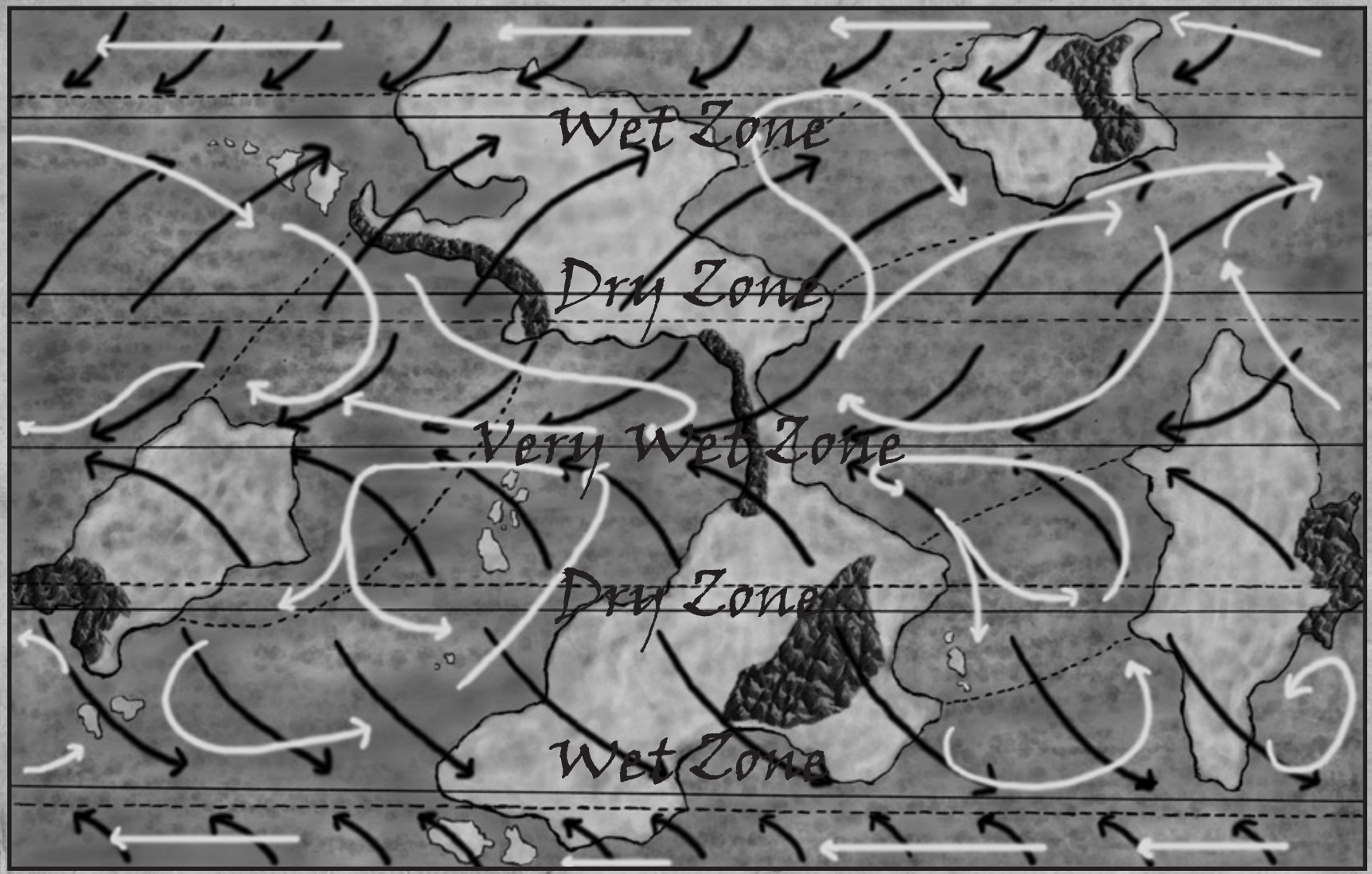
so it stretches farther north into the wetter latitudinal zones. A similar thing happens with the desert on continent D. The desert on A exists because it's in the dry zone, but notice that I placed a dry transition zone along the southern coast. The ocean air is relatively dry in this zone, but what little moisture it holds drops along this curve. All things considered, the desert on A is probably fairly wet for a desert until you go in deeper. The great desert on E was the hardest to place because there are many factors to weigh. It is a mixture of dry zone, wind patterns, mountain range and large landmass. For these reasons, I decided that this was the Sahara of my world: the big, sandy, unfriendly desert.

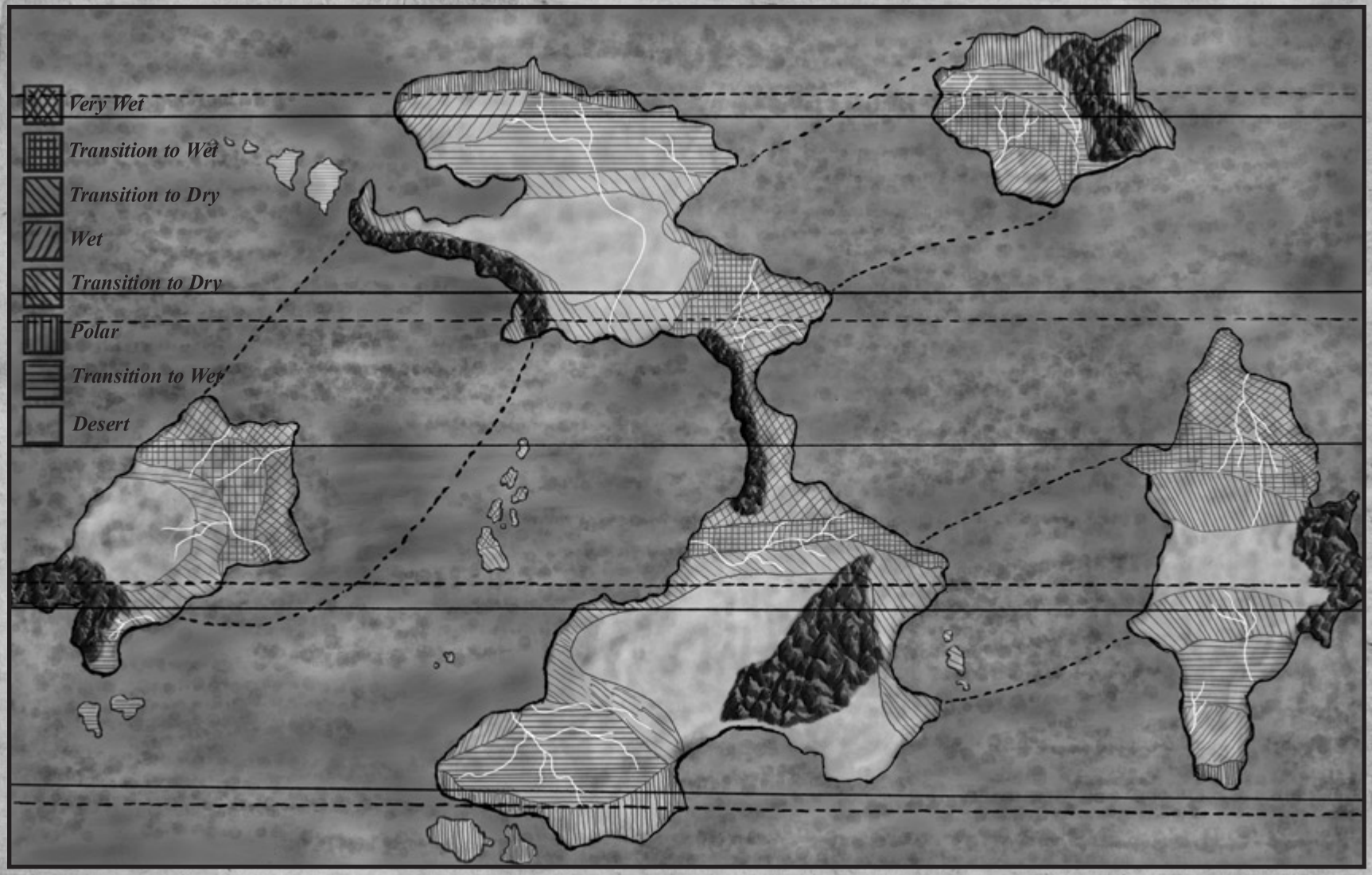
I then placed the dry transitional zones between the deserts and the wet transitional zone. It's much easier to do it this way, even though you have to consider the next wet transitional zone leading to the wet band around 60° north and south latitude. Again, I found it easier to just jump zones and place the midlatitude wet zones before placing both the dry transitional zones and the wet transitional zones.

Placing the next wet areas was very easy. I just followed the wind patterns and land as I did with the equatorial wet zones. These wet zones aren't as wet as the equator, so if you find yourself faced by a large continent, the water won't travel as far inland as it would at the equator. I mapped my midlatitude wet zones, then placed my wet transitionals, and finally the dry transitionals. These dry transitional zones are mostly grassland/scrublands while the wet transitional zones are mostly forest/grassland mixes. The midlatitude wet zones can be temperate rain forests if there are mountains to catch enough rain, like along the Pacific Northwest coast. With all that done, I capped of my world with the cold zones north and south of the artic circles. These zones can be grasslands, boreal forest, or tundra depending on their rainfall and how close they are to the poles. I haven't differentiated between the polar climates for this map, but by now, you should be familiar enough to place your taiga and tundra without guidance.

Next, I placed rivers on each continent, keeping in mind wind patterns and general elevation. Most of them are straightforward and not worth mentioning except for the major river on continent B that runs through the desert. This river provides water in the otherwise dry expanse and will no doubt play a role in intelligent creatures' interactions. It could also mimic the Nile as its headwaters are in wetlands. If I wanted, I could make these headlands have a particularly rainy period that would mimic the yearly floods of the great river on Earth. I think I will.

Mapping your World~ Step 5





Mapping your World~ Step 6

Mapping Your World (Part III)

Step Seven: The Origin of the Major Intelligent Races

The origins of major intelligent races largely depend on what type of creation you want, but it is always easiest to work with the system than against it. Given that assumption, I also know that you probably want to create your own races by hand, so we'll find a way to do both. What nature likes to do is create environments that apply pressures on creatures to survive. By adapting to these pressures and passing adaptations to further generations, creatures undergo physical and behavioral changes. In this way, a small creature becomes a large one given millions of years. In this process, some creatures develop intelligence. Intelligence is a shortcut adaptation compared to all others. Intelligence allows a creature to recognize the systems around them as systems and not just stimuli. It also allows them to better manipulate their environment to suit their needs rather than waiting for genetic and evolutionary adaptations. It's a very powerful adaptation, and it's what we gods are interested in. Eventually these intelligent creatures learn to survive in almost every environment through their cleverness. They may even find a way to traverse over large bodies of water, given enough time, experiment, and luck. It seems impossible that an island in the middle of a huge ocean would be populated, but it happens. As long as intelligent creatures can survive, they'll continue to expand their territory.

The movement and expansion of intelligent creatures are our focus for mapping. But before you start mapping where your races originate and where they migrate, you need to decide what your major races are going to be. How many intelligent species are you going to have, knowing that wars are inevitable, and some species may have selective advantages over others? In other words, you should be prepared to lose a few of your races due to any number of factors, luck being an important one. Of course, you can always create them again, but let's keep our magic expenditures to a minimum and prevent unnecessary expenses.

Once you've chosen your major races, place them next to major rivers or within 50 miles of the shore. Also, don't put them at high altitudes; it's easier closer to sea level. Now move them around. Move them up and down the river they occupy, and then watch them jump to other environments that abut their home river. Given hundreds of thousands of years, they'll be everywhere, and may have already killed off each other. That's their nature. We don't have the right to change that as godlings. But instead of creating "finished" races, you should create ancestor races rather than creating each race from scratch. Ancestor races are the "proto-races" from which other races spring forth. This can explain how some races are capable of interbreeding (but not always) and eases the first steps of a complicated history.

Step Seven: Example

I've decided on the major intelligent races in my world: elves, dwarves, humans, gnomes, halflings, orcs, goblins, hobgoblins, and kobolds. That's a lot of intelligence and perhaps not all of them will make it through.

Placing these races is a bit of a challenge, so I began with ancestor races. The river on continent E is the birthplace of one of my ancestor races: the ancestor race of humans, elves, and orcs. Some of these can interbreed when this whole process is done, so I need to address the different environmental pressures that caused the ancestor race

to diverge. But that is later. The rivers along the mountain range on C are the birthplace of the ancestor race for the dwarves, gnomes, and halflings. All the "little people" on one continent pleases me. The ancestor race of the goblins and hobgoblins appear on the desert river on continent B. This leaves only the kobolds, which come from the rivers on continent A. Right now I've four centers of origination. This is a good number, and there's only one large landmass (continent D) without major intelligent species.

Step Eight: The Movement of the Major Intelligent Species

Our next mapping step is to move our ancestor races out of their swaddling-lands and into the territories they'll claim as birth lands. There are a few things that we should consider in this step. The most important is rivers. People prefer to move and populate areas all along rivers rather than deviate away from rivers. It's easy to understand; water is life. Next, it's easier for creatures to stay in their own familiar climate zone than to move out of it, making east/west movement easier than north/south movement. Sources of food (plants and animals) and appropriate shelter are more similar east/west than north/south because climate is more variable north/south. Altitude also plays a role here. People settle lowlands before highlands, all things considered. These lands of easy expansion are birthlands of the ancestral race.

Move your ancestor groups around according to these primary factors. They quickly claim these parts of the world, then they move into less familiar terrain. This second migration is harder to define and occurs for many different reasons, but remember the above two factors. If one of your ancestor races moves east/west and encounters a river, they'll expand to fill that river as well. In a way, it's sort of like the children's game leapfrog. It's in this manner that the great north/south rivers play an important role, because although the climate changes faster, at least one thing is staying the same. North/south movement is much faster with a river than without. The last type of expansion is the most likely to fail, but the most spectacular: sea expansion. When a population becomes crowded and there's nowhere to easily expand, internal war and more daring expansion attempts occur. Wind direction and ocean currents are the two most important aspects of expansion. If a race can move with water and air currents, their chances of finding shore greatly increase.

Once your ancestor races go through two, possibly three expansions, there is a good chance they have encountered another race or a significant physical barrier, like a desert or mountain chain. These things both limit expansion for different reasons. Meeting another race inevitably leads to violent conflict while meeting a great physical barrier inevitably stalls expansions. How you wish to handle the conflict is up to you, but assuming that your races are both competitively viable through similar or different survival strategies, you'll probably have a rough line of racial control that moves back and forth throughout time. Of course, one race can get a permanent upper hand and drive another into less fruitful lands, but even then, the "dominant" race doesn't "own" these lands like it does their birthlands. It takes a long time for dominant races to engulf subject races at this point. More than likely, periodic warfare continues indefinitely as the subject race in the hills and forests attack the dominant race that owns the valleys and plains.

Two final notes: don't forget the coastline and consider spacial restraints. Even well developed worlds have the majority of their populations (up to 70% in worlds with billions, yes billions, of people) within 50 miles of the coast. Coasts are great sources of food, and the call of the water pleases nearly every intelligent humanoid ever created with its cyclic to's and frow's. Spatial restraint may start speciation off earlier in an ancestral race, and it often leads to quicker overseas expansion.

Step Eight: Example

This example is best understood by looking at the included map. Each age shows the progressive expansion of each ancestor race as time goes by. All of this expansion takes place before agriculture and the development of cities; the extended nomadic family is the unit of these intelligent animals. Also remember these ages are really ages; they're thousands of years, even hundreds of thousands.

My ancestor races take off along rivers and along the east/west axis first. The goblin/hobgoblin group claims all of continent of B, the elf/human/orc ancestor race claims all of E, the future dwarves/halflings/gnomes claim continent C, and the kobolds claim continent A. There are a few points of interest in the migrations according to each age. The first age is the riverine and east-west expansion period. During this time, each race takes the easiest route of expansion. During the second age, the goblin/hobgoblin moves along the great north-south river through the desert to expand along the more hospitable coast while the elf/human/orc group and the kobolds expand along the coast of their respective continents. Both groups avoid their deserts. The second age is also the end of easy expansion for the dwarven/gnome/halfling group, meaning their densities increase and speciation may occur. During this period, I had them start to show differences in build, height, and behavior according to their preferred terrain, but they're still one race right now. The kobolds have also run up against the mountain group caused by continents A and D colliding. This barrier stops them for a long time until they learn to adapt.

The third age is an exciting one because the dwarves/gnomes/halfings make it across the ocean to continent D through the beneficial ocean and air currents. They find a land that, although containing a lot of different plant and animal life, is very similar to the land they left behind. They survive and continue to reproduce, claiming the northern portion of continent D. During this period they make first contact with another intelligent species, the kobolds. The kobolds have finally gotten through (and around) the mountain chain on the isthmus between continents A and D. They found the environment harsh, but survivable, with the land north of the mountains better than the land south. In the north, they meet the dwarf/gnome/halfling ancestral race. Chaos, madness, and death ensue. Don't try to stop it, you can't. I don't find it very fair either. For the human/elf/orc and hobgobling/goblin group, the third age is more like the previous one. They both expand where it's easiest and most familiar. They do manage to conquer their local desert environment, but density is so low it's almost non-existent.

The fourth age claims all the land on the world for some intelligent ancestor races. Although some islands were conquered earlier, all islands are now populated by intelligent proto-races. The isthmus between continents A and E rage with conflict as the human/elf/orc group has finally met the hobgoblin/goblin group. Continent D has become the most hotly contested real estate in pre-history because not only have the gnome/dwarf/halfing ancestor race and the kobolds taken part of it, but the intrepid orc/human/elf group has grabbed a hold on the southern tip.

Step Nine: Divergence and Divergent Expansion

Once expansion slows down for any reason and large portions of a race have spent significant amounts of time in differing environments, species divergence occurs. Given the magical nature of our worlds, this divergence can be extensive and very sudden. This step creates the races we're all familiar with: elves, humans, dwarves and all the other various humanoids. Depending on what races you want on your world, you'll need to look at the environments where your ancestral races settled and select the one which is most associated with what you desire. For example, you'll probably want your dwarves to come from rocky mountainous areas. After settling divergence, you can start sub-speciation if you wish. The various different sub-races are reflections

of additional specialization to a particular environment. My gnome cautions me to not get "out of hand" on this, but that's his preference. You'll have your own, I'm sure.
Once you locate where the new races develop, they expand. During this expansion, the ancestral races are still around, and every newly developed race is still capable of breeding with them as well as each other, but this won't last for much longer. The young races quickly out compete their forefathers, and their territory expands while the ancestral races' territory diminishes. This is very similar to the manner in which the ancestral race originally spread throughout the world, but faster and more deadly. Given enough time, the ancestral races that spawned children races are no more, and only a few of their descendent races are even capable of interbreeding.

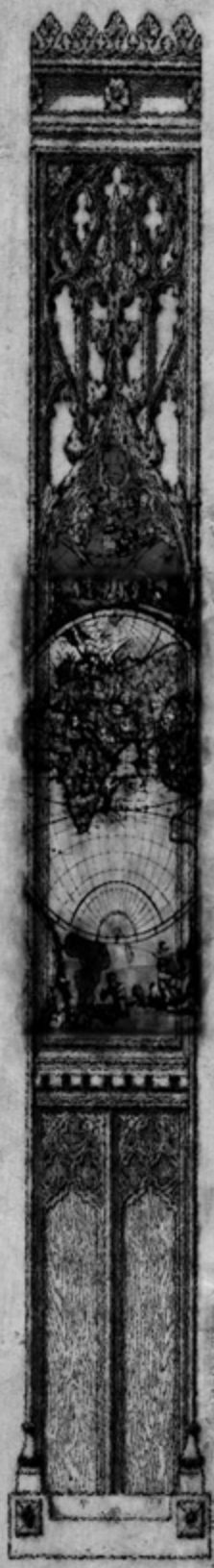
But what of the ancestral races that don't evolve into new races? These are not as rare as one would think, and they don't stop evolving. There's no way to stop that, not for we godlings. The ancestral races that survive are just that, survivors. They are scrappy and more than likely hold their own against all comers. These are the races that may even outlast the other "more developed" races. What they often do however, is undergo sub-race development pattern directly, spewing out sub-type after sub-type, all well developed to exploit their particular environment and all capable of interbreeding with all the other sub-types. This is often greatly to their advantage.

Step Nine: Example

Now that everyone's got nowhere to go, they settle down to constant conflict with themselves and their neighbors and specialize. Over the ages, they learn a particular environment well and find particular ways to exploit it. Eventually, magic takes a hold of them, and nature pressures them into different races. Again, this takes a very long time, and now they may start toying with a new thing called agriculture.
The races have finally developed enough to be individually discernable. As shown on the map, each race rose from a particular area within their ancestral race's territory. Every ancestor race sprouts younglings except for kobolds—they're like the roaches of intelligent species. Eventually I'll have them expand to all the continents (just like every other race), and they'll just be too numerous and crafty to destroy. Good must always have something to be wary of. Anyway, back to the map.

Kobolds watch their territory diminish on continent D as gnomes and humans expand over two ages. On continent E, humans expand inward, eventually claiming most of the desert and the coastline, separating the majority of orcs from elves. Elves and orcs lose the ability to intermingle through this geographic separation over a few more ages, but elves and humans continue to breed through their wars and alliances. Goblins hold their own, until they meet hobgoblins, who conquer them completely and use them as a servant race. Dwarves and halflings expand, destroying their progenitor race, but then they hold their own as dwarves start to delve deep for the first time, relieving the pressure on their society.

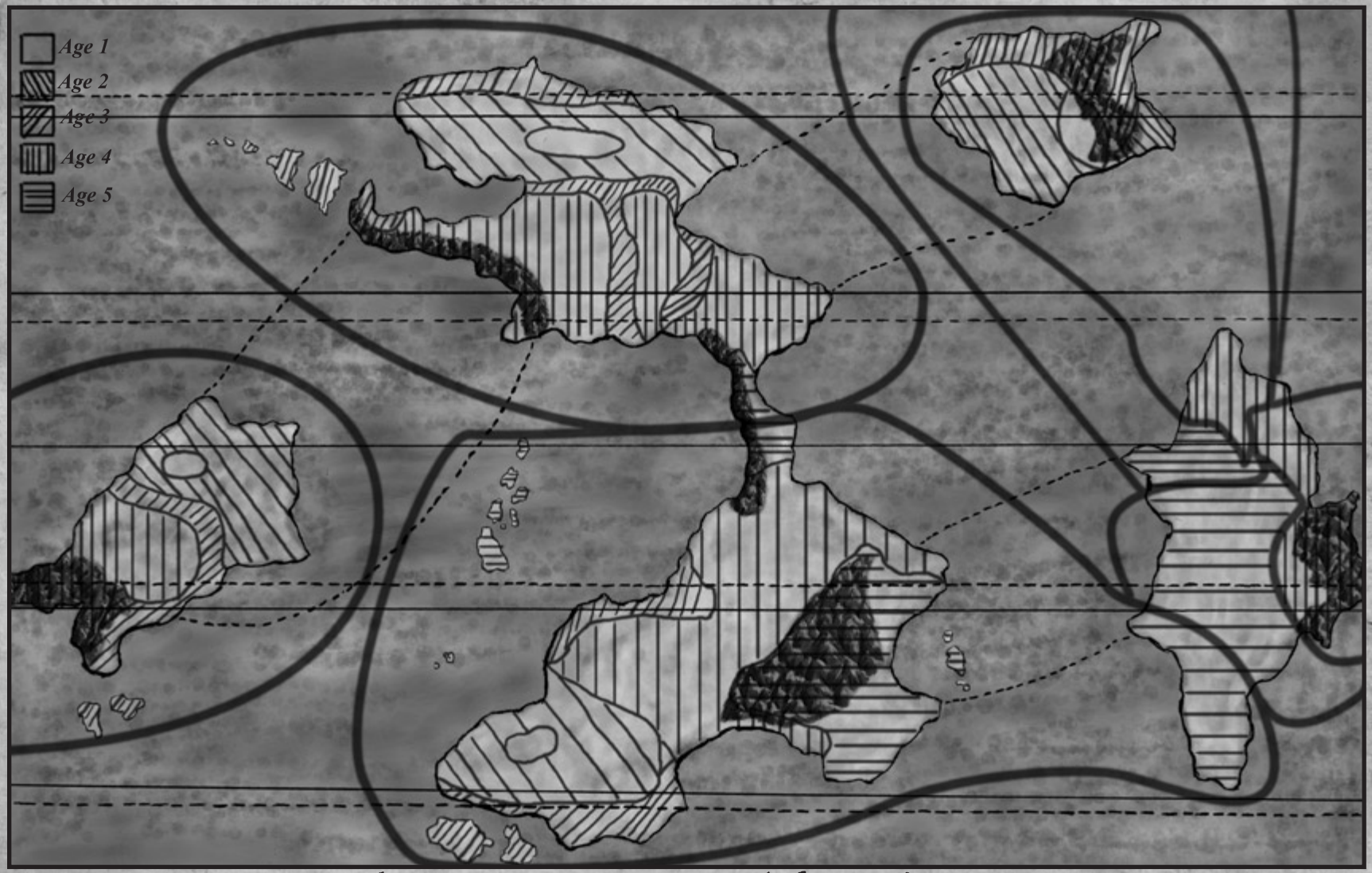
It's important to remember that every race has diversity within their group. For example, the dwarves have the underground/mountainous branch as well as the more artic types living on the northern shoreline of B. The kobolds cover so many different terrains that every possible subsistence/cultural pattern can be found on continents A and D. The hobgoblins may develop the first kingdoms along their Nilesque river because the soil is naturally fertile, renewable, and predictable, conditions that may make agriculture quickly surpass hunting/gathering as the main subsistence pattern. Also, the stability of the river prevents the universal abuse of land done through short-term survival needs that tends to destroy civilizations and thus promote continual occupation of the same land for hundreds of generations. Other races will have similar differences develop within their race. Don't assume that all elves come from forest people and all halflings are gardeners.



That's it. The races now have their terrain, their histories, and their reasons for how they are as well as where they are. Eventually dwarves find themselves carving kingdoms out of kobolds' mountains and in elvish mountains. The latter location leads to tragedy after elves betray dwarves to goblins, and an enmity exists for eons. But every race eventually makes its way around the world, given enough time. Through this whole process, I've spent some of my magic energy to push their developments the way I want them to go (can't leave everything to chance), but only minimal amounts are needed through this process to get a reasonable amount of what you wish. Budgeting our magic is the most important aspect or our divine existence, and your world is a reflection of judiciousness.

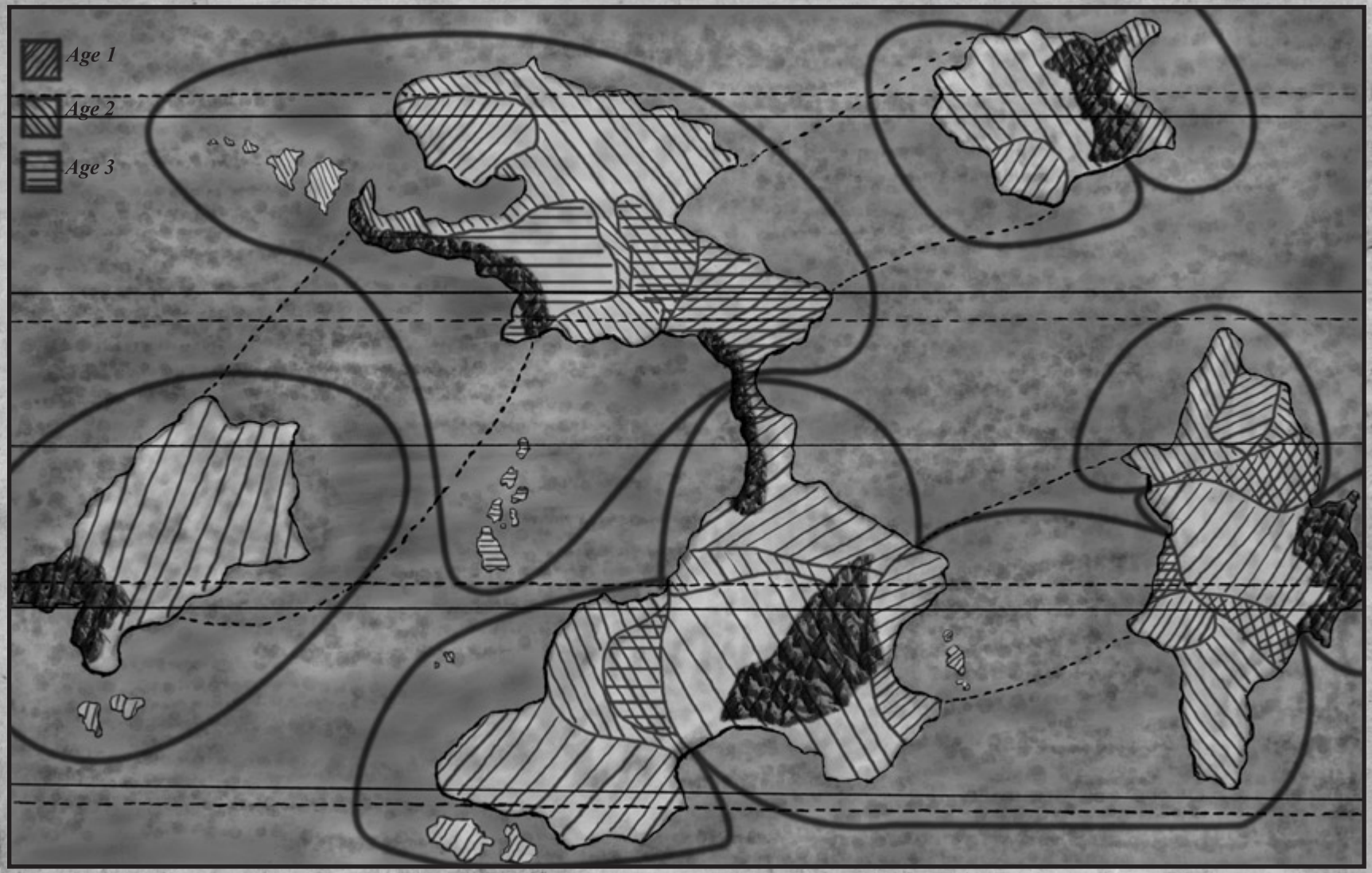
But that's another story. My work here is done.

Ah... Things were simplier then...



Mapping your World~ Steps 7 & 8

Mapping your World~ Step 9



Legal Stuff

OPEN GAME LICENSE Version 1.0a

The following text is the property of Wizards of the Coast, Inc. and is Copyright 2000 Wizards of the Coast, Inc ("Wizards"). All Rights Reserved.

1. Definitions: (a)"Contributors" means the copyright and/or trademark owners who have contributed Open Game Content; (b)"Derivative Material" means copyrighted material including derivative works and translations (including into other computer languages), potation, modification, correction, addition, extension, upgrade, improvement, compilation, abridgment or other form in which an existing work may be recast, transformed or adapted; (c) "Distribute" means to reproduce, license, rent, lease, sell, broadcast, publicly display, transmit or otherwise distribute; (d)"Open Game Content" means the game mechanic and includes the methods, procedures, processes and routines to the extent such content does not embody the Product Identity and is an enhancement over the prior art and any additional content clearly identified as Open Game Content by the Contributor, and means any work covered by this License, including translations and derivative works under copyright law, but specifically excludes Product Identity. (e) "Product Identity" means product and product line names, logos and identifying marks including trade dress; artifacts; creatures characters; stories, storylines, plots, thematic elements, dialogue, incidents, language, artwork, symbols, designs, depictions, likenesses, formats, poses, concepts, themes and graphic, photographic and other visual or audio representations; names and descriptions of characters, spells, enchantments, personalities, teams, personas, likenesses and special abilities; places, locations, environments, creatures, equipment, magical or supernatural abilities or effects, logos, symbols, or graphic designs; and any other trademark or registered trademark clearly identified as Product identity by the owner of the Product Identity, and which specifically excludes the Open Game Content; (f) "Trademark" means the logos, names, mark, sign, motto, designs that are used by a Contributor to identify itself or its products or the associated products contributed to the Open Game License by the Contributor (g) "Use", "Used" or "Using" means to use, Distribute, copy, edit, format, modify, translate and otherwise create Derivative Material of Open Game Content. (h) "You" or "Your" means the licensee in terms of this agreement.

2. The License: This License applies to any Open Game Content that contains a notice indicating that the Open Game Content may only be Used under and in terms of this License. You must affix such a notice to any Open Game Content that you Use. No terms may be added to or subtracted from this License except as described by the License itself. No other terms or conditions may be applied to any Open Game Content distributed using this License.

3.Offer and Acceptance: By Using the Open Game Content You indicate Your acceptance of the terms of this License.

4. Grant and Consideration: In consideration for agreeing to use this License, the Contributors grant You a perpetual, worldwide, royalty-free, non-exclusive license with the exact terms of this License to Use, the Open Game Content.

5.Representation of Authority to Contribute: If You are contributing original material as Open Game Content, You represent that Your Contributions are Your original creation and/or You have sufficient rights to grant the rights conveyed by this License.

6.Notice of License Copyright: You must update the COPYRIGHT NOTICE portion of this License to include the exact text of the COPYRIGHT NOTICE of any Open Game Content You are copying, modifying or distributing, and You must add the title, the copyright date, and the copyright holder's name to the COPYRIGHT NOTICE of any original Open Game Content you Distribute.

7. Use of Product Identity: You agree not to Use any Product Identity, including as an indication as to compatibility, except as expressly licensed in another, independent Agreement with the owner of each element of that Product Identity. You agree not to indicate compatibility or co-adaptability with any Trademark or Registered Trademark in conjunction with a work containing Open Game Content except as expressly licensed in another, independent Agreement with the owner of such Trademark or Registered Trademark. The use of any Product Identity in Open Game Content does not constitute a challenge to the ownership of that Product Identity. The owner of any Product Identity used in Open Game Content shall retain all rights, title and interest in and to that Product Identity.

8. Identification: If you distribute Open Game Content You must clearly indicate which portions of the work that you are distributing are Open Game Content.

9. Updating the License: Wizards or its designated Agents may publish updated versions of this License. You may use any authorized version of this License to copy, modify and distribute any Open Game Content originally distributed under any version of this License.

10 Copy of this License: You MUST include a copy of this License with every copy of the Open Game Content You Distribute.

11. Use of Contributor Credits: You may not market or advertise the Open Game Content using the name of any Contributor unless You have written permission from the Contributor to do so.

12 Inability to Comply: If it is impossible for You to comply with any of the terms of this License with respect to some or all of the Open Game Content due to statute, judicial order, or governmental regulation then You may not Use any Open Game Material so affected.

13 Termination: This License will terminate automatically if You fail to comply with all terms herein and fail to cure such breach within 30 days of becoming aware of the breach. All sublicenses shall survive the termination of this License.

14 Reformation: If any provision of this License is held to be unenforceable, such provision shall be reformed only to the extent necessary to make it enforceable.

15 COPYRIGHT NOTICE
Open Game License v 1.0 Copyright 2000, Wizards of the Coast, Inc

System Reference Document Copyright 2000, Wizards of the Coast, Inc; authors Jonathan Tweet, Monte Cook, Skip Williams, based on original material by E. Gary Gygax and Dave Arneson

Disenchanter from the Tome of Horrors, Copyright 2002. Necromancer Games, Inc; Author Scott Greene based upon original material by Roger Musson.

Bookworm from the Tome of Horrors, Copyright 2002. Necromancer Games, Inc; Author Scott Greene based upon original material by Gary Gygax.

Purple Moss from the Tome of Horrors, Copyright 2002. Necromancer Games, Inc; Author Scott Greene based upon original material by Jean Wells.

Occult Lore Copyright 2002, Trident Inc. d/b/a Atlas Games; authors Keith Baker, Adam Bank, Chris Jones, Scott Reeves, and Elton Robb

Minions: Fearsome Foes Copyright 2001, Bastion Press, Inc.
Open Game Content from The Penumbra Bestiary Copyright 2003, Trident Inc. d/b/a Atlas Games; editor Michelle A. Brown Nephew.

Nyambe: African Adventures Copyright 2002, Trident Inc. d/b/a Atlas Games; author Christopher W. Dolunt

Open Game Content from The Penumbra Bestiary Copyright 2003, Trident Inc. d/b/a Atlas Games; editor Michelle A. Brown Nephew.

Into the Green Copyright 2003, Bastion Press, Inc.

A Magical Society: Guide to Mapping, Copyright 2004, Expeditious Retreat Press, Authors Joseph Browning and Suzi Yee

The entirety of this work is 100% open game content, excluding the Open Game License, company name, all logos and art, authors' names, artist's name, and title.