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WORLDBUILDING MAGAZINE

TRANSPORTATION & other topics

With Featured Guests:

CAROLYN IVES GILMAN and
KATERYNA "TOKKAMAK" KOSHELEVA

WORLD SHOWCASE

Melissa Matos' *Drakir*

ON THE MARCH

Moving Fictional Armies

TRANSPORTING INFORMATION

Sending Messages in Low Tech Societies

LETTER FROM THE EDITOR

I am proud to present to you the Transportation issue, our 24th to date. We’ve covered topics from military troop transportation to how people handle messages. Utilizing some of the ideas in this issue should help your setting come to life nicely.

As we transition toward 2021, Worldbuilding Magazine is also going through a few changes, with one that we wanted to share in regards to our 2021 schedule: we will release issues quarterly, rather than every other month. This means four issues rather than six each year, which will allow us more time on each topic and give volunteer staff some well-deserved time off.

There’s one last issue in 2020, though! Stay tuned for the Survival issue in December, then we’ll kick off 2021 with an issue all about how to get started worldbuilding in a new project—inspired by questions from readers.

Happy worldbuilding, all.
Adam Bassett, Editor-in-Chief



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WE SHIP IT
Cargo, Culture, and
Worldbuilding



ARTIST SHOWCASE
Kateryna “Tokkamak”
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WORLD SHOWCASE

MELISSA MATOS' DRAKIR

interviewed by Aaryan Balu, illustrated by Melissa Matos

🗨️ INTERVIEW ✍️ WRITING

Melissa Matos is creating a world for her upcoming high fantasy novel *Song of the Wild*, which is currently set to release on October 15th, 2020 with Kyanite Publishing. This is how she describes the novel's setting—Drakir.

Drakir is the pocket of civilization surrounded by the Wild. All sorts of people live there: humans, elves, dwarves, halflings, and gnomes. Together they have rebuilt their land after a series of devastating wars with the Wild. The Wild races are also diverse, ranging from tiny fairies to hulking Minotaurs, all ruled by the Queens of Summer and Winter.

My main character works as a Warden, who patrols the borders and keeps the watchtowers around the land.

What does the society of Drakir look like following these wars?

Originally they focused on defense, building up the towers, learning the magic needed to fight off the Wild, and rebuilding their cities. It has now been some time since the wars, though, so they focus much more on rediscovering the knowledge that had been lost during the wars and advancing new forms of magic combined with engineering.

There is a lot of respect for those who cultivate this knowledge, like professors and engineers, and a fearful respect for the Wardens who watch the borders. But magic is becoming more common and less expensive now, so some of that prestige is waning.

Most cities are now multilevel engineering wonders, each with its own elected government. They try to avoid large federations and royalty, as that is widely believed to be what kindled the wars to begin with.

So basically, very Italian Renaissance-inspired.

What's Drakir's current relationship with the Wild?

There is a truce between both sides. It is understood that any Wild person or thing found inside Drakir can be killed or captured on site, and the



same goes for Free Races found in the Wild. The Wardens work to make sure that no one crosses the border either way. The only exceptions are those born of both races (like the main character, Glade), who must heed the Queen of the Wild's call every year. They are allowed to be in either place. Though the Free Races are not terribly kind to the Changelings, as they are called, and tend to not treat them as full citizens.

Tell me a bit about the Wardens. What's that experience like, and what kind of challenges do they face?

Wardens are usually hired from ranks of magic users as they graduate university or from well-trained fighters. They are licensed to the city that hires them, and are expected to do at least one tour a year at the towers for three weeks. Life in the towers is like a rough camping trip, and things have been quiet at the border for a bit, but now and then a strong Wild one will threaten to

cross. The Wardens will light the signal in the tower to call for aid but are faced with fighting it off. Usually, however, something from the Wild will try to aid them, as it seems they don't want the wars to start either, but it may take a while before any help comes.

What are the Wilds like? What's the inspiration for them, and what is the experience of the creatures that live there?

The Wilds are a deep and magical fairy forest. Many of the creatures there are inspired by nature or Greek mythology, so there are nymphs, fairies (the little winged people type), creatures that represent almost every living thing there, as well as fantastic beasts like basilisks, unicorns, etc. Living there depends on if it's the Summer or Winter side. Summer is all passion, emotion, and enjoying everything at the expense of everyone around. Winter is more cold, dreary, and deadly, numbing all feelings and empathy. There is a strict hierarchy, and powerful Wild ones are able to control the weaker ones, bending them to their will at a whim. Many of the smaller creatures are harmless, but the more powerful ones can cause a lot of harm and destruction when they wish.

The art I will be sharing with you later are my imaginings of these creatures. I'm hoping to publish an art book, *The Field Guide to the Wild*, as a companion to the novel.

I look forward to seeing them! Is it dangerous to live in the Wilds if you're from there?

It can be. There are basically four levels: small folk, nymphs, archons, and queens. The weaker creatures, especially ones with desirable skills, are often kept by the stronger ones and used as servants. For example, nymphs with soothing voices or who can travel at fast speeds are popular with the archons (the higher-ranked ones).

The animals are less easy to control and harder to categorize, but there are some dangerous and terrifying Wild beasts that all but the queens are afraid of. There is a beast called a Raishk that's all teeth and claws, and even if someone manages to kill it during an attack, it won't let go of its prey.

Could you tell me a bit more about the four levels? What differentiates them, and how does that power structure manifest?

Small folk are smaller, weaker beings, like the fairies, minims (mushroom people), and the like. They are basically like insects or pets in the Wild, though some are intelligent. They just aren't considered important or a threat.



Nymphs are the most like humans or elves. They can vary a lot in size and power, ranging from flower nymphs to mountain nymphs. They each personify a specific natural thing, like a tree or flower or mountain. Most Changelings are born to nymphs. The higher nymphs have sometimes challenged the lower levels of archons, but it is rare. Most nymphs are kept as servants to archons.



Archons represent larger concepts in nature, like decay, pollination, sunlight, shadow, new growth, and whole forests—concepts of what happens in nature. They often come in pairs, one for Summer and one for Winter. Some are very like people, and some are very not, being made up of what they represent. The summer archon of decay looks like a child covered in leaves and sticks, but the archon of Rhinadon Forest is a giantess wreathed in a summer storm.

The queens are a larger category than just the Queen of Summer and the Queen of Winter. These are the most powerful of the Wild beings and the ones that agreed to the truce. There are Summer and Winter Ladies, a King of the Hunt, and a few others. They represent higher concepts like justice, life, death, and revenge and are the undeniable rulers of the Wild. The queens are able to command all the lower groups and have the allegiance of the others in their class.

Sounds very cool! What's the structure at the top? I'm imagining a Summer and Winter court, and somewhat related, what's the relationship between Summer and Winter? Does it change with the seasons?

Yes, more or less, though some of the archons hold court of their own as well. It's difficult to tell

in the Summer court, as they are rather chaotic, but the Winter court has a rigid structure with a Queen, then the Lady and her chosen consort, and then archons and nymphs below.

Yes, the relationship between the courts fluctuates with the seasons with power shifting at the equinox. Midsummer is when all the Summer Wild are called home and midwinter for the other side. After which, most start to decline until the other side gains the upper hand. The two courts are not at war with each other, but they don't get along.

So your MC is a Changeling and a Warden—is that experience unique? What does it entail, and what kind of challenges does she face as someone guarding the border between worlds?

It is. She legally should not be allowed to be a Warden, as most would consider that a conflict of interest. She is very good at illusion and is constantly disguised. Thankfully with magic becoming more widespread, a lot of people wear illusions, so it's not completely weird that she does so. She sees her job as protecting the innocent Wild creatures and helping the overconfident Wardens who don't know what they are getting into when they meet a more powerful Wild one.

Most of her troubles come from having to return to the Wild once a year and from trying to hide what she is. She understands the Wild but hates being there, knowing that she has no control and no choice if she gets caught there. But she hates the ignorance of the Free Races as well since they blame Changelings for a lot of problems that aren't their fault.

Take me through the...well, "Call of the Wild" might not be the right word for it, but the obligation of Changelings. What kind of things do they have to do, and why?

Most of the time, they are entertainment for the Wild. For the Free Races, the few that choose to stay there are used to helping run some of the engineering, as they have some small control over elements and the like.

But what happens during the main call at Summer and Winter is still unknown. Changelings get called home and have to go to the main tree that is the center of the realm for each side. They don't remember what happens when they are there, but when they return, usually coming to at the edge of the Wild, they are starving, filthy, and exhausted.

What kind of magic do Changelings—and other figures in the setting—wield?

Changelings (and most of the Wild) have mostly elemental control, though the higher-ranked the Wild, the more they are able to control. Glade (my main character) has some control over sunlight as well as some of the smaller creatures in the Wild.

For the Free Races, they divide their magic into three kinds:

1. Spellcasters/wizards/mages use specific recipes to cast magic, using specific materials, incantations, and amount of time. This kind of magic can be kind of slow, and

a wizard has to be well prepared to get it to work out in the field, but if they have the right materials and enough time, they can do some impressive things.

2. Artificers (Glade has been trained as an artificer, specifically a bard) are able to imbue their artwork with magic, which comes in many forms like songs and armor as well as potions and items for wizards to use in their spells.

3. Clerics have been given power directly from Vantor the Breaker, the old god who broke the Free Races from the control of the Wild. They have exclusive use of fire magic as well as the ability to detect illusions, though this latter skill has faded in recent years in the absence of any major Wild threats.

Tell me a bit about Vantor—what kind of presence does this god (or other gods) have in the setting?

Vantor, as with all of the old gods, has not been directly active in a long time. Not since the end of the wars about 400 years ago. There are still many churches to Vantor, as well as a few old shrines to the other gods, but worshipping Vantor is still the predominant religion. There are still some clerics that can wield the power he gave previously, though there have been no new breakings—that is, no one freed from Wild control—since that one event ages past. However, some claim artificers are able to do magic as a gift from the old gods.

What kind of control did/does the Wild exert over somebody?

It's a lot like getting crazy drunk. At least, on the Summer side. A person gets flushed with joy and pleasure and life and tends to start dancing or singing or laughing a lot. Possibly getting frisky with whoever happens to be around.

On the Winter side, a person gets numbed, stilled, and quieted to the point of not caring about anything around them anymore. This change also sometimes manifests as a dance, but a much more torturous one, like to a dirge or a forced march.

Over Wild creatures, it's almost a hive mind kind of thing, and the Queens can just command them at will.

So what did the world look like before the wars? Total control of the mortal races?

Yes, the races were all Wild before. Most of the land was covered in dense forest, and everyone was subject to the Queens. When Vantor broke the races away, his people began clearing forest and building cities. The final straw was when they declared their own king and queen. The Wild attacked to bring them back into submission. Then Vantor gave them fire and taught them to forge weapons, and they fought back, eventually resorting to burning whole swaths of forest down to make the Wild stop fighting.

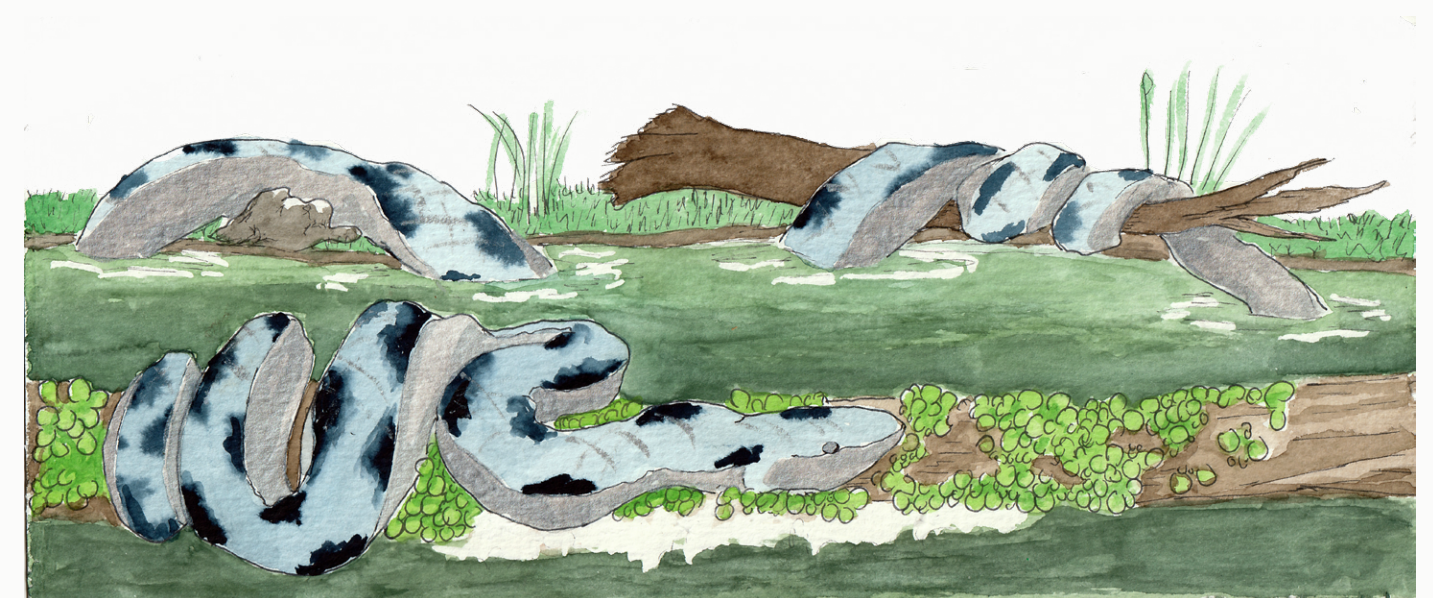
Humans are an odd exception, as they were not part of the Wild then. No one's sure when they showed up, but it was sometime during the wars. Their version of Wild magic is different.

There are some that are able to transform into animals, but the more often they do, the less they are able to change back and the more they lose their minds. If any humans are found trying this kind of magic now, they are thrown out into the Eastern Wastes with the other animals.

Have there been any notable stories of that happening? What happens to those people?

There are a few legends, but most humans know to avoid this magic now. Because of the job Glade gets hired for in this book (something that most Wardens wouldn't want to get hired for), she ends up working with a human who tried this kind of magic, Otsoa, and his odd companion, Thromm. Basically they are the last resort team, chosen specifically because they would be unlikely to refuse the job.

Eventually, humans that indulge in this magic become nothing more than wild animals. It is rumored that there is a great temple out in the wastes somewhere, where the king of the animals reigns over a court like the Queens of the Wild do in the forests. No one has ventured out there to prove it. If I get that far, that will be book 3.



What’s the job that Glade needs to pull off?

A young woman has gone missing from a prominent elvish family, who don’t want news of it getting out in public. When Glade’s team investigates a little, they find out she too was a Changeling—probably why the family is embarrassed—and then find the bodies of three other murdered Changelings. Most Wardens, or anyone for that matter, would not be eager to work on a case revolving around Changelings, but Glade especially feels like she needs to figure it out. Otsoa wants to stick with the case, as it looks like the victims died as a result of being experimented on with magic, something he resents a lot.

So it’s part murder mystery.

What else can you tell me about the story without delving too far into spoilers?

Heroic/high fantasy, but not a typical quest. Good friendships, fun RPG references/allusions, but a serious look at what it is to live between two worlds, and to be vulnerable to something that you have no control over.

I’m a huge D&D fan, and it shows.

I was gonna ask what other inspirations went into building this world—Dungeons & Dragons is certainly a great one. Anything else?

Greek myth, but also folklore from Italy and other parts of Europe as well as the Americas. Dresden for the clever use of magic by detectives and the fairy-related things.

Makes sense. What’s your favorite part of this world?

Oy, I have to pick a favorite?

The parts I enjoyed writing the most were the parts in the Wild or Glade dealing with the pull of it. I’m not sure what that says about me, but I

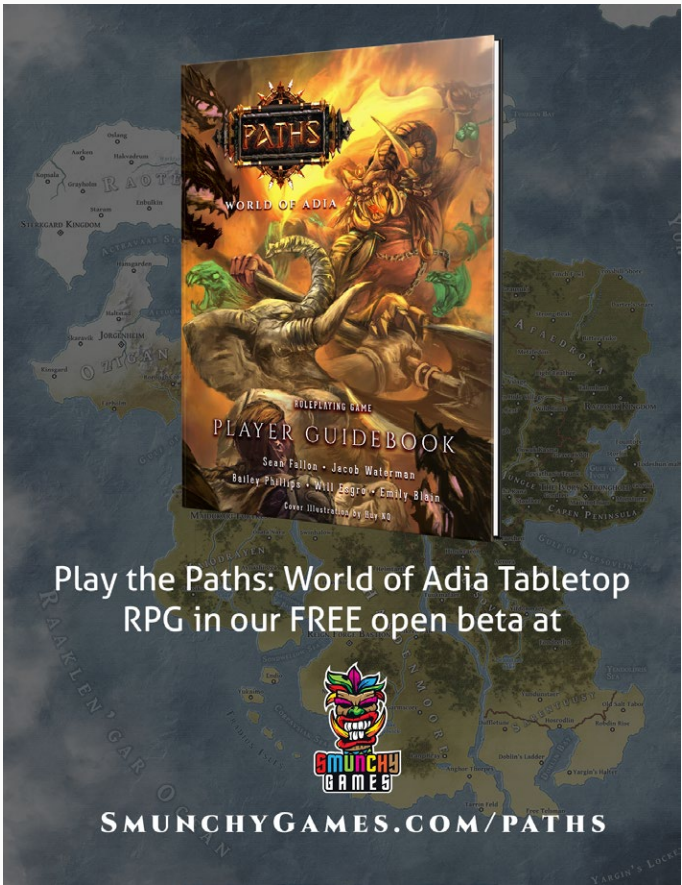
think we can all relate to having a part of us we want to hide or get rid of. Plus, the Wild was just weird and creepy, and I could make it look like anything I wanted.

This interview was edited for Worldbuilding Magazine.

Thanks to Melissa for joining us! If you like what you heard about Song of the Wild, you can find her on [Twitter](#), [Instagram](#), or [Facebook](#). You can also find all of Melissa’s work—including more information on Song of the Wild—on her [website](#).

If you would like to be featured in a future World Showcase, [click here to apply!](#)

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ON THE MARCH

by B.K. Bass, illustrated by Adam Bassett

 WAR  TECHNOLOGY

Lucien wiped sweat from his brow as he peered down a long line of swaying shoulders and bobbing speartips. They’d been marching for days. His gambeson was soaked through with sweat, especially under the bundle of armor on his back—which was too heavy to wear on the march. Atop this was his shield, a blessing in that it kept the blistering Ibisian sun off his back.

The column snaked between the flowing dunes of the desert, the endless grit broken only by their footsteps and the occasional figure of a soldier who’d collapsed and fallen to the wayside—to be left for the vultures. How many men had they lost with the battle yet to commence? A dozen? A hundred?

Suddenly, Lucien thought he heard a humming on the air—so soft to almost miss, but growing to an overwhelming drone in moments. Sand billowed over the crest of a dune as if a storm had descended upon them. Cries of alarm rose up from the column as men scattered.

Somebody grabbed Lucien’s shoulder and pushed him into a run, though with the staggered gait of a man well-past exhausted. He struggled to unsling his shield, and with no time to don his armor, he cast the bundle to the ground—relieved to be free of the burdensome weight.

Spear and shield in hand, he stumbled up the side of the dune. Above him, a behemoth figure crested the ridge. It stood on six long, spindly legs. Gossamer wings fluttered as large, bulbous eyes stared down at the panicked soldiers. Its mandibles clacked in eager anticipation. Upon its shoulders sat a man clad in iron mail with a gleaming, curved scimitar. From the thing's protruding abdomen, a dozen similarly equipped men leapt.

Fresh from their flight and eager for blood, the famed Ibisian dervishes raced down the hill.

"Form a line! Form a line!" an officer cried nearby.

"They're behind us!" another man screamed.

Lucien looked back to see more of the giant insects cresting another dune to alight upon the forward slope. Dozens of men dismounted and raced to the rear of the panicked, disorganized throng. The coppery smell of blood soon filled the air as exhausted, unprepared men were cut down in what could only be called an act of butchery.

Too tired to fight—nay even care—Lucien dropped his spear and shield, then sank to his knees in the sand to await the sweet release of death.

Quite often in fantasy fiction—especially epic fantasy such as J.R.R. Tolkien's *The Lord of the Rings* or Robert Jordan's *The Wheel of Time*—we see grand armies marching to war. Thousands of men line up in front of one another, or before some foreign city, eager to win glory on the battlefield. Too often though, the journey is glossed over for sake of the destination. We're here for the action, right? Nobody wants to read a chapter of "*and then, we walked some more,*" so let's get down to the stabbing already!

Well, that's all good and fun, but when it comes to imparting realistic, thought-out elements into your worldbuilding, it doesn't quite get the job done. We've mapped out trade routes, developed detailed cultures, established conflicts over natural resources, and likely even created a grand cosmology. But then when it comes down to the nitty gritty of it, are we just going to take thousands of men, pick them up, and plop them down hundreds of leagues away without thinking about how they got there?



GETTING THERE IS HALF THE FUN

When it comes to transporting an army in a fantasy world, the first method we should discuss is the most obvious: feet. Or as my drill sergeants called in in my days in the military: the *standard issue LPC*. For the uninitiated: that's a wry, unofficial military acronym for Leather Personnel Carrier. You likely know them as boots. This method is what one normally sees—or likely assumes when it's glossed over entirely, as is often the case—in traditional fantasy: grand armies marching to battle.

But, it's not just fighting men on the march. They likely have wagons full of food and supplies and men to drive them. There will also be other camp retainers such as cooks, surgeons, clergy, and merchants. Some armies might have marched in their full armor, but more often than not, heavier infantry would either carry their armor in a pack or they'd be gathered into wagons.

To navigate the terrain, the entire force would be drawn out into a long line, which was done for two reasons: to prevent elements of the army from becoming separated, and to funnel the force through the easiest route to avoid difficult terrain. This was what made ambushes in the days of mass marches so deadly. Battles were usually fought in formations, from antiquity through the 19th century, which was how the men were equipped and trained to fight. A long column on the march—unformed, exhausted, and caught unaware—could be picked apart by a fresh, organized force waiting in ambush.

Even under the best circumstances, though, the men will be tired from the march. Soldiers com-

monly had blistered feet, along with exhaustion, dehydration, malnourishment, and sleep deprivation. Walking a hundred miles and then getting into a fight as soon as you arrive is never a good proposition!

So, next time you're working out who's fighting who and where, and you decide they're going to hoof it, don't forget all the hardship of the march. The wear on the men, both physical and mental, can decide the outcome of a battle. Also, don't forget about how long it takes. Traveling by foot is slow already, but then add in the needs of regular rests, stopping to prepare and eat meals, camping for the night, and foraging for food and other supplies. Even one of the most famous examples of a forced march from our history—the crossing of the Alps by Hannibal Barca during the Second Punic War—took *sixteen days*!¹

Whatever the details of the march itself, just remember that having an army simply pop up in a foreign land like they just rolled out of the tavern is a sure way to get your reader's eyes off your page because they're too busy rolling them in disbelief at what they just read!

RIDING IN STYLE

By now, you're probably wondering if I'll ever address the elephant in the room—or giant insect, as it were. I think I've beaten a dead horse talking about how much walking sucks, so what are our other options?

Well, speaking of horses, there's one example for you. But if your fantasy world is anything like our own, a horse is a valuable commodity. There's a reason the medieval knight and the horse are such a ubiquitous combination: only

the wealthy could afford a horse. A trained war-horse would be even more expensive than normal. In the case of the armored knight, it would also be larger. It took a hefty beast to carry all that weight.

There are examples of men riding to battle but not fighting on horseback, though. The dark age Saxons are a prime example. The wealthy among them, the thanes, often rode to the battlefield so as to be spared that long march. However, once they arrived, they dismounted and fought as infantry. During colonial times, the dragoon was a specific type of infantry used by quite a few nations that used their horses for mobility to flank the enemy or to respond to a sudden change in the battlefield, but then they dismounted and fought in a line formation just like any infantry unit would. Still, in both these examples, the majority of the army still had to walk to the enemy.

What about every man riding a horse to the battle, even if they don't fight on horseback? With this approach, there's the added logistical concerns when it comes to horses. One of the biggest obstacles to fielding a large army, as has been said by many military leaders over time, is that an army marches on its stomach. Add a horse for every man, and you've just doubled the number of mouths to feed. There's also the need for transporting much larger amounts of potable water. These added concerns would greatly increase the size of the force's baggage train, as more animals need to be fed, further bloating a very vulnerable element of the army.

The advent of the locomotive in the late 19th century really changed how armies traveled. The American Civil War is one of the first examples of large numbers of troops being moved en masse across land without having to walk. In

World War I, the railways of Western Europe became arteries that fed the flow of blood spilled in the trenches, replacing massive losses almost as soon as they occurred and contributing to the years-long stalemate on the Western Front. As an example, during August of 1914, British railways transported over 120,000 men from across the country to the port of Southampton, ready to board ships bound for France.²

Short of going all-out steampunk, how can we have something like trains in a fantasy world? Probably the easiest answer would be to have a wizard open a portal. It's faster than a train, but it would have a similar effect. You can move thousands of men and tons of material rapidly and without the exhaustion of walking. Looking for something less hand-wavy? What kind of beasts of burden does your world have? Is there something incredibly strong, large, or both? Why not have giant wagons filled with hundreds of soldiers pulled by mammoths? Or trains of wagons with teams of giant lizards at their heads? The most prominent example in fantasy fiction that comes to mind for me is from the *Dark Sun* setting of *Dungeons and Dragons*. In this setting, there are massive, reptilian armored beasts called mekillot that pull enormous, multi-story wagons through the desert.

Still waiting for me to talk about the insects? Fear not, because we've arrived! Now, when you think of six or a dozen men hopping off a flying contraption into battle, what comes to mind? That's right, the helicopter! During the mid-twentieth century, the helicopter revolutionized troop movements in combat zones once again. Warfare also had changed quite recently from the massive trench lines of WW1 to the smaller-scale platoon- and squad-based actions of WW2. No longer were armies lining up to face one another. Instead, mobility proved key

¹ Mindy Weisberger, "How (And Where?) Did Hannibal Cross the Alps? Experts Finally Have Answers," Live Science, April 18, 2018, <https://www.livescience.com/62265-hannibal-alps-crossing-mystery.html>.

² "Transport and Supply During the First World War," Imperial War Museums, <https://www.iwm.org.uk>.

to winning battles. The helicopter is viewed by many as a natural evolution of this idea, and in the inhospitable jungles of Vietnam it was put to the test by the United States military.

Now, some may cry out, “What about the Korean War?” While the helicopter was an essential tool in this conflict, its uses were limited to very specific roles. In particular, they were used for casualty evacuations, logistical supply, and reconnaissance. It wasn’t until the Vietnam War that they were used to rapidly move troops to respond to crisis situations as they arose, to reinforce beleaguered patrols and firebases, and to outmaneuver the enemy. The helicopter also filled utility roles, such as those it served in Korea. Altogether, in terrain that favored the insurgent defenders, the new doctrine of *airmobility* changed the way modern wars were fought. Even though the Vietnam War ended poorly for the U.S., it helped shape the highly-mobile, small-unit-focused force that we know today.

So, here’s where we have the special forces of our fantasy world. You likely won’t fly armies consisting of thousands of men across the map, but small units that are highly mobile can easily overpower a numerically superior force with surgical strikes. Remember the mention of long columns of marching men being vulnerable to ambush? Well, just as what occurred in our little introductory fiction, a surprise attack by a small, elite, airmobile force against an exhausted, disorganized column of marching troops would prove an utter disaster for the poor footsloggers.

I have to admit my flying bugs above were inspired by the quorl, the dragonfly-like creatures used by the Moranth Legions in the *Malazan Book of the Fallen* series by Steven Erikson. Although, while the quorl can only

carry two riders, I took inspiration from our aforementioned helicopters to make something a bit meatier. There’s a plethora of other options out there to give your fantasy special forces the advantage of rapid travel through the sky. Flying carpets and dragons are simply two examples one can pull from the already-established social lexicon, but creating something new might be even more interesting. What about giant, floating, jellyfish-like creatures, soaring through the sky because their bodies are full of hydrogen as a byproduct of synthesizing oxygen from water vapor in the clouds? And attached to their dangling tendrils: gondolas filled with warriors!

PLAN YOUR JOURNEY

No matter how your army gets there—by land, air or sea; walking, riding, or flying—the biggest thing to remember is to put some thought into the actual journey. While we’re all eager for that big set piece battle, glossing over the logistical details will make your narrative less believable. When you do start considering these usually inconvenient aspects of warfare, you might even find another layer to add to the story that makes that battle even more interesting! Instead of two lines of bright-eyed and bushy-tailed troops facing each other down, perhaps the attacker is at a disadvantage because they’ve been on the march for a week, a month, or longer. Or perhaps they do show up suddenly through some magical means or otherwise, ready to fight, and catch the defender unawares. And when things seem at their bleakest, perhaps our heroes will soar in on the winds of magic or the wings of some fanciful creature to save the day!

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EXCLUSIVE INTERVIEW

CAROLYN IVES GILMAN

interviewed by Adam Bassett

 WRITING  INTERVIEW

Carolyn Ives Gilman is a Nebula and Hugo Award-nominated author of science fiction and fantasy. Her novels include *Dark Orbit*, *Halfway Human*, and the *Forsaken* series. Her short stories and novellas have been published in *Fantasy & Science Fiction*, *Clarkesworld*, and multiple Best of the Year anthologies. She is also a historian and museum consultant specializing in frontier and Native American history.

³ Herbert P. Lepore, “The Coming of Age: The Role of the Helicopter in the Vietnam War,” *Army History*, (1994), 29: 29–36, <https://www.jstor.org/stable/26304086>.

I am a person with a bifurcated career. I have always earned my living as a respectable museum historian, but my secret identity is [a] science fiction and fantasy writer. Having two careers is good for cross pollination. Most of the adventures I have had in life came from the museum career—particularly during the years I spent tracking down all the artifacts Lewis and Clark brought back from their journey to the Pacific in 1804-06. This quest took me coast to coast, from musty museum attics to American Indian reservations, and gave me indelible memories like sitting in an upstairs bedroom at Monticello poring through catalog records while a thunderstorm swept by; or climbing onto a rickety ladder in Cambridge, MA to dig through drawers of bird carcasses from the long-defunct Peale Museum. Later, the architecture of Monticello inspired that of the planet Gammadis—both designed to hide the slaves from the sight of the ruling residents. I'll get around to the bird carcasses some day.

In fiction, I tend to gravitate to the future; maybe my job gives me my fill of the past. I like to write at in-between lengths like novella and novelette because it gives you enough space for worldbuilding but also the instant gratification of getting something done and published in less time than novels take. I have four novels out so far, two science fiction and two fantasy. There are two more SF novels on my computer, begging me to market them.

"I SELDOM FOLLOW THE SAME PROCESS TWICE BECAUSE IT ALL DEPENDS ON THE STORY."

I had been writing stories set on other planets for some time before I realized they could be loosely linked into a larger universe with a shared history, and at that point I started deliberately overlapping them. I call this universe the Twenty Planets. It's a galactic neighborhood that was

inhabited in a human diaspora so ancient there are no records of it. Each planet has gone its separate way, and they are just now re-discovering each other. There are no aliens on the Twenty Planets; humans are alien enough. I don't rule out aliens, though. Every author deserves the right to aliens.

Thanks for that rundown! It sounds like you've had quite a few adventures. When crafting adventures for fiction, or the worlds they're set in, what most inspires you?

All of the above and more. I get ideas from the newspaper, from science magazines, from stories people tell me, from dreams, from historical research, from sitting in a chair staring at the wall. I am constantly taking random notes about knowledge that might or might not prove useful. It all goes into the imagination grinder.

Do you have an established process for when you begin worldbuilding?

I seldom follow the same process twice because it all depends on the story. Sometimes, the seed of a story is a situation that seems full of potential. This might be a "what if..." speculation, such as, "What if they built habitats at deep sea vents on a planet like Europa?" (*Arkfall*) or, "What if there was an alien race that was intelligent but not conscious?" (*Touring with the Alien*). These questions can be intriguing enough that they call for more research. I read a whole library of books about consciousness to answer the second question and found out that, in a way, *we are those aliens*, because we are a whole lot less conscious than we think.

Often, the story seed is just a setting. I start out thinking, "How would life adapt to a planet in a system with a Wolf-Rayet star?" (*Umbertain*), or "What kind of culture would live on a tidally locked planet?" (*The Ice Owl*) The weirder the better. The setting will then suggest a set of cultural adaptations. For example, my people living

in the deep sea habitats of *Arkfall* had an almost pathological nonconfrontational, cooperative ethos, whereas the people on the tidally-locked planet in *The Ice Owl* had a harsh, ironclad set of beliefs. The drama of the story then comes from tension between the character and the environment, the culture, or people from outside the culture.

You recently released a new novella, Exile's End, which is set in the Twenty Planets universe (the setting for novels such as Halfway Human and Dark Orbit). In it, the main character is an art curator on a fictional planet. That seems like it might have been directly influenced by your work as a historian/museum curator, and if so, how did that experience translate into the story?

I confess: yes, it was directly inspired by some of my experiences as a museum professional, where we faced ambiguous moral issues almost every day. Museums are having to confront their origins as institutions of colonial conquest—repositories for the looted spoils of people from around the globe. It is not easy to determine what is right when you're tasked with guarding priceless objects that are the evidence of a centuries-old injustice—although people don't hesitate to take absolute (and opposite) positions about it. I became particularly aware of the dilemmas in the years when I worked at the National Museum of the American Indian, which was founded to represent the perspectives of Native people of the Americas, who have had a difficult relationship with museums.

The moment when I decided to write *Exile's End* was at a museum conference when the author of *The Monuments Men* lectured us about how great art is the common heritage of all humanity, and I was sitting in the audience thinking, "Wait a minute. It's not that simple." But I had to

wait until I no longer worked at the Smithsonian to write it because they would have been very, very cross with me.

In Exile's End, an artifact is discovered which—without spoiling anything—drives the conflict between two cultures. Could you tell us a bit about the research and thought that went into building and/or expanding upon these two peoples in order to create a believable conflict over the artifact?

The immediate inspiration was a trip to China under the auspices of FAA (Future Administration Authority), a Chinese science fiction publisher that brought a group of Western authors to the mountain town of Danzhai and required us only to write a story inspired by our experiences. For me, the trip focused around discovery of the culture of an indigenous people, the

Miao, whom we call the Hmong. Part of *Exile's End* is inspired by the people I met who are struggling to keep ancient Miao culture alive today. But at the same time I was researching the story of Pocahontas for a contract at the U.S. Capitol, and I was interested in the

way she had been incorporated into American origin stories. Did you know that Pocahontas is portrayed in the art of the [Capitol rotunda](#) more often than anyone else except George Washington? If he is the father of this country, she is its mother. Americans adopted this Native woman as a kind of biblical Rebecca, founder of a new American race.

All of these wildly multicultural resonances got incorporated into *Exile's End* in transformed shape. The only common thread between the Miao and the Powhatans is the complex relationship between indigenous people and the colonial culture that occupied their land. The story revolves around two people who represent

"IN FICTION, I TEND TO GRAVITATE TO THE FUTURE; MAYBE MY JOB GIVES ME MY FILL OF THE PAST."

the colonizers and the colonized on a far-future planet. They are both trying to do the right thing, which brings them into irreconcilable conflict.

Exile's End is part of the Twenty Planets universe that is shared with other titles such as Halfway Human and Dark Orbit. What is your approach for connecting stories like these?

I never set out to write a group of interconnected stories in the same universe. For one thing, I am deeply skeptical of the whole concept of galactic empires. There is just no way that earthbound methods of warfare, trade, and administration will work on interplanetary scales. As much as I enjoy some of these books and shows, as far as I am concerned, they are about the past and not the future.

The Twenty Planets are not an empire, but a set of planets that are loosely connected by rather glitchy lightbeam transport and primitive faster-than-light communication. There is one plan-

et, Capella Two, whose economy is based on the collection and sale of information, so it exports its scientists, explorers, and trade representatives everywhere in search of new profits.

Once I invented this universe, I kept using it over and over because it seemed a shame to let a good universe go to waste. The two novels (*Halfway Human* and *Dark Orbit*) are the most closely connected; both are about Capellan expeditions to new planets. But everything I have written in [this universe] is a self-contained story about a different planet.

The nice thing about the Twenty Planets is that I have twenty planets to explore. My downfall as an author is that I have a short attention span; once I'm done with a planet, I want to go on to the next one.

What are your thoughts on the differences between writing a shared universe and a series like your two Forsaken novels?

The Forsaken books (*Isles of the Forsaken* and *Ison of the Isles*) are actually one large novel broken into two halves; the story is continuous. It is also very different from my usual work because it is based on the historical research I have done on the 18th-century frontier in North America. I wrote it because I was impatient with the simplistic way a lot of speculative fiction was portraying colonialism and indigenous people, and I wanted to do something more reality-based. The marketing problem this creates is that it doesn't fit comfortably into either fantasy or science fiction categories. The book has magic and an 18th-century level of technology, but it is more grim and gritty than fantasy readers expected at the time it was published. I think this expectation has changed now. We are asking more of fantasy these days.

In Dark Orbit, a Twenty Planets novel, you constructed something like a Native American society. I imagine the research for that sort of

project is immense, though you're in a uniquely strong place to start for that. What things did you know going into the story that you wanted to do with this group of people, and what did you discover along the way either through research or the process of writing?

I didn't actually think of the Torobes as Native American, though I can see similarities. I was actually extrapolating what kind of culture would evolve among people living in such extreme and challenging circumstances, and the answer was a low-tech, traditional society. All traditional societies share certain traits, whether they are Asian, African, or American.

For example, there are often strict divisions of tasks by gender; the men are out hunting, herding, or fighting (or, in this case, trading), so the villages have a matriarchal power structure. Since [the Torobes] was a non-literate society, knowledge was passed on through dance, song, and apprenticeship. I didn't actually do much new research to portray their culture; it was based on a lifetime of immersion in anthropological literature.

That makes sense. Now, I would like to talk about how the natives in Dark Orbit learn to live without sight. First, what made you decide to give them this trait, and secondly, could you go into a bit more detail on how the society is impacted by this?

This is a really interesting example of how worldbuilding works for me. I actually started with the desire to portray a functioning civilization of the blind. I have forgotten why; possibly I had overdosed on Oliver Sachs books. But when I started to work on the story, I thought, "Okay, what sort of environment would give rise to such a situation? Sight would have to be a disadvantage for survival." That led to the weirdly deceptive environment of the planet Iris; when the sighted explorers arrive they can barely function and quickly get in trouble. But

"I ACTUALLY STARTED WITH THE DESIRE TO PORTRAY A FUNCTIONING CIVILIZATION OF THE BLIND."

there had to be a reason for Iris to be this way, so I decided the place was simply riddled with dimensional folds and spatial discontinuities, which the natives have learned to navigate, undistracted by the visual confusion. The planet, the unstable space, everything was invented to facilitate the story I wanted to tell.

The depiction of a self-sufficient blind society was partly the result of research, and partly logical extrapolation. For example, they would naturally design a village adapted to their own needs, not ours. Their houses wouldn't need walls for visual privacy; they would need aural privacy, which they could get from white noise like running water. The wayfinding cues would not be street signs, but textured pavements and audio cues like chimes. It was only later I learned that blind activists had pressured the Washington Metro to install textured tiles along the edges of the subway platforms to warn blind pedestrians. I had to think, "Wow, got that right." But it was really just a logical deduction.

The thing is, research will only take you so far when you are writing about something that does not exist; imagination has to supply the rest.

On that note, how do you write or imagine groups in your stories who encounter such wildly different technology or ideas than they are used to?

The existence of a group of time-gypsies, whom I call "Wasters," occurred to me as I was thinking through the consequences of the space travel system I had adopted. In the Twenty Planets, true faster-than-light travel is impossible—I



decided to go with Einstein on this one. However, I gave my universe the next best thing: light-speed travel. People are coded into a clarified lightbeam and shot from one planet to another at the speed of light. However, this is still incredibly slow because of the immense distances. A person who travels by lightbeam will experience no transit time, but the rest of the universe will have aged by five or twenty years in the time it has taken to cross interstellar space. This would obviously make a normal sequential life impossible. To go to another planet, a person would have to leave behind everything they knew and plunge forward in time.

As I thought about what sort of person would travel under such circumstances, it became clear that they would have to find community with each other. These risk-takers, novelty-seekers, and investigators would gravitate to each other and begin to look down on people who never left their planet of origin. They would have to be exceptionally adaptable, able to live in a state of cultural dislocation. But in a place like the Twenty Planets, they would be indispensable.

To wrap up our discussion, I'd like to discuss ending stories. [The New York Review of Science Fiction](#) commented on *Dark Orbit* that it has a "carrier bag structure, which does not attempt to neatly wrap up everything at the end." First, do you agree with that comment? Secondly, what are your thoughts on neatly wrapped up stories at large? When do you wrap things up neatly, and when do you let things end more openly?


In *Dark Orbit*, as in most of my stories, the immediate problem is solved at the end—the mysteries are answered, the good characters escape to safety, the evil are (usually) punished. But there are always larger problems that are not wrapped up, threads that lead forward into the future. Life works this way. There may be a "happily," but not an "ever after." Every time you turn over a stone, ten other stones come tumbling down. I blame the universe.

There are some threads left dangling at the end of *Dark Orbit* that I would like to explore more in the future—particularly, what will be the impact on the Twenty Planets when the Torobes' discoveries about spacetime become known? But there are so many stories clamoring to be told. It's impossible to write them all.


This interview was edited for Worldbuilding Magazine.

Thanks to Carolyn for taking the time to talk with us for this issue! You can find her website [here](#), which includes a full catalogue of her fiction and nonfiction works.


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Thirty-Three Tales of War is a collection of flash fiction pieces that follow thirty-three anonymous individuals living during the Candrish Civil War. You can read all previous stories for free in *Worldbuilding Magazine* or on the author's website.

XXIV: COURIER

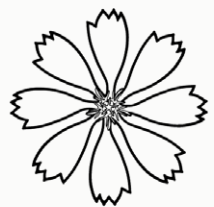
THE Courier approached the Blue Queen's study with shaking hands and labored breaths. When her bodyguard opened the door and stared down at him with her vacant, icy-blue eyes, his heart thumped.

"I bring news from the Empire," he shakily stated. Hands sweating, he twisted the scroll case around in his hands as if to wring it free of the bloodshed it heralded. "It's bad."

The bodyguard let him past. The Blue Queen, who sat behind a rather uncluttered desk at the very rear of the room, beckoned him forward. "Read it to me, sweet one," she commanded in a high, soft voice.

He hastily uncorked the case and slid out the black and brutal message hidden within. Unfurling it, he swallowed hard. The postmaster rarely foisted upon him the mantle of bad news, but the Courier had been the first of his ilk to make it to the station that morning. That was a rare bit of initiative he never intended to bring forward again. Not if it meant bringing news like this to officials like her.



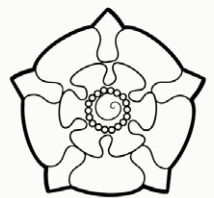


“Writes His Highness the Patriarch Edkandris Mazh Paldra of Paldra Province within the United Empire of Brisia—”

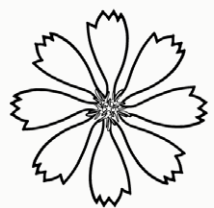
“Get to the point,” the bodyguard snapped.



The Courier cleared his throat. “His Highness writes to inform his wife that their youngest daughter, Her Radiance the Yatsriya Yarova Sofezhka Ranov, was captured by the Red Queen’s forces on their return voyage to Nilova in Nezhlovayad.” He lowered the scroll a bit. The Blue Queen remained silent, as did her bodyguard. He raised the scroll. “His Highness the Patriarch escaped the wreckage and was returned to Korchak Uyrtsoyu by way of a passing merchant ship.”



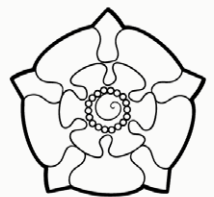
Lowering the scroll again, he said, “I offer my condolences to Your Elegance, but I know they will never be enough. I am terribly, *terribly* sorry to bear this news to you.”



“And I am sorry to hear it.” The Blue Queen’s milky-white eyes glistened with tears. “Thank you for your service. The treasury will issue you compensation. You may return to your station.”

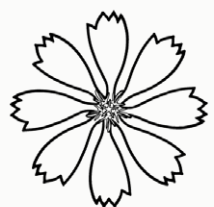


The Courier handed the scroll, case and all, to the bodyguard. His heart ached for the young Yatsriya. The rebel queens would hold no tolerance for a halfblood, much less one who was a daughter of their nemesis. As he left the room, he felt a weight bear down on him from above despite being alone in the corridor. Hopefully, something good might come to pass in the next few days. Gods knew everyone needed it.



XXV: PEDLAR

CICADAS chirped all around, and the sun blazed down in glorious summer heat as the Pedlar waited outside a homestead somewhere in Chariv, counting ten five-pieces into a farmer’s waiting hand.



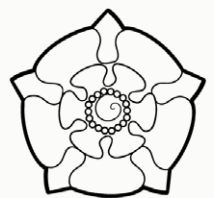
“Wherever did you get a little thing like this?” the Pedlar asked in idleness.

“Found it dropped down the road.” The farmer scratched his nose.



“Ochetski warriors are rarely so careless. Must’ve been in a hurry.”

“Yeah.”



The Pedlar finished counting coins and took the grieving wheel from the farmer, gingerly tucking it into the pocket of his trousers. “There’ya go. That should set you up nicely for the coming months. Kind of you to let me buy this,” he added.

The farmer shot him a look of longing to be alone and trudged away.

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“Blessings of the Five upon you!” the Pedlar called.

Whistling, he walked off down the road to Misgrad. He didn’t know whose souls the grieving wheel mourned, but it was no matter. No one could be remembered forever.

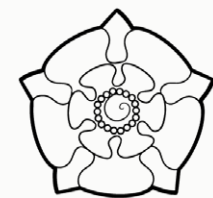
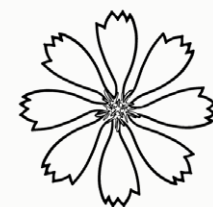
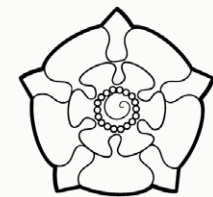
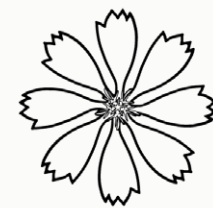
That night, in a stand of pines at the mountains’ feet, he pulled out his treasure and counted the beads. Eight. Perfect. Holding the grieving wheel tightly in both hands, he bowed his head low and offered it toward the sky. “Mother. Grandmother. Grandfather. Sisters and brothers I’ve never known. I will forever hold the sorrow of your losses within my heart.”

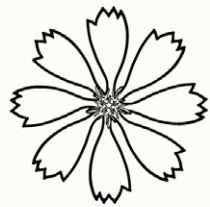
He lowered the wheel. No one ever taught him how to pray correctly—at least, not in the Ochetski manner—but it only mattered that he was trying. How could he have learned? His mother was an Ochetski warrior and his father a Chovreki woodcutter. She had left the Pedlar on his father’s doorstep swaddled in hillwalker hide and placed in a steppe-grass basket. He was raised the Chovreki way, a worshiper of the Five and the Orthodoxy. Still, a part of him longed to know the ways of the other half of him.

He tucked the wheel back into his pocket and warmed his hands against the meager fire he kindled. Maybe that was why he lived as he did. His father didn’t like that the Pedlar didn’t want to carry on with the family business of woodcutting, but he understood. Besides—the Pedlar thought to himself as he added grass to the flames—out here, he might have a chance to meet them. If he did what his father wanted and carried on the family business tucked away in the northernmost reaches of Kandrisev, he’d have to wait for the rest of his life.

XXVI: SMUGGLER

“ALRIGHT, you’re free.” The Smuggler pulled the rope away from around the neck of what appeared to be a large grain sack.

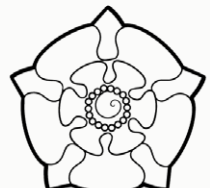




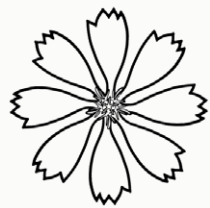
A young girl scrambled out gasping for fresh air. He chuckled despite her indignant glare. Once she climbed down from the cart, he pointed her east.



“That way’s the way to Sarona, if you really understand what it’ll take you to get there. Bears, wild hillwalkers, Rosehearts, wolves, spirits, maybe a couple Laurels if you’re ‘specially unlucky...” He tilted his head. “Seems like a bit much to handle for someone your age.”



“Lady, I said it before and I’ll say it again that I cannot, will not, should not tell you who bought your seat. It’d put you, them, me, and the whole operation in real danger. Gettin’ out of Igna, let alone Zoldonmesk, ain’t exactly a small-stones gig. And even if you did know, so what? You gonna try to find ‘em? Bring ‘em across?”



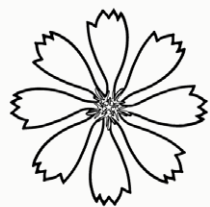
“Thank them,” she said. “And...maybe.”

The Smuggler guffawed. “Well, let me tell you that your mystery benefactor ain’t hurtin’ to help himself. They’re capable of stayin’ safe a good while longer all by their lonesome.”



“But if I could just—”

“Listen.” The Smuggler made a point of looking down the road one way, then the other. “You’re nobody now. No-bo-dy. Woe be upon you if you ever, ever say your real name. In fact, better think of a new one. New name, new past, new trade, new hometown. The Sakcha family’ll look high and low to find you and drag you back into their lair. Cut your hair. Change your face if you can stomach a scar or broken nose. Work in wide fields or dense forests. Do whatever you have to do to stay out of sight, mind, and mouths. Scores of my associates have ended up in Zoldoni mines. Those were the ones that didn’t do what I just advised. Not a single damn one of ‘em has been seen ever again.”

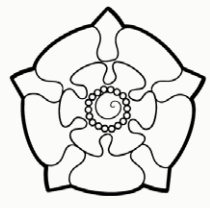


The girl held in a breath, looked down, and shook her fist three times as if she had touched something too hot. “So it wasn’t my father,” she muttered.



“No. I can tell you that much.”

The girl looked him in the eye. “Alright then. Thank you for your help.”



The Smuggler watched her walk until she was a tiny dot on the horizon. He climbed up the side of his hillwalker to sit in the saddle. Perched so high on a massive, hairy beast, he could see all the surrounding hilltops. After scanning around for signs that he had been seen, the Smuggler yanked on the horn-reins. Better to not stick around. There were other deliveries to make.

XXVII: BARD

THE Bard smiled at her fellow traveler and his young son. They stood on the road to Shkolle: her going, them coming. The traveler gave her a small handful of one-pieces and bid her play a cheerful song for his son’s nameday. Her fingers rasped across the goatskin stretched over her drum.

*Bless you, young-ling
Today you were named
May your night be
filled with games.
Though you’ve grown old-er
Still you are young
Cher-ish your time and have your fun
Bless you, young-ling
May you grow up strong
May your years be
warm and long.*

The man clapped as he approached, grabbing the Bard’s hand as if to offer another coin, but yanked her sharply inward. Unbalanced, she yelped, heart thundering like the hooves of spooked deer. She dropped her drum and scuffled with the man. Somehow, her back ended up against his chest and his hand squeezed against her throat.

“Pogi,” the man commanded.

The Bard shrieked and kicked while the little boy ruffled through her cape and pockets. Her coinpurse lifted off her belt. The man whirled her away hard enough for her to strike her chin on the muddy ground. Scrambling up and blurry-eyed, she watched him lift Pogi onto his shoulders and snatch up her drum. Blood rushed past her ears.

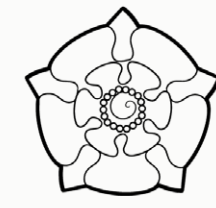
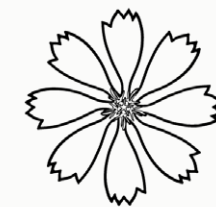
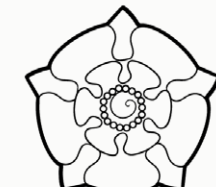
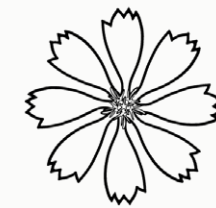
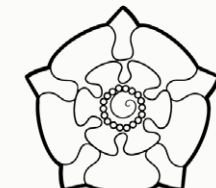
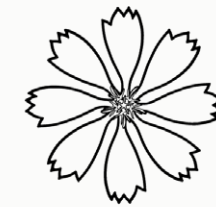
“Stop,” she yelled, stumbling after him.

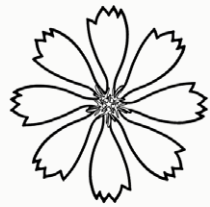
A searing pain in her side kept her from getting very far. She fell to her knees. Blood black as night dripped onto the ground beneath her. Sobbing, the Bard held a hand to her bleeding stomach. She never felt the knife go in.

XXVIII: MERCENARY

“YOU sure we ought to be out here fighting with these Candrish girls?”

The Mercenary gave Madrars a withering look. The subject had come up again and again ever since they disembarked at a half-abandoned port in Morozhelo. He and his comrades bore precious cargo to the Candrish Blue Queen all the way from



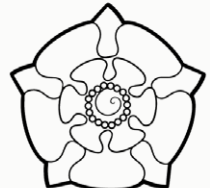


the Empire. They had been marching southwest since early Spring, well before the massive snow drifts and slush had melted. No one forced anyone to come—not unless a robust sum of *maugat* coins counted as a “someone.” Every single man was here by choice, and all of them knew full well what this mission might entail.

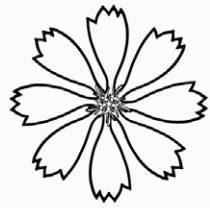


“We’re in their country,” the Mercenary said. “Best to not insult them.”

“I’m just saying—female warriors? Really? My girl can’t even lift an axe to chop wood without help. How could one ever hope to chop off a head?”



The Mercenary gestured with his head. “Southeast of here there’s entire tribes full of women warriors plenty capable of chopping off heads—ours, mine, everyone’s. Care to go provoke them?”



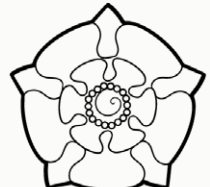
“No, but I’m just saying it’s no wonder the war’s dragged on so long.” Madrars sniffed. “They keep their men weak at home doing women’s work so they’ll seem strong.”

The Mercenary quickened his pace to walk ahead of Madrars. “We aren’t here to pass judgment.”

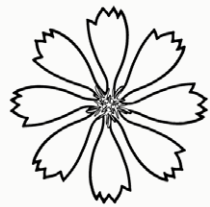


“You know it’s true.”

“I don’t care to hear anything more from you.”



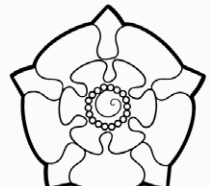
When they stopped for the night, the Mercenary went straight to bed once camp was set up. For what felt like years, he laid awake inside a hide tent that wasn’t *quite* warm enough on fur mats that weren’t *quite* dry enough. Tired of being tired but unable to sleep, he pulled himself up and made his way outside. Valtorys and Domars were making their rounds, but when they came back to warm up they’d make good company.



The Mercenary stood alone beside the crackling fire. Flurries of snow wafted down around him. The rustle of old autumn leaves in the distance sent his heart flutter, but he refused to give in to fear. Madrars was probably right. Not even the fabled Ochetski warriors could be as scary as the stories told. Every legend was exaggerated, and every myth was fantasy. Moreover, women were women and men were men, regardless of origin.



But Valtorys and Domars had been gone a long time. The encampment wasn’t very big and the perimeters tight. The Mercenary frowned. The prospect of mere stories unsettling him as if he were a child was almost too embarrassing to consider, even in thought alone. Still, there were other dangers around. Wolves, bears, spirits. He withdrew his gloved hands from the fire’s warmth and carefully tread across crunching snow just outside their ring of tents.



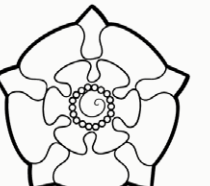
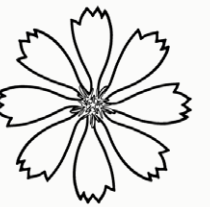
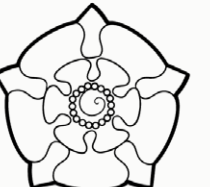
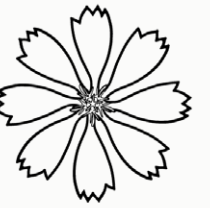
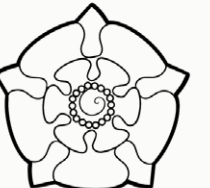
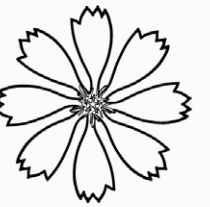
No doubt it was all some cruel trick designed to mock his weak constitution. The two idiots were probably hiding in the treeline giggling like a bunch of sappy girls. He walked the perimeter once close enough to camp for his cloak to brush along the tents, but Valtorys and Domars were nowhere to be found.

He started to sweat. Perhaps they had unwittingly settled in a spirit’s grove. But no—that was too outlandish. He scanned the snow for tracks, whether hidden, windswept, or fresh. A rustle ahead of him made his head snap up. It was Valtorys. Valtorys, pinned by arrows to the trunk of a leafless tree. Blue blood gushed down his throat onto his furs and the snow beneath him.

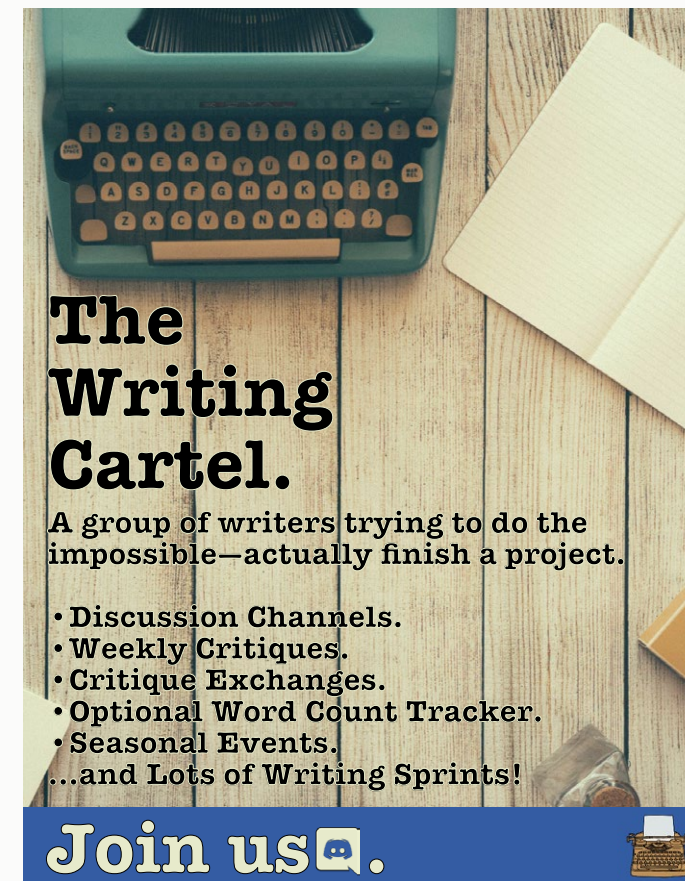
“We’re under attack,” the Mercenary bellowed as he bounded back to the camp. Beside the fire, he found Domars’ corpse, throat slit and eyes foggy.

His fellow mercenaries clambered out of their tents. The Mercenary ran for the cart in which their cargo was hidden.

It was gone. He stumbled backward and landed in a snowbank. The cart was gone. In its place fluttered a tiny banner: yellow, black, and charged with laurels.



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TRANSPORTING INFORMATION

SENDING MESSAGES IN LOW TECH SOCIETIES

by Eleanor Konik

▲ HISTORY

The first roads were little more than game trails. Early infrastructure focused more on stopping travel than facilitating it. With civilization, though, came a need to transport information, and history presents us with thousands of years of inspiration for creating messenger systems in fiction.

Neither snow nor rain nor heat nor gloom of night stays these couriers from the swift completion of their appointed rounds.

This famous quote, most commonly associated with America's Pony Express and the United States Post Office, predates the founding of the USA by over two thousand years. The ancient Greek historian Herodotus actually wrote about the Persian courier system back in approximately 430 BCE. Relay messenger services weren't unique in the ancient world, though. The Egyptians, the Incas, the Romans, and the Chinese are just some of the Empires that boasted efficient postal mail. Furthermore, the transpor-

tation of information wasn't solely handled by Imperial couriers. Homing pigeons, drums, and signal fires also played a critical role in sending key messages across different lands.

Couriers like those employed by the American Pony Express are a common feature in Wild West fiction. Pony Express riders delivered messages through often hostile territories that mostly lacked any real infrastructure. Despite how often they appear in Westerns, however, the Pony Express only operated for about a year—the establishment of the telegraph put them out of business, and they never proved to be financially viable.

HIGHWAYS

The Achaemenid Empire, otherwise known as the First Persian Empire, was so enormous that a lot of people think its size caused communication difficulties between the throne and the provinces. It's easy for even scholars to assume that big empires can't maintain centralized control, which isn't always true. In reality, even with the geographical disadvantage of a mountain

range, ancient Empires could maintain strong infrastructure that allowed for official communication across vast distances.

The Achaemenid Empire used a postal relay system called the *pirradazish* that functioned similarly to the American Pony Express, although the Persians had the advantage of roads, rivers, canals, and homing pigeons. In Persia, only important roads or roads near cities were paved. Most probably had a gravel surface with curbstones and a ridge down the middle to divide the road into lanes.¹

Some ancient roads cut right through the sides of mountains, but even when a road is naturally paved—by virtue of being carved from stone—there's more work to be done. Irrigation channels kept roads from washing out and eroding away; constructing these channels was an extremely labor-intensive process in a pre-industrial society, but that didn't stop ancient empires from doing it. Creating a road isn't enough, though. Roads need to be navigable, so the Persians under Darius I employed people called road counters to measure the roads—probably to create accurate maps and erect milestones. Maintenance was also vital, so workmen traveled with the road counters to make repairs.

In the Incan Empire, local populations maintained roads and bridges—typically made out of rope—as part of their tithes.² The Andean Royal road was over 5,000 km (3,100 miles) long, longer than the longest Roman road. Andean civilizations dug stone steps into the mountainsides and built stone walls to keep sand from drifting into the lowland deserts. The messengers, called *chasquis*, had no horses and no wheeled vehicles; selected from young men with notable strength and fitness, *chasquis* traveled on foot with only the occasional llama to help carry goods. They lived in cabins along the roadside and kept watch for their

For a great example of how important good roads are for the transportation of information across a fantasy world, check out L. E. Modesitt's Spellsong Cycle. The protagonist, Anna, spends a significant chunk of the second book building a network of roads to facilitate troop movements, and the postal mail system she implements is a direct driver of the plot.



¹ Henry P. Colburn, "Connectivity and Communication in the Achaemenid Empire," *Journal of the Economic and Social History of the Orient* 56, no. 1 (2013): 29–52, <https://www.jstor.org/stable/43303512>.

² Mark Cartwright, "The Inca Road System," *Ancient History Encyclopedia*, September 8, 2014, <https://www.ancient.eu/article/757/the-inca-road-system/>.

fellows, running out to greet tired messengers before becoming the next link in the chain. The chasquis could carry messages over 400 km (250 miles) per day.³

The Roman Empire built and maintained an extensive road network as well. A good Roman courier could carry a message about 80 km (50 miles) per day.⁴ It may seem odd that the Andean messengers covered so much more ground in a day; although horses can sprint faster than humans, humans are probably the world's best long-distance runners.⁵ Societies that train people to carry messages at a run have significantly faster postal systems, but the runners have to do a lot more work.

ANIMAL POWER

A good horse, ridden hard but not to the point of collapse, can travel about 20 km (12 miles) in an hour, approximately three times as fast as a person walking. Post stations were typically spaced according to this 20 km distance. There's good evidence that ancient couriers operated similarly to the Pony Express model of changing horses at every station and then changing riders daily.

In Mongolia, the Khans created supply and message routes called "yams" that leveraged settlements and relay stations to transfer mes-

sages quickly and effectively. Mongolian message riders covered up to 300 km (185 miles) in a day at their peak. Stations offered supplies and shelter, although many official messengers also just stopped at villages to rest and change horses.⁶ The Khans conquered much of Central Asia and implemented formal postal systems, which became instrumental in combating insurrection.

Of course, the Khans were not the first to set up mail systems in China. As early as 1600 BCE, the Shang and Zhou dynasties used land and water routes to send mail.⁷ The Qin dynasty implemented the use of horses, along with vehicles like palanquins and litters, to speed up bulk mail delivery. They also allowed government officials to use the posthouses in lieu of privately-owned inns when they traveled.

In contrast to horses and humans, ancient homing pigeons could cover about 160 km (100 miles) in a day, and they didn't require nearly as much fodder as a horse. Of course, they can't carry as much either, and they don't provide the personal touch of a human messenger who often did double duty as spies. Still, pigeons have been domesticated since at least 3000 BCE, and they were definitely used to carry messages since at least 2500 BCE.⁸ By the 12th century, the Persians had developed a complex messaging system with pigeons carrying messages between

The imperial messenger birds in Miles Cameron's [Traitor Son Cycle](#) are well-integrated into the series and several key plot points rely on swift communications between distant leaders trying to stay coordinated against the enemy.

cities. Pigeons were bred and housed in dedicated facilities called dovecotes. In Egypt and the Levant, they were often built from mud brick and had thatched roofs, but individuals could keep pigeons in something as simple as a clay pot. Pigeons proved useful for more than just sending messages; as with many other domesticated animals, their excrement makes good fertilizer, and their meat and eggs make for good eating.



WIKIMEDIA COMMONS

Dogs are often underutilized as messengers in fiction, but dogs, too, carry messages. Rottweilers served as scouts and messengers during WWII, and since the Romans used dogs to carry provisions when their horses foundered and died, they certainly could have trained dogs to carry messages if they lacked other options.⁹

DRUMS

Messages don't need to be written down on paper to be relayed. Multiple pre-industrial societies around the globe have used drums to communicate over long distances. Some people in Papua New Guinea still use wooden slit drums, known as garamuts, to send messages.¹⁰ Slit drums were used in Africa, Southeast Asia, and Oceania throughout history.

In Africa, slit drums work particularly well for sending messages, as many African languages are more tonal than phonetic. "Talking drums" are therefore able to mimic spoken words, sending audio messages via sound waves, audible to anyone within range. Because some words may become distorted or muffled, messages sent via drum often become drawn out and repetitive, using ten words where one would normally do, to ensure that the message gets conveyed.

Although fictional drum messages are often sent from high places, in real life drum messages typically come from within a village. The natural acoustic properties of rivers and valleys where towns and villages are typically situated allow them to remain audible over 10 km (6 miles) away.¹¹ Incidentally, this is the approximate distance between towns in most agricultural settings.¹²

³ "Inca Roads and Chasquis," Discover Peru, (n.d.), <http://www.discover-peru.org/inca-roads-chasqui/>.

⁴ C. W. J. Eliot, "New Evidence for the Speed of the Roman Imperial Post," *Phoenix* 9, no. 2 (1955): 76–80, <https://www.jstor.org/stable/1086706>.

⁵ David Stipp, "Why Nearly Every Sport Except Long-Distance Running Is Fundamentally Absurd," *Slate*, June 4, 2012, <https://slate.com/culture/2012/06/long-distance-running-and-evolution-why-humans-can-outrun-horses-but-cant-jump-higher-than-cats.html>.

⁶ Hosung Shim, "The Postal Roads of the Great Khans in Central Asia under the Mongol-Yuan Empire," *Journal of Song-Yuan Studies* 44 (2014): 405–469. JSTOR, <https://www.jstor.org/stable/44511248>.

⁷ Wang Zijin, "Posthouses and Delivering Post in Ancient China," *The Splendid Chinese Culture*, ed. Chen Zhiping, trans. Taiping Chang, https://en.chiculture.net/index.php?file=topic_details&old_id=0905.

⁸ Carter W. Clarke, "Signal Corps Pigeons," *The Military Engineer* 25, no. 140 (1933): 133–138. <https://www.jstor.org/stable/44563742>.

⁹ Charles F. Sloane, "Dogs in War, Police Work and on Patro," *The Journal of Criminal Law, Criminology, and Police Science* 46, no. 3 (1955): 385–395, <https://www.jstor.org/stable/1139438>.

¹⁰ Amanda H. A. Watson and Lee R. Duffield, "From Garamut to Mobile Phone: Communication Change in Rural Papua New Guinea," *Mobile Media & Communication* 4, no. 2 (2016): 270–287, doi:10.1177/2050157915622658.

¹¹ Ruth Finnegan, *Oral Literature in Africa*, 1st ed., (Open Book Publishers: 2012), vol. 1, <https://www.jstor.org/stable/j.ctt5vjsmr>.

¹² *Why Cities Are Where They Are*, Wendover Productions, January 3, 2017, YouTube video, 15:43, <https://www.youtube.com/watch?v=3PWWtqfwacQ>.

The quintessential example of drum communication in second-world fantasy is Pern. Anne McCaffrey's *Harp-er Hall trilogy* does a beautiful job of bringing to life the role of communication drummers in an agricultural society. Piemur, the protagonist of *Dragondrums*, learns the secret codes used to send messages across great distances via drums and relay stations called drumheights.

BEACONS

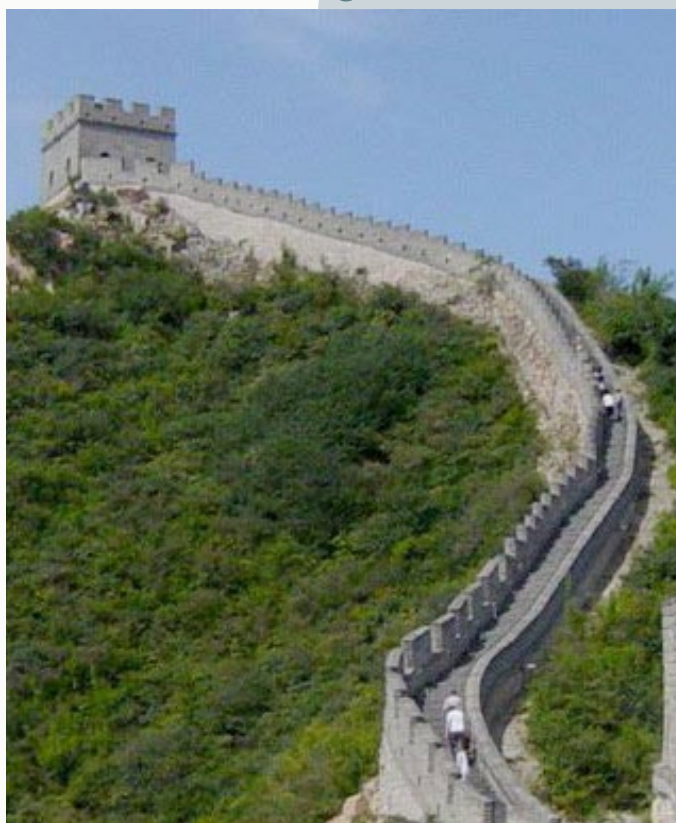
Beacons are objects visible from long distance that serve as signals. They're typically situated somewhere high and noticeable to convey warnings or serve as guides. Lighthouses flash their lights in a specific rhythm to provide location information to sailors. The medieval Dutch signaled information using the orientation of local windmill blades. The Greek historian Polybius invented an encrypted communication system that mapped torches to letters around 150 BCE. Complex messages are possible using dot-and-dash systems like Morse code.

Smoke signals have served as long-distance visual communication in ancient civilizations on at least four continents. In Oceania, the indigenous people of Australia built signal fires on hills and used fire and smoke to signal good fishing spots, travel advisories, news about births or deaths, and more.¹³ In Asia, Chinese soldiers manning the Great Wall could send word of impending attack hundreds of kilometers in mere hours.¹⁴ Beacon towers relayed "all clear" signals each morning and other important military information as needed. Beacon platforms were designed so that bonfire smoke or torch flames could be seen clearly at the next watchtower. They often contained chimneys or flues to encourage the

The most well-known fantasy example of signal beacons probably comes from *Lord of the Rings* when Gondor's signal beacons were lit to signal the siege of Minas Tirith and summon aid from Rohan.


smoke to rise straight up. Despite what you'll read on the internet, though, the soldiers probably didn't burn wolf dung, but sulfur and saltpeter were used after the Ming dynasty to help make the smoke more clearly visible across distances.

 WIKIMEDIA COMMONS



The native people of both North and South America communicated simple messages across distances using smoke signals.¹⁵ Since smoke signals are difficult to keep hidden, each tribe



 FREDERIC REMINGTON, 1905

had its own set of signals, and messages only conveyed information on a few topics by creating Morse code-like patterns. For example, "enemies here!" or "all's well" or "we found game." However, tribes could prearrange other signals. On the open plains, puffs of smoke could be seen for upwards of 80 km (50 miles).

IN COMBINATION

Creators aren't limited to using only one of these methods to ensure their created cultures can communicate. Most low-tech civilizations utilized more than one method of transporting information over distances. The Inca and the Chinese both used signal fires to augment Imperial roads and postal systems. The Egyptians and the Romans certainly would have paired their regular couriers with messenger birds.

When considering how preindustrial civilizations communicate over distances, remember too that created worlds don't necessarily face

the same limitations as ancient peoples. Just because something didn't happen on Earth doesn't mean the conditions aren't ripe for it in a fantasy land. Dogs make perfectly effective messengers even though we don't have any evidence that some of Earth's oldest civilizations used them that way. Encryption cyphers on drums are perfectly viable ways of communicating even if drum-talking societies rarely bothered to encode messages. And once you add magic into the mix, the possibilities are endless.

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¹³ Aboriginal Smoke Signalling and Signalling Hills in Resistance Warfare, February 21, 2016, <http://nationalunitygovernment.org/content/aboriginal-smoke-signalling-and-signalling-hills-resistance-warfare>.

¹⁴ "Wolf Smoke Signals War," *China Heritage Quarterly*, June 2006, http://www.chinaheritagequarterly.org/articles.php?searchterm=006_wolf.inc&issue=006.

¹⁵ Ojibwa for Native American Netroots, "Indians 201: Smoke Signals and Mirrors," *Daily Kos*, July 25, 2019, <https://www.dailykos.com/stories/2019/7/25/1874226/-Indians-201-Smoke-Signals-and-Mirrors>

TRANSPORTING INFORMATION

REFERENCE CHART

HOW FAST CAN MESSAGES TRAVEL?


Carrier	km Per Day	Miles Per Day
Incan Chasquis	400	248
Mongolian Message Riders	300	186
Homing Pigeon	160	99
Roman Couriers	80	50
Wolves/Dogs	55	34
Average Person Walking	40	25


Carrier	Distance in km	Distance in Miles
Drums	400	248
Signal Fires	80	50

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CARGO, CULTURE, AND WORLDBUILDING

by MasterThief

 ECONOMICS  TRANSPORTATION  TECHNOLOGY

[D]ivision of labour, from which so many advantages are derived, is not originally the effect of any human wisdom, which foresees and intends that general opulence to which it gives occasion. It is the necessary, though very slow and gradual, consequence of a certain propensity in human nature...the propensity to truck, barter, and exchange one thing for another.

– Adam Smith¹

The drive to trade and to gain wealth is as much a part of human history as the drive to explore, to conquer, or to settle. On a planet as large and as diverse as Earth, there have been plenty of opportunities for ambitious or clever people to make fortunes simply by hauling things around—the rarer the good and the longer the distance, the more profit to be made. As goods move faster and farther, Smith noted, culture itself begins to change, with division of labor, specialization, and gains from regional and international trade altering the social fabric of buyers, sellers, and middlemen alike.

¹ Adam Smith, “Chapter II: Of The Principle Which Gives Occasion To The Division Of Labour” in *An Inquiry Into the Nature and Causes of the Wealth of Nations*, ed. Edwin Cannan (1776), Vol. 1, https://oll.libertyfund.org/titles/237#lf0206-01_label_179.

Yet commerce and trade are morally neutral, so they can further evil ends as well as good. Trade in goods has united diverse human groups into nations, allowed for exchange of ideas across vast distances, and promoted order, stability, and increased standards of living. But trade has also enabled the darkest impulses of human nature: greed, conquest, oppression, and exploitation. Wars have been fought over nutmeg, and the cotton trade enabled chattel slavery. Whatever goods humans buy or sell, parts of us always seem to go with them. So, consider this article a bird's-eye view of how the mechanics of cargo shipping shapes worlds and cultures, including suggestions for worldbuilders on how to use these details to shape interesting settings.

ANCIENT CARGO

Among the first objects humans developed were baskets and ropes for carrying objects from place to place. After all, for most of human existence, the only way to get things from point A to point B was to carry them. Once humans domesticated pack and draft animals, like horses, oxen, camels, and even large dogs, and developed wheeled carts and sleds that these animals could pull, the distance that an object could be carried increased. Yet there was still a limitation: moving things took energy, which required food, water, and rest. These needs limited most trade to short distance transit of essential goods where there was a known market at the destination. The harsher the terrain—deserts, tundras, mountain ranges, thick jungles—the harder the limits on trade and the more expensive the transit, even for the most basic goods. At the extremes, such limitations led to the longest overland trade routes being limited only to the rarest and most valuable cargoes. Silks and spices, carried on the Silk Road across the deserts and steppes of Central Asia to Europe, sold for prices that only the richest and most powerful could afford.

The other, much easier, available mode of transport was by water. Even before the development

of the first cloth sails, humans built rafts out of logs, and later bark canoes; people transported goods up and down navigable rivers, over inland lakes, and along sea coasts, using natural currents where possible and paddles or oars when necessary. Once cloth sails became the norm, the energy and food costs of transport over water plummeted. Larger river barges and ships became common all over the ancient world. These vessels enabled longer-distance transport and trade of not just rarities, but essentials: staple food crops and livestock from inland agricultural areas; logs and wood products from forests; quarried stone for construction and art; ores and refined metals from mountain mines; cloth and canvas from areas known for weaving. Wooden crates, cloth sacks, and clay pots were essentials for transporting these goods and keeping them safe on long journeys, and ports along river confluences and deltas became hubs of commerce and government.

It should be no surprise that the world's wealthiest, most powerful, and culturally significant ancient civilizations were all river- or sea-faring: the Babylonians and Assyrians along the Tigris and Euphrates rivers; ancient Egypt along the Nile; the Indus River Valley civilization and Mauryan civilization along the Ganges in India; the first Chinese dynasties of the Xia, Shang, and Zhou along the Yangtze and Huang He Rivers; the "Mound-Builders" of the Mississippian Culture in North America; the Toltecs and Aztecs of the inland lakes in the Valley of Mexico; Phoenicia, Carthage, Greece, and Rome around the Mediterranean Sea. Each of these civilizations was strengthened not just by ease of trade and transportation, but by the exchange of ideas—technology, science, languages, literature, religion, culture—as well as the intermingling of distinct tribes or clans into unified wholes.

A worldbuilder looking to create an ancient civilization, either as a primary setting or as background lore, can create something unique simply by changing around geographies, the order of

real-life inventions, or introducing fantastic or speculative elements; then, they can consider how cargo, people, and ideas would move. What would a culture that had a navigable river basin the size of the modern Amazon—hundreds of tributaries connecting thousands of square kilometers—look like, especially if the rivers connected easily passable plains instead of dense jungles? Or, consider a culture where boats didn't exist, perhaps due to lack of materials or a sea that is too toxic or dangerous to cross—which means choosing between isolation or trying to reach the outside world for trade. Or, a culture that discovers a way to fly a millennia before real-world humans, whether by nature, through domesticating powerful flying mounts, or with floating rocks or metals. How far could a culture not bound to slow sea travel or even slower land transit spread its trade and influence—and what would be the consequences for its neighbors?

IMPERIAL SAILS, IMPERIAL WARS

As human technology improved, so too did the distance humans—and their cargo—could travel. Some of the most important discoveries of this field happened in navigation. Compasses enabled travelers and seafarers to accurately determine their direction of travel at a glance. Many cultures—from Europe to the South Pacific—independently developed and mastered celestial and solar navigation, particularly valuable for long sea voyages in unfamiliar areas. By tracking the movements of the sun, moon, planets, and stars, astronomers and explorers paved the way for transit and trade across oceans without depending on staying within sight of land or following the whims of ocean currents. At the same time, innovations in sail technology made longer-distance voyages possible, even in unfav-

orable winds. Most European and East Asian seafaring civilizations used square sails for their ships, which were limited by wind direction and could not sail into headwinds without complicated maneuvers; straight headwinds could easily blow ships off course. Byzantine and Arab traders, by contrast, used triangular lateen sails that could work with winds from many different angles and did not require oars or paddles to use against headwinds. Eventually, the largest sailing ships of the day started using both square and lateen sails: square for speed, lateen for maneuverability.

The effects on trade, commerce, and culture from these simple advances were profound, turning relatively small European nations with small sea-coasts into globe-spanning imperial powers. Portuguese explorers were able to sail around Africa to Asia, bypassing the Silk Road and breaking the Imperial Chinese monopolies on spices and silk. Portuguese trading posts along this route, from Goa in India to Nagasaki in Japan, became centers for the trade for goods, knowledge, religion, and culture. The small trading posts built by the Dutch became the cores of modern major cities like New York City and Jakarta. Even the usually reclusive Chinese sent huge "treasure fleets" from their coastal ports to Jeddah on the Red Sea and Mogadishu in Eastern Africa.² Not all the exchanges enabled by new transportation technology were fair, and the desire for trade soon gave way to the lust for conquest.

The same ships capable of hauling cargo could also carry cannons and soldiers to subjugate native peoples, extract their wealth (like gold, silver, and other resources), and forcibly integrate them into overseas empires. Sailing ships carried slaves taken from their homes and sold into lives of bondage. The cash crops these slaves

² Louise Levathes, *When China Ruled the Seas: The Treasure Fleet of the Dragon Throne, 1405-1433* (Oxford: Oxford University Press, 1994), ii (map).

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tended—sugar, tobacco, cotton, coffee, and more—were sent back on those same ships. The zero-sum mercantilist economic doctrines of the time spurred the colonial powers of Europe to conquer ever larger swaths of territory in the Americas, Asia, and Africa. They had many goals, but all selfish: feed their industries, enrich their homelands, spread their faith by force, and wage war—the ultimate objective being to beggar and impoverish their neighbors in Europe and abroad. Only a few isolated nations managed to escape European domination. Only one—the isolationist government of Japan during the Tokugawa era—closed itself off from all but advantageous international trade, though it experienced centuries of political and technological stagnation.

Worldbuilders who want to create globe-spanning empires or think about the effects of commerce and an interconnected world, on both the colonizers and the colonized, should find the “Age of Sail” (1400 CE–1800 CE, more or less) worth exploring and tinkering with. While certainly nowhere near as popular as medieval eras, setting a fantasy story in a sailing age allows it to be truly world-spanning. In addition to changing around geography or technology or adding speculative elements, worldbuilders can also think about how industry and commerce would overcome geographic limits and help develop new technologies. If the technology of your world, for example, is based upon lighter-than-air materials that allow for flight, where would they be found? Many aspiring global powers would no doubt seek to trade for these materials...or simply colonize or conquer the areas where they appear. How big could a flying airship get? Would it use the same kind of sails as ocean-faring ships, or would they find some other kind of propulsion that did not depend on the wind—that is, if humans had no way to create or harness wind for themselves? Think about what cargo such an airship would carry, and along what trade routes? For another example, a plant discovered in a newly settled territory that natives use to give themselves

IT SHOULD BE NO SURPRISE THAT THE WORLD’S WEALTHIEST, MOST POWERFUL, AND CULTURALLY SIGNIFICANT ANCIENT CIVILIZATIONS WERE ALL RIVER- OR SEA-FARING...

magical powers—an instant cash crop. Consider who would grow it, and whether it would be processed or refined within the colonies, like roasted coffee beans, sugar distilled into rum, or tobacco made into cigars. Who would buy the finished product, and how would the market be controlled? Most of all, think about the colonies where such a powerful substance was made... and whether they would remain content as an exploited province of a distant empire.

THE YEARS OF STEAM AND STEEL

In the last years of the 18th century, developments on land accelerated transportation, and for the first time, the speed of ground transportation no longer depended on the speed of a trader’s horse or oxen. First used to power water pumps, reciprocating high-pressure steam engines made their way into trade, transportation, and engineering. Parts from old rail-mounted mining carts were used in the construction of the first steam-powered railroads in Great Britain, introducing a new technology that made animal-drawn carts obsolete wherever it spread.

Rail transit decreased the transport time of cargo over land from months to days; the use of railroad networks and steam power allowed for major industrial cities to develop away from the bodies of water previously needed for long-range shipping and powering industry through waterwheels. Rapidly expanding industrial

hubs from Berlin to Chicago, along with regions like the British Midlands and the Swiss plateau, grew in importance as they were connected by nation- and continent-spanning rail networks. Increased speed brought about the ability to haul specialized cargo containers. Refrigerated rail cars—first filled with ice, then with modern refrigerator technology—enabled fast transport of perishable food over long distances. Hopper cars carried bulk goods from grain to coal to iron ore, while tanker cars brought oil and industrial chemicals. Box cars carried livestock, machine parts, and goods purchased from mail-order companies like Sears, Roebuck & Co.—clothing, farm equipment, even prefabricated houses, and more—and delivered directly to consumers.³

Steam power also worked wonders for maritime transport. Steam engines were first used with side-mounted paddlewheels and, later, with the rotary propellers still used on ships today. Steam power also meant ships were no longer at the mercy of wind or current and could go directly from port to port, shaving valuable time off cross-ocean transit. A steam-powered American Navy squadron arriving in Tokyo Bay in 1854 convinced the Tokugawa shogunate of Japan that their national isolation was no longer tenable.

The other important contribution steam power made to ocean transit was the construction of canals. While smaller rivers and streams had been widened and dredged to make them navigable for centuries, the construction of canals

³ Patrick Sisson, “How Sears Kit Homes changed housing,” *Curbed.com*, October 16, 2018, <https://www.curbed.com/2018/10/16/17984616/sears-catalog-home-kit-mail-order-prefab-housing>.

not based on existing rivers or streams only became feasible in the early 19th Century. The largest such canal was the Erie Canal in upstate New York, built in the 1820s to connect the Great Lakes directly to the Hudson River, taking weeks off transit times between the American Midwest and the East Coast. Steam-driven digging equipment and steam-powered mechanical canal locks soon made canals faster to build, wider, and more adaptable. By 1879, the Rhine, Rhône, Saône, and Seine Rivers in France had all been linked by canals, and by 1897, the Kiel Canal in Germany directly linked the Baltic and North Seas. The Suez Canal, opened in 1869 and the first canal to receive international funding and backing, linked the Mediterranean Sea to the Red Sea. An even more ambitious and expensive canal connecting the Atlantic and Pacific Oceans over the mountainous Isthmus of Panama became reality in 1914—though not without American backing of a Panamanian revolt against the territory's Colombian masters first.

Creative worldbuilders took the real-life era of steam and steel and made a whole new genre from it. Steampunk mixes the writing style of nineteenth-century speculative fiction (like Jules Verne, H.G. Wells, Mary Shelley), the aesthetics of *fin-de-siècle* Europe and the American Wild West, and fantastic steam-based technologies (from submarines to mechanical computers to prosthetic limbs). Described in a 2004 manifesto as “Colonizing the Past so that we can dream the future,” steampunk authors and artists in many different media regularly challenge the politics and philosophy underlying the real-life age of steam while reveling in the era's technological, social, economic, and political possibilities.⁴ The steampunk genre itself provides many examples of how to use the worldbuilding techniques of altering geographies, playing with technological history,

and adding fantastic or speculative elements to known events. Popular and influential steampunk settings include fiction from Michael Moorcock (*The Warlord of the Air*) and Cherie Priest (*Boneshaker*), graphic novels (*Girl Genius* and *The League of Extraordinary Gentlemen*), the tabletop setting of *Space:1889*, video games (*Thief: The Dark Project* and *Sakura Wars*), and anime (*Nausicaä of the Valley of the Wind* and *Fullmetal Alchemist*)—among numerous others.

PLANES, TRUCKS, AND CONEX BOXES

Even as steam engines on ships and railroad engines gave way to combustion engines powered by oil, gasoline, or diesel, transportation speeds seemed to plateau by the middle of the 20th Century. This problem laid not in how cargo got to its destination, but in the congestion in ports all over the world. The use of engine-powered trucks, which could travel along existing roads and make deliveries direct to homes, shops, and industry, helped relieve some of the pressure. So too did the advent of airplane flight, which could bring important cargo between continents in hours instead of the days it took to cross by ship or rail.

The problem of getting cargo from one form of transportation onto another remained, in particular, the logistical bottleneck of loading ships in port. Some forms of cargo—grain, coal, petroleum, and chemical products—were carried on special bulk freighters; however, from the age of sail onward most cargo ships were designed and built to haul “break-bulk” cargo. As cargo arrived by land at wharfs around the world, gangs of longshoremen broke down these bulk shipments into individual bags, crates, boxes, coils, etc., hoisted them by sling cranes, and then stuffed them by hand into whatever space of the ship

they would fit. Then the process was reversed while unloading at the destination port. This method was time-consuming, labor-intensive, and frequently dangerous work; theft and loss of cargo were common, and the relentless drive of ship captains and cargo owners to squeeze every last second of time and bit of money out of the longshoremen led to injuries, deaths, and frequent strikes and violence. By the middle of the 20th Century, every major port in the world had formal or informal longshoremen's unions, frequently made up of members of the local underclass in long family lines. These unions effectively controlled all labor on the docks to ensure stable wages and worker safety—often by means of racketeering and organized crime. The costs of cargo shipping still amounted to up to 50% of the costs of the goods.

The key to wringing this inefficiency out of the increasingly global supply chain was containerization: packaging cargo in metal boxes of standard sizes and weights that could be loaded and unloaded quickly. A self-made trucking magnate from North Carolina, Malcolm McLean, was the first shipping executive to rely on containerized cargo; he began sending custom-built cargo boxes—truck trailers minus wheels and chassis—on refitted former oil tankers between Newark and Houston in 1956. McLean's Sea-Land service reduced the cost of shipping from \$5.83 per ton to \$0.16 per ton, and the time for loading and unloading of a cargo ship shrunk from days to hours.⁵ Soon, and despite opposition from longshoremen's unions and government regulators across North America and Europe,

container cargo quickly became the norm with smaller Conex boxes and larger ISO containers completely replacing break-bulk cargo within a few decades. The next logical step, intermodal transportation, followed. Now, a single 30-foot container filled with everything from children's toys to frozen foods to vital medicines could be transferred from factory to truck to railcar to ship and back again, arriving at its destination sealed and intact in a matter of a few days to a few weeks. Even militaries began to recognize the value of container cargo; the rapid U.S. military buildup in Vietnam was only possible by the speed at which container ships and ROROs—“roll-on roll-off” ships with ramps for loading vehicles—could be offloaded at a new, purpose-built container port at Cam Ranh Bay.⁶ The time and expense saved by containerized cargo were so great that not even canals could compete. When Egypt closed the Suez Canal to all shipping in the wake of the 1967 Six Day War, shipping companies simply routed their existing ships the long way around Africa. Today, “Super-Panamax” container ships too large to fit through the Panama Canal are a common sight on all the world's oceans, and even shipping containers themselves are recycled into homes and buildings of wholly new architectural styles.⁷

In a sense, standardized cargo shipping methods are the ultimate evolution of a fantasy world—requiring global governance and large scale engineering know-how—and practically a prerequisite for science fiction worlds. For one, who will be determining the sizes of containers, and on what basis? You may find inspiration from

⁵ Marc Levinson, *The Box: How the Shipping Container Made the World Smaller and the World Economy Bigger*, 2nd ed. (Princeton, NJ: Princeton University Press, 2016), 68.

⁶ Levinson, p. 247-48.

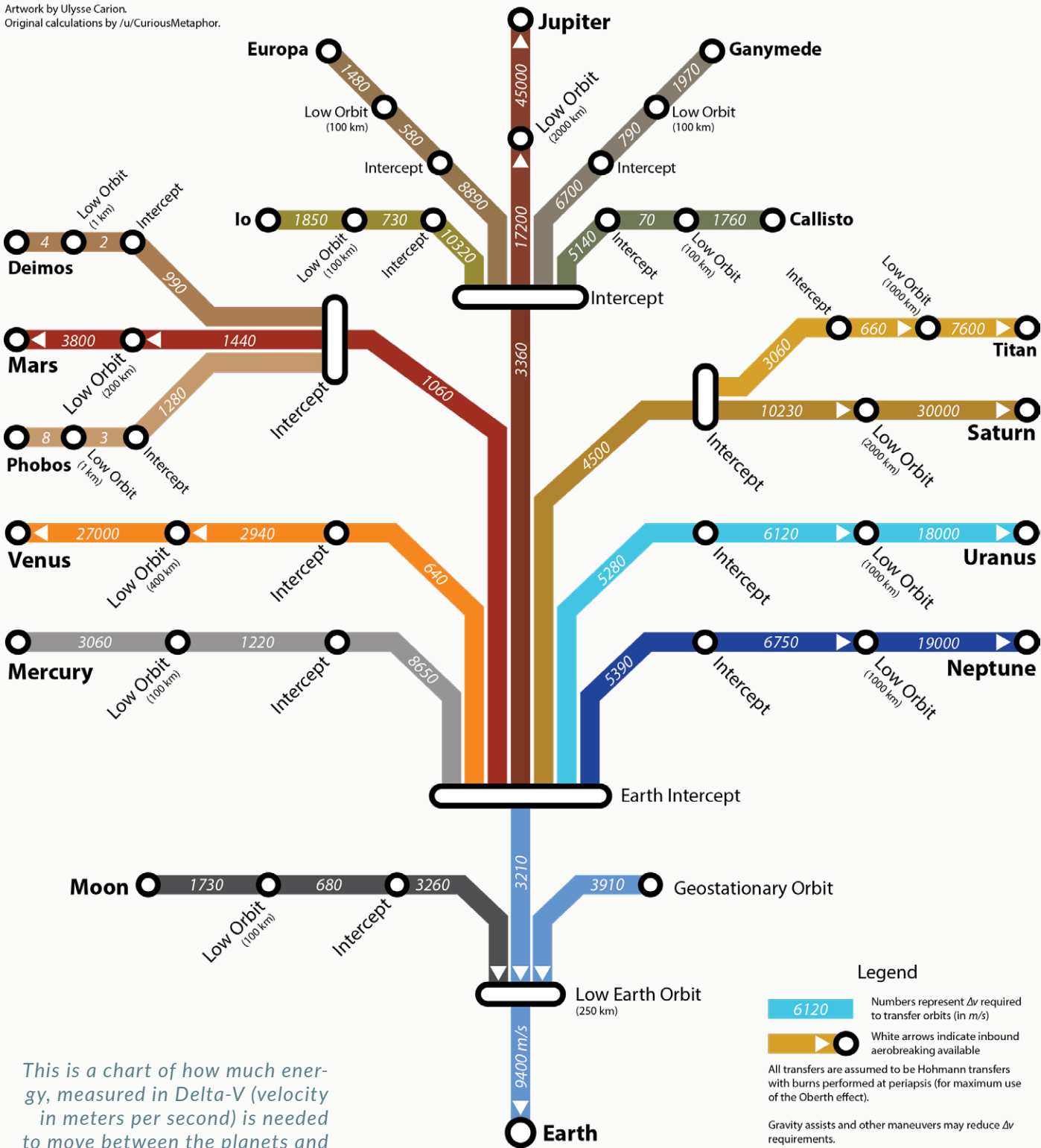
⁷ Brad Plumer, “This is an incredible visualization of the world's shipping routes,” Vox, March 22, 2017, <https://www.vox.com/2016/4/25/11503152/shipping-routes-map>; Christopher McFadden, “15 Awesome Buildings Made From Recycled Shipping Containers,” Interesting Engineering, December 30, 2017, <https://interestingengineering.com/15-awesome-buildings-made-from-recycled-shipping-containers>.

⁴ “Steampunk Manifesto,” November 27, 2004, <https://prof-calamity.livejournal.com/277.html>.

The Solar System

A subway map

Artwork by Ulysse Carion.
Original calculations by /u/CuriousMetaphor.



This is a chart of how much energy, measured in Delta-V (velocity in meters per second) is needed to move between the planets and major moons of the solar system.

the fact that modern intermodal shipping containers were based on road and railroad gauges already in use, which in turn may—or may not—trace back to Roman chariots designed to accommodate the width of two horses.⁸ Standards for container size, weight, and movement could be set by a single, globe-spanning empire by decree or by groups of merchants and laborers in a decentralized world with governments no larger than cities. There might be pack animals large enough to carry a standard shipping container in your world. How might containers be secured from theft or loss during transit? Who would be trying to steal from—or protect—them? What modifications would a container need to transport the speculative fiction “unobtainium” of your world? Or think about the shipping containers themselves, either real-world Conex or ISO boxes or your own designs; how they would be used in different worlds of different genres? As emergency housing and hospitals? Barriers against zombie hordes? Buried in the ground for bunkers, safe from hostile alien invaders? Perhaps used for the walls of new buildings, castles, or even skyscrapers?

THE FUTURE, DELIVERED

If it was hard to ship cargo across a single planet, getting cargo to orbit and back again will be a challenge of its own. Overcoming the Earth’s gravity entirely requires speeds an order of magnitude higher than the fastest current airplanes. Even a modern chemical rocket like the SpaceX Falcon 9 costs \$2,750 per *kilogram* to send material into orbit, to say nothing of material by the ton.⁹ Much of that cost is due to a lack of oxygen—

IN A SENSE, STANDARDIZED CARGO SHIPPING METHODS ARE THE ULTIMATE EVOLUTION OF A FANTASY WORLD

or anything else—in space, requiring combustion engines like rockets to carry their own oxidizer as well as fuel. Even from Earth’s orbit, the energy cost of sending material to other planets in the solar system only increases. Barring major improvements in rocket technology, getting people and cargo from planet to planet will be like crossing continents in the age of horse-drawn carts and canoes, to say nothing of moving them between stars with faster-than-light travel.

Yet, difficult does not mean impossible. Several speculative alternatives to conventional rockets have been proposed to get things from Earth into orbit. The American National Aerospace Plane program of the late 1990s explored the feasibility of reaching orbit using a single-stage, hydrogen-burning engine on a plane that could take off from a conventional airport and ascend to low-earth orbit.¹⁰ This idea has been slowly improved upon by the proposed Skylon Spaceplane from Great Britain and the continued development of hydrogen-burning scramjet engines by the United States, Russia, India, and China. Another proposed technology for getting cargo into orbit is the space elevator: a long, thin tether fixed to the Earth at one end and an

⁸ David Mikkelson, “Are U.S. Railroad Gauges Based on Roman Chariots?”, *Snopes.com*, April 16, 2001, <https://www.snopes.com/fact-check/railroad-gauge-chariots/>.

⁹ Wendy Whitman Cobb, “How SpaceX lowered costs and reduced barriers to space,” *The Conversation*, March 1, 2019, <https://theconversation.com/how-spacex-lowered-costs-and-reduced-barriers-to-space-112586>

¹⁰ Kenneth Chang, “25 Years Ago, NASA Envisioned Its Own ‘Orient Express,’” *New York Times*, October 20, 2014, <https://www.nytimes.com/2014/10/21/science/25-years-ago-nasa-envisioned-its-own-orient-express.html>.

orbiting counterweight/transfer station—or the Moon—at the other.¹¹ The space elevator would allow cargo to travel between Earth and orbit without rockets or powered flight. Although practical space elevators await innovations in materials science to produce a tether material strong enough to suspend both cargo and the counterweight, it's just one of many real-world ideas that shipping-minded worldbuilders can look to for inspiration. Then, of course, there are the possibilities of extracting mineral wealth from moons, asteroids, and other free-floating bodies, where gravity is a rounding error. From asteroids and other bodies, a sufficiently large ship with big enough engines could fill its hull with everything from metal ores to water ice, fueling growth and industrial development far beyond Earth's orbit.

The larger issues of cargo and commerce between planets and star systems won't change much, and they provide opportunities for science fiction worldbuilders to refine their settings. A setting with high transportation costs will mean rare interplanetary and intersolar transport, with cargo space reserved for the rarest and most valuable cargoes (much like the days of the old Silk Road on Earth) or for shipments that can be easily found free-floating in space. In such a setting, settled worlds or areas of space will be, by nature, largely self-sufficient, forced to rely on local resources for construction, agriculture, industry, and commerce, and will likely be clustered together on planetary surfaces or within low orbit. Trade, not to mention communication, will be infrequent, and worlds may exist with only the barest knowledge of each other.

By contrast, a setting where technology has lowered transportation costs and increased speed and capacity will mean more frequent transport. Just as Adam Smith noted centuries ago, when humans can “truck, barter, and exchange one thing for another” cheaply, specialization and division of labor is the natural result. The worlds and space of this setting may, for example, see planets with breathable atmospheres given over almost entirely to agriculture, as seen in sci-fi settings like that of *Firefly*. At the same time, planets, moons, and asteroids with light gravity without could be mined for mineral wealth as in *The Expanse*, or industries could relocate off-world to take advantage of zero-gravity manufacturing or the natural heat, cold, or chemically active atmospheres of non-habitable worlds.¹² Space-going cargo ships in such settings would, as on Earth, travel regular trade routes to bring raw materials, finished goods, foodstuffs, and many other goods across vast distances.

Then, of course, there will be the exchange of cultures, science, technology, literature, and religion that commerce enables. Depending on your setting, this exchange may take the ancient and violent forms of mercantilism, colonialism, or even outright slavery. Or, it may mean a new golden age for the peoples of many worlds, where the mistakes of the past get left behind on the docks and where the good aspects of human nature are refined, loaded for transit, marked for sale, and sent on their way into a peaceful future.

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¹¹ Emerging Technology from the arXiv, “A space elevator is possible with today's technology, researchers say (we just need to dangle it off the moon),” *MIT Technology Review*, September 12, 2019, <https://www.technologyreview.com/2019/09/12/102622/a-space-elevator-is-possible-with-todays-technology-researchers-say-we-just-need-to-dangle/>.

¹² Prachi Patel, “4 Products That Make Sense to Manufacture in Orbit,” *IEEE Spectrum*, November 26, 2019, <https://spectrum.ieee.org/aerospace/space-flight/4-products-that-make-sense-to-manufacture-in-orbit>





FOR THEIR OWN GOOD

ARTIST SHOWCASE

KATERYNA 'TOKKAMAK' KOSHELEVA

interviewed by Tristen Fekete

 ART  INTERVIEW

My name is Kateryna Kosheleva. I'm an illustrator/comic book author based in Wrocław, Poland, although I was born and lived most of my life in Ukraine. I've liked drawing and making up stories since I was a kid, and after a short detour into language studies, advertising, and graphic design, I've found my focus on visual stories and fictional worlds.

Growing up in a culture that has undergone a sudden and drastic change on all levels pretty much defined my interest in the post-apocalyptic genre. From ancient Mesopotamian myths to the wacky world of *Fallout*, there's always this repeating pattern of the course of history resolving itself in a dramatic manner. I'm trying to explore this phenomenon in detail through working on my own graphic novel and helping other authors to visualize their stories.

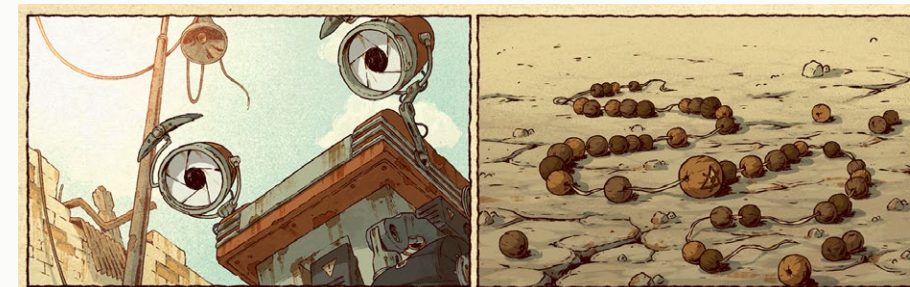
Your novel is called For Their Own Good and it's up in a few parts on your website. When did you begin creating it, and have you always been interested in graphic novels?

For Their Own Good started as a collection of worldbuilding notes in 2013. I was briefly studying classic animation at the time and contemplated an idea of eventually making it into an animation short. However as I was working on an actual script, I realized that the story has become more complex, thus outgrowing the format. It was actually my husband who suggested turning it into a graphic novel.

My relationship with comic books and graphic novels was rather complicated. I admired and appreciated the level of visual artistry the medium required, but I had no idea how to go about the literary side of it. It was Alan Moore's *Watchmen* that gave me better understanding of how the text, the visuals, and all the neat tiny details work together, revealing layers upon layers of pretty deep story and the living, believable environment it plays out in.

It sounds like it's been quite the journey for you and For Their Own Good. What tools do you use for your work? And how have they helped or challenged your creation process?

I must admit that I'm completely and utterly spoiled by the digital age. I've used Wacom tablets and Photoshop for more than a decade now and switched almost exclusively to the iPad Pro/Clip Studio Paint combo a couple of years ago, and this transition has been nothing but a positive influence. I found myself drawing more and more, and it really helped me improve both my workflow efficiency and my skills (along with nudging almost all other activities from my life).



Ironically this rapid improvement over a relatively short period of time has presented a challenge for me, especially regarding *For Their Own Good*. Looking back to the early chapters of the story, I can see stylistic inconsistencies that I'm in a slow process of addressing right now. Revisiting old work is actually a lot of fun, but when venturing into unknown creative territory, it's probably best to start with something small and self-contained.

Despite the efficiency and convenience of digital tools, I still find myself drawn to traditional media, especially ink and watercolor. I mostly use them for studies and sketching—the best remedy against occasional art blocks.

I'm a little jealous. It sounds like you really found your groove! I've been reading through some of For Your Own Good on your website, and the amount of improvement your work has made between the first and third chapters is astounding.

When planning out chapters, do you find yourself writing and worldbuilding it all out first, or is it more of a flexible, "see what feels right" kind of undertaking?

Oh, it's definitely flexible. So far I have a general understanding of how big the story will be when it's done and what hap-

pens in each chapter, but it's subject to change. While the worldbuilding base (historical events, societal structures and norms, technology, economy) mostly remains immutable, I'm constantly learning and doing research, which quite often calls for adjustments and fine tuning.

In a way, being both author and illustrator is a very advantageous position. This way, as you write, you end up thinking about each scene visually, kind of like having a small movie playing in your head. It really helps me to see what works and what doesn't, both in dialogue and more general world concepts.

As I approach the drawing stage for a chapter, I try to have it written as completely as possible. However, drawing one chapter takes me about five to seven months, so naturally as I learn more, I sometimes end up completely rewriting a scene or removing it altogether (amusingly, it happened most often in Chapter 2, which probably has only a handful of scenes that weren't rewritten right before I started sketching them).

Up to seven months per chapter, I never would have imagined it taking that long. I completely understand having that small movie in your head!

In your learning process, have you come to enjoy drawing certain subject matters over others? And are there any subjects which still give you trouble?

My favorite part is definitely backgrounds, which has been true not only for my own book, but for all the projects I've worked on. I love working on the details and to have the environment work as a separate character with its own story told through visuals rather than dialogue. Incidentally, this tendency towards those details contributes to such a long production cycle.

The part I find most challenging is facial expressions. I've discovered that understanding the



mechanics of it, or a plain, analytical approach to facial anatomy, might not be enough. My theory is that drawing convincing faces and emotions requires some sort of intuition, which doesn't come easy to severely introverted people. Yet, it's an interesting way to grow as an artist—challenging yourself with something difficult, maybe even something that goes against your own personality. This is one of the best things about being an artist, because with enough determination and critical approach, the domain of what you can do gets bigger and bigger. You can actually see it through tangible results.

Your passion for backgrounds is easy to see! Facial expressions will forever be a challenge, but getting them right feels so rewarding.

You've certainly got the right mindset when it comes to improving and expanding your skills. What's something you're looking forward to trying or experimenting with, and what inspires you now to persevere and continue creating?

Experimenting and trying new techniques essentially constitutes the better part of my work, so it's difficult to point at any single thing. Right now, I'm trying to maintain focus on what's important: refining my style, looking for ways to improve efficiency (I'm contemplating an idea of utilizing 3D bases for environments so that I could concentrate more on the atmosphere of the world) and write better characters—in that regard, as I get the idea, I try it on the spot.

If I had all the time in the world, however, I would definitely love to give game art and design a try—

to explore all aspects of this form of art: writing, game systems and mechanics, coding, visuals. I'm fascinated by complex systems interacting with each other to produce something meaningful, something people can enjoy and relate to, and games are definitely like that. They are actually the source of my inspiration in terms of perseverance and determination. Amazing projects like *Stardew Valley*, developed by a single person over years of hard work, make me believe that as long as you're focused and really love what you do—nothing is impossible.

Using 3D tools to create environments is very helpful, I find. It takes a bit of time to learn but is definitely worth it. Hearing those stories is always inspiring, too. I'm sure you could do it!



And since we're talking about being inspired, do you have any advice or tips for young artists still finding their footing?

One of the most important things I really wish someone told me when I was just starting is “take any advice with a grain of salt.” Creating art is probably one of the most complex processes our brains are capable of. A lot of factors contribute to what you're good at and how fast you progress. It depends on your personality, temperament, and environment. So while most general advice (practice more, seek constructive critique—the kind of thing you get when you google “how to get better at art”) still applies because it creates good habits, the exact way you do it may differ, and most probably will. Figuring out an effective improvement routine is more of a trial and error, a way to “fail faster.” Try things, discard what doesn't work for you regardless of what people say, and keep going.

Another thing that often discourages people is comparing yourself to everyone else. And when I say “everyone”—I mean it almost literally due to social media practically showering us with new

content every second. So, it's understandable why seeing a lot of awesome art may make you feel that your work comes short. The harsh truth is that the field of visual arts is highly saturated and competitive skill-wise, so it will probably always be the case. Now, there is an argument that you should only compare your work to your own, which is a nice sentiment, but realistically this isn't how our brain works. I think the only real way you can deal with this “everyone is better than me” mindset is to learn to perceive it as another challenge you can definitely tackle.

The issue is that, *in a way*, ties to the previous point: talent. Personally, I don't believe there is such a thing in a sense of some mysterious quality you have to possess in order to make progress in art. What most masterpieces (and this extends beyond art) have in common is passion and years, sometimes even decades of hard work. If you have both—you will inevitably improve.

Generally speaking, most of the reasons that make people feel like they're stuck, or just not good enough are psychological, a matter of not really knowing how you personally operate. It's



difficult to figure out, especially under the weight of expectations and pressure to succeed (which could be good things when used in moderation). Paying attention to your reactions and psychological state, being honest with yourself, and becoming aware of your biases helps.

Oh yeah, and another important thing (which I personally had to learn the hard way): don't neglect your health. Ergonomic workplace, healthy eating habits, and exercise really do make a difference. Ignoring all that boring stuff may come at the cost of your skill to progress or ability to draw at all.

This interview was edited for Worldbuilding Magazine.

Thanks to Kateryna for joining us! If you enjoyed learning about For Their Own Good, you can find more about it on [Instagram](#) or read it on [Kateryna's website](#).

If you would like to be featured in a future Art Showcase, [click here to apply!](#)

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AN OVERVIEW OF FICTIONAL TRAVEL

by Zaivy Luke-Aleman

⊗ TRANSPORTATION 📖 RESOURCE 🐉 FANTASY 🛡️ SCI FI

Transportation can reveal the quality of life, stage of development, and interconnection between cultures in your setting. Like all things in worldbuilding, small details can reveal a lot of information. For something so incredibly common in everyday life, transportation has many opportunities to influence your story. To show this point, I want to go into a small case study with a world I've been building. In it, magic users in the Anderlin area typically live isolated from people who do not use magic. Far to the west, non-magic users are rapidly developing technology, but not in a way that exactly matches how we might in real life. Where Earth citizens made carriages or wagons, the Anderlin people used a different vehicle.

About half a century ago, non-magic users went to war with the sorcerers. As a result, the scientifically-inclined soldiers from West Anderlin became curious as to how this magic was created. After the war, they used their memories of the magic they had seen, created theories

around it, and developed technology influenced by it. Although they did not have the ability to use magic because of their exposure to it, their ways of thinking changed.

Sorcerers enjoy convenient travel on a hovering, blank platform. Their spell makes it so that the platform can move through the dense forest without any trees hitting them. However, it only works horizontally, so they have a parallel platform to block falling seeds or leaves. In West Anderlin, rather than developing carriages, the people were so perplexed by this platform that they developed a similar creation. The West Anderlin people travel on flat platforms suspended on parallel cables; it is a vehicle that is powered by a unicycle-like addition, similar to paddle boats on Earth.

Since this invention was inspired by what non-magical people saw during war, there is a counter movement to magic-influenced designs. The strongest opposers demand for there to be

no more inventions at *all* based on a philosophy that magic has tainted non-magic users, and thus *any* new creation will be an offense to their people. In this way, the most radical can be likened to an extreme version of Old Order Amish culture through the intense preservation of traditional culture. However, its convenience and positive influence on communities has made platform transportation accepted in many areas of West Anderlin. As a result, the movement opposing magic-influenced inventions has dwindled over the years with a few radical groups scattered across the landscape.

What influences transportation in your world(s)? A few different factors could come into play here. The kinds of resources available might be worth exploring. If your characters do not have enough access to strong timber, how might they adapt rather than using wood carriages or wagons?

In addition, whom these modes of transportation are for will likely affect these vehicles. A horse for a king might have a lavishly decorated bridle and saddle. Meanwhile, a horse for someone with less financial standing might use a plain or improvised bridle. Here we can see the possible class differences in transportation. While my example tries to show an internal influence, using modes of transportation found on Earth is a great way to quickly communicate your setting to your audience. For example, say you include a system of horse and buggies; this might show that your world is similar to Europe prior to the invention of the car, and in doing so, you could imply the level of technological advancement in your society without saying it out right or going into too much detail.

How do previously isolated groups of people inspire one another? Cultural exchange can interrupt or save time in developing technology. In my world, such exchanges interrupted and altered the course of development. However, say two cultures have similar resources. If one develops trains before the other, by learning or through observation, the other culture might create their own trains. If not, it is also possible that this other culture instead hired people to design and build trains for them.

Media also has many examples that can inspire your world's modes of transportation and how you can think about travel. In "Every World Needs a Platypus" (season 1, episode 9 of the *Worldcasting Podcast*), the hosts discuss the creative and unique ways in which beasts function as modes of transportation. Instead of a horse, why not branch out into giant lizards? *Avatar: the Last Airbender* has a wonderful example of unique transportation with the leg-

endary shirshu. The blind beast is an excellent tracker because of its strong sense of smell, and it has the ability to paralyze prey; its large size also allows it to carry a person. The shirshu has characteristics similar to moles, komodo dragons, and sharks or hounds on Earth. This combination makes it the perfect form of transportation for June, a bounty hunter in the show.

How does this idea of creative transportation extend into science fiction? *Cowboy Bebop* is great at showing both the unique aspects of space travel as well as class differences through the characters' modes of transportation. In the show, the main cast often complains about not having enough money to buy new ships, and sometimes it is difficult for them to make

FOR SOMETHING SO INCREDIBLY COMMON IN EVERYDAY LIFE, TRANSPORTATION HAS MANY OPPORTUNITIES TO INFLUENCE YOUR STORY.

repairs as well. The corporate-controlled gate systems they use for travel provide the backbone for the age of their world, setting both the tone and displaying the influence of corruption by the wealthy. In *Cowboy Bebop*'s grungy bounty hunting setting, transportation reveals truths about the characters in the context of the world, as the main cast hops from one planet to the next to make ends meet; plus, the details of how people travel, and how certain groups control that travel, also provide insight into the political and economic influences at work in the world.

Star Wars and *Ender's Game* each use some form of light speed travel, a classic trope in space-based science fiction. While *Star Wars*' light speed travel often takes place in quick cuts, *Ender's Game*'s light speed travel—while faster than typical space travel today—still takes place over the course of nearly the entire first book. This contrast is a helpful example of taking common tropes and finding ways to make them different. When including a trope of your own, take into consideration what parts of the tropes you will use and what aspects of them you can make unique.

Artificial wormholes, like those in *Stargate*, limit when and where travel occurs, which may be better suited to worldbuilders who prefer rule-based worlds. A wormhole can allow for new environments to create wonder; they can also be used as a form of sabotage in your plot by breaking gates that allow for rapid teleportation, similar to Ann Leckie's *Imperial Radch* series, where the characters delay an invasion. Wormholes could cause unique challenges to influence your plot, limited only by your imagination. Imagine the ramifications for your story when you introduce another form of travel: through

time¹. What happens when a character meets a past or future version of themselves? Do they personally experience any debilitating effects, or does the environment start to reflect the ripples in the time-space continuum? By creating a system of where and *when* travel can occur, a science fiction writer can develop a world in a similar fashion to a hard-magic system². For fantasy writers, transportation is a great place to begin dabbling in science fiction. Trying to find answers for these sometimes nebulous concepts can help you develop a knack for writing more hardlined systems, even beyond travel. Still, when creating a mode of transportation, consider also the purpose of it—not only in the world, but also in the framing of the story.

Adventure Time and *Horizon: Zero Dawn* both have a mix of old-world atmosphere with new-world futurism. The former explores unique travel that is strongly influenced by its world: from inventions of candy-based science to a time-traveling owl and to virtual world exploration; each form of travel feels quirky and fits just right in the context of the show's setting. However, the main characters typically travel on foot, often surrounded by the natural environment, which creates a surprisingly complementary contrast between the futuristic, old-world, and mystical atmospheres produced in *Adventure Time*. Meanwhile, *Horizon: Zero Dawn* exercises less flexibility. People *only* travel on foot, though the main character's unique tools allow her to tame wild robotic beasts. The atmosphere of the world gives a stone-age feel to a civilization that exists in an advanced, post-technological society. Both worlds have similar histories, but dramatically different results. Try not to feel limited by previous creators, but think instead of the range of opportunity for your world.

Why people travel the way they do can prove just as interesting as how, and you determine how deep the reasoning goes—from simply choosing the most fun forms of transport to weaving plot-lines rooted in ancient histories.

The Netflix animated series *She-Ra* has a character called Glimmer whose magic involves initially short-range travel, which gives her advantages in escaping and complicates fights for her enemies. The show's combat works in a similar way to the classic anime fighting trope (as commonly seen in *Dragon Ball*) where characters move too quickly for their opponent to see their enemy. As the attacker appears for less than a second on screen, the defender has to learn how to predict where they will be attacked

next instead of reacting to what they can see. When it comes to escaping, if a character begins to fall down a ravine, Glimmer can teleport to her friend and then teleport back into safety. While not as world-spanning as my other examples, the scale of travel is

an important facet while worldbuilding. When certain entities in a setting can bypass doors, windows, or walls (and maybe even more secure defenses), how have people adjusted in turn? Is the ability common enough to spawn society-wide changes, or so rare (like some unique superpower) that draws only specific reactions to that individual? More than likely, ideas on the boundaries of travel shift whenever physics is defied, even if only for short distances.

Can the form of travel influence the items or passengers it carries? A typically overlooked vehicle in fantasy is *The Magic School Bus*. This classic children's series involves the Bus, which not only served its role as a mode of transportation for a class, but also changed the physical dynamics of

those who rode inside it. In a wonderful example of soft magic, the Bus has shrunk characters to incredibly small sizes as well as transformed them into pseudo-aquatic life, among many other fantastical situations. Because of the Bus's abilities, the characters can travel inside living creatures to understand how their bodies work as well as delve into locales they could not normally, like deep sea or space—the exploration being the series' central concept. This flexibility adds a sense of wonder to the show that reflects the intention of the overall narrative to educate in a fun and interesting way. *The Magic School Bus* provides a great example of how to make the mode of transportation central to the story, allowing it to set the narrative tone rather than simply being a tool for the characters.

TAKE SOME TIME TO APPRECIATE THE COMPLEXITY OF TRAVEL IN YOUR OWN LIFE AND THEN IMPLEMENT IT CREATIVELY IN THE WORLDS YOU BUILD.

Transportation is a daily influence in people's lives. It could become a central focus in your narrative like in *Cowboy Bebop* or *The Magic School Bus*, or travel might just remain an aspect of a larger work like in *Star*

Wars or *Horizon: Zero Dawn*. No matter what you decide, it's important to give modes of travel some thought. How people or creatures travel in your world can add a layer of nuance socially, culturally, and economically. It also gives your audience something familiar to latch onto if a world has similarities with Earth. Take some time to appreciate the complexity of travel in your own life and then implement it creatively in the worlds you build.

¹ Henry Reich, *Time Travel in Fiction Rundown*, minutephysics, Oct 26, 2017, YouTube video, 8:04, <https://www.youtube.com/watch?v=d3zTfXvYZ9s>

² To learn more about magic systems, check out "Talking Magic" in our podcast *Worldcasting* (season 1, episode 8).

THE HISTORY CHALLENGE CONTEST WINNERS

hosted by World Anvil

✂ CONTEST ▲ HISTORY

The following sections were winning submission to World Anvil's "History Challenge." We hope that they inspire you to try something new with histories and timelines in your own worlds.

KRIGAN EMPIRE

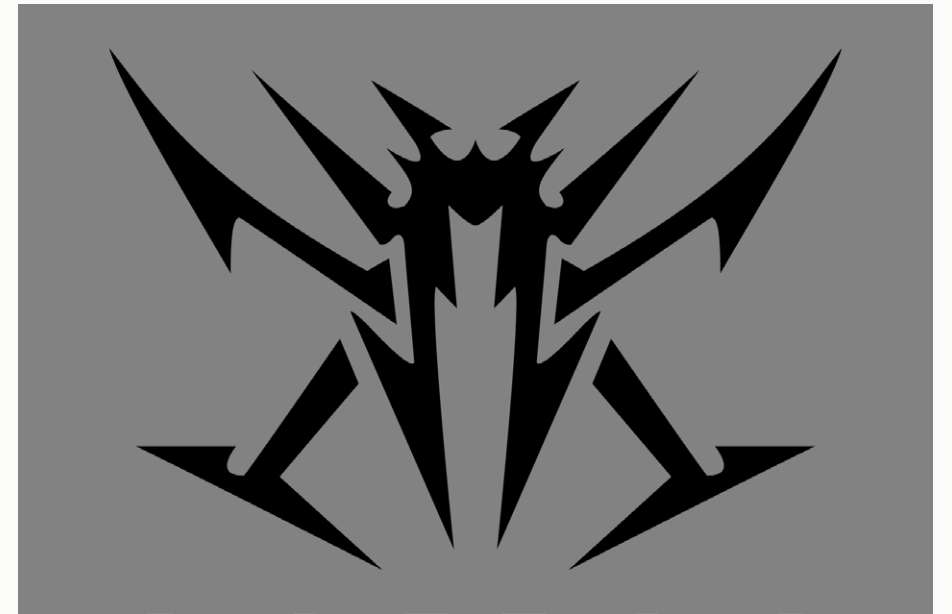
written and illustrated by Darius

An endless swarm of teeth and claws and eyes. Without fear or mercy. A race driven by an ancient hatred, born a million million years before our ancestors crawled out from the sea. That's who the Krigan are. And pray to all the gods you know should they ever come for you.

— Gen. Andrew Ryan - 5th Confederate Fleet

Andromeda is a vast place, filled with all manner of fascinating things, and its various inhabitants have taken great efforts to explore every inch of it—with one notable exception. There is a sector of space near the galactic core that even the most expansionist of empires will avoid like the plague because there is something in this volatile region of space: a sleeping giant. A realm of unconquerable might. A race of warriors without count, fear or equal. A swarm that will ruthlessly eliminate everything it deems a threat. The Krigan Empire.

The Krigan emerged from the nuclear ashes of Kaedis-5 millions of years after the previous inhabitants had destroyed one another. A maelstrom of radiation,



mutation, and constant battle for survival had created a race with an aggression never before seen. The drive to survive, to destroy any threat to the Hive, was bred into their very core through millennia of carnage. It was this very nature that drove the Krigan Empire, which emerged around 700 CE, to spread across the galaxy. This drive made them attack and destroy every advanced civilization they encountered and turn themselves into mindless engines of annihilation. And when their last enemy was vanquished, the Krigan turned on one another. Only the genocidal cataclysm, caused by the Krigan known as Katern, managed to halt this descent at the cost of a hundred billion Krigan.

Since the end of this bloodbath in 2379 CE, the Empire has taken a more reasonable approach, rarely interacting with the newly emerging powers of Andromeda. Yet it continues to defend its territories with the same ancient ferocity. Sooner or later, any spacefaring civilization learns to respect the insectoid Empire, for the words of its leaders are backed by thousands of warships and hundreds of millions of warriors. Still recovering, the Krigan Empire undoubtedly remains the preeminent superpower of the Andromeda Galaxy.

At the heart of the swarm are the *Hive Queens*, massive organisms that birth the majority of all Krigan and are assumed to be the origin of the Hive's consciousness. Constantly connected to the Hivemind, they collect and process information from across the entire Empire. Based on this knowledge, they determine things such as resource allocation, construction, and colonization, among a myriad of other things. The total number of Queens is unknown.

Calling the Krigan a Hivemind, while accurate, would not cover the whole truth. The entire species does share a single consciousness and can theoretically be commanded by as few as one of the Hive Queens, which serve as the Hive Mind's origin and focal points. However, all Krigan, apart from basic worker and combat drones, have some level of individuality and can remove themselves from the

Hive's consciousness at will. The consciousness itself consists of several layers, the most basic of which allows casual conversation and exchange of information. On the other end is the Primary Layer, only accessible by the Queens, and only used in the direst of circumstances to forcefully control the entirety of the Krigan Species.

Genetically engineered to be the ultimate warriors, the *Primarchs* are the military leaders of the Empire. They are the only ones able to resist the Primary Layer and can themselves assert control over the swarm, although not to the degree of the Queens. Military needs, technological advancement, and war are their domains, and they work in near-perfect synchronization with the Queens to ensure the future of the Empire.

Not much is to be said about the Empire's economy since it doesn't have one in the conventional sense, at least. With the exception of food, everything needed for the nation to function is produced from a chitin-like material that, depending on its consistency, serves as the foundation for everything, from small household items to the titanic warships of the fleet. It is produced by *Construction Drones*, whose ability to work is only limited by the amount of available energy, and the Krigan will make use of any possible source to sate the drones' hunger.

The Empire has the largest military in the known Andromeda Galaxy. While a shadow of their ancient self, the Krigan Imperial Navy and Army dwarf any other force by far. Currently, the Empire is known to field up to 10,000 warships of varying size, including a total of 105 warships identified as Super Dreadnoughts. The Krigan are known to utilize every known ship class, favoring to field vast swarms of Frigates and Destroyers, the titanic Battleships and Dreadnaughts that serve as the command points of a fleet formation. Carriers are not a separate ship class in the Krigan Navy, as every vessel is able to send a number of Fighters and Bombers toward the enemy.

Numbering over a hundred million individuals, the Krigan Imperial Army is an often-confusing body to dissect. It does not use specific types of soldiers or equipment, rather it utilizes a broad range of so-called "base creatures" which can mutate based on what is needed. Both in space and on the surface, the Krigan favor destroying their opponents through superior firepower and sheer mass. Their unique Hivemind enables them to instantly move orders across the battlefield and coordinate actions across entire systems, all the while the individual soldiers can make their own decisions based on available data. A deadly combination that few have found an answer for.

I have seen a thousand worlds burn. Seen Empires that have lasted ten thousand years disappear in just ten. I have seen more death and torment than all your kind combined. Do not think that there is anything you could threaten me with.

— Kain, Primarch of the Empire to a Human Envoy

GRAND DUCAL POSTAL SERVICE OF ROHSK

written and illustrated by Wim "Errandir" Driessens

Until 1156, Rohsk—like the other three Regions of Adhonaglamar—didn't have any organized courier service. Most of its inhabitants were illiterate, and only the nobility occasionally sent out letters which were most often delivered by errand boys of their household. Since most of those boys grew up inside their small villages, they often became lost, taking ages to deliver their messages. Therefore, more important dispatches warranted a guardsman. They were more familiar with the geography of Rohsk, but they encountered another danger on the road: inns and taverns. Well stocked with ale and entertainment, many a messenger lost track of time in such establishments.



All of that changed after the incident at Aren Forest. In the spring of 1156, as was his custom, the Grand Duke of Rohsk was preparing his yearly visit to the Market of Oswain. Oswain, located near the southern border of Rohsk, is several weeks' ride from Rohsk's capital Risha. To prepare for his arrival, a handful of guardsmen were usually sent ahead. One such party of guardsmen had been in Oswain a few days when one of them, a young scout named Finlay Epps, overheard two men talking about an ambush of the Grand Duke's caravan. With some help, he rounded up and interrogated the rogues. They confessed to being part of a band of mercenaries hired to capture the Grand Duke in Aren Forest. From there, the Grand Duke would be taken across the border into Naeron. They knew the Grand Duke tended to travel with only a small escort of armed men, which would be easily outnumbered by the mercenaries.

With not much time left before the Grand Duke was expected to pass through Aren, Epps was sent out in an effort to warn him. For eleven days and nights, he rode tirelessly, only stopping to rest his horse. On the twelfth day, he reached the royal caravan. On the verge of collapse, Epps was brought before the Grand Duke and informed him of the plot.

Because of Epps's warning, the caravan took another road, avoiding Aren Forest, while a nearby garrison rounded up the mercenaries. Realizing the extraordinary speed with which Epps had made the journey, and being tired of his letters taking ages to arrive, the Grand Duke promoted the young scout to Head Courier of his household, a newly created position.

After his appointment, Finlay Epps became the sole official courier of the region for another six months. He mainly dealt with dispatches from the Grand Duke, occasionally taking messages for some of the Grand Duke's household. As other nobles in Rohsk started petitioning the Grand Duke to be allowed to call upon the services of his courier, he realized more couriers would be needed as well as a larger organizational structure to organize and supervise their activities. At the end of 1156, the Grand Duke formally created the Grand Ducal Postal Service (GDPS) and housed them in a small wing of his estate in Risha. To oversee the organization, the function of Head Postmaster was created. Out of gratitude for his services, it was offered to Epps, who turned it down. He had come to love the journeys throughout the region that his work as a courier brought him. Still young, he didn't relish the thought of being tied down to a desk in Risha. So the position went to Merton Pirn, a clerk who had served the Grand Duke's steward.

In the years after its founding, the GDPS hired several dozen couriers. By 1160, the organization had outgrown the wing at the Grand Duke's estate. So a new building, the Main Postal Hall, was erected in the East Quarter of Risha. Around that time several smaller postal halls were also housed inside the market halls of several major cities around Rohsk. Each was led by a Postmaster, who in turn answered to the Head Postmaster in Risha. In honor of the man responsible for the founding of their organization, there would always be only one Head Courier in the entire organization. This honorary title remained attributed to Epps until his untimely death in 1164.

As the common folk of Rohsk became more and more aware of the reputation of the GDPS and the advantages of a reliable messaging system, they

"DELIVERED, OR DEAD" — GDPS MOTTO

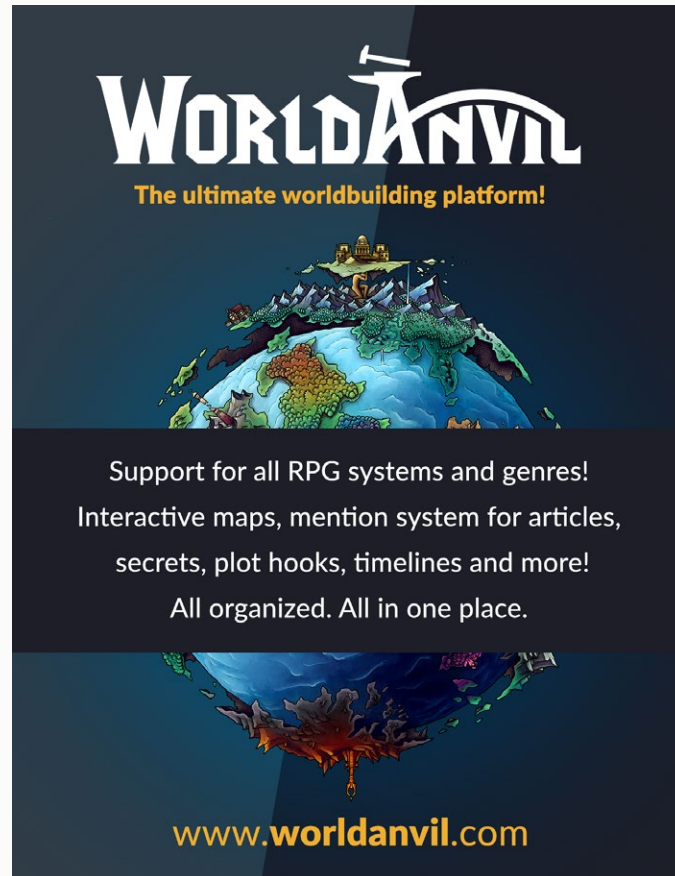
gradually became frequent users of their services. Since many were still illiterate, they relied on local clerks to write down their messages and read out the replies. Never wasting an opportunity, the GDPS's second Head Postmaster started hiring clerks from 1162 onwards to work under the direct supervision of the GDPS. The clerks were overseen by a Master of Clerks who'd report to the Head Postmaster in Risha. These clerical services created a fresh stream of revenue for the GDPS, allowing the organization to gather ever more wealth and influence.

During the time preceding the Grand Ducal Postal Road initiative, the GDPS's motto often ended up being a sad reality.

The Grand Ducal Postal Road initiative, also known as the GDPR initiative, was an attempt by the GDPS to address the frequent robberies and murders of couriers on the roads of Rohsk that the organization suffered in the period between 1161 and 1163. The Interregional War of 1149 had left many former soldiers without patronage and income, which led to many of them forming small gangs that raided the countryside. GDPS's couriers were an easy target for these bandits.

The letters they obtained during such raids were often of little value, and they would frequently find their way into the hands of local bards. Those took it upon themselves to turn them into entertaining stories for the people. The nobility, enraged by this theft of their personal communications and public disclosure thereof, pressured the Grand Duke into action. In 1163, after a particularly embarrassing revelation about a prominent nobleman's desire for his kitchen maid's fine 'duckies,' the Grand Duke removed the acting Head Postmaster and appointed Ryle Fernash to lead the GDPS. A former high-ranking member of the Grand Ducal Guard, Fernash wasted little time. On his third day in office, he hired fifty huntsmen and former soldiers. They escorted the couriers on their journeys and actively hunted down any bandits along the main roads used by the GDPS. After two months, the number of attacks had dwindled, as had the amount of new and entertaining stories for the people.

One of the largest postal halls outside of Risha was the one in Braedon. By 1173, it had 43 couriers in its service as well as seventeen clerks, nearly as many as the Main Postal Hall itself. Braedon was a tightly-packed city that flourished thanks to its iron ore and copper mines. Most of its buildings, especially around the old city centre, were mainly made out of wood. This proved to be its downfall. In late 1173, winter had set in early with bone-dry icy winds blowing through the city for days on end. On the night of the 12th of November, fire broke out in one of the shops on the edge of the city square. Fed by the winds, the fire spread quickly. It ravaged through Braedon for two days and two nights, turning everything in its path to ashes. By the end of it, nearly three quarters of the city had been razed to the



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ground, including the postal hall. Its archives were lost, along with twenty-one couriers as well as fourteen clerks. It was the largest loss of life for the GDPS in a decade.

Rebuilding the city took years. By February 1174, the Head Postmaster ordered a new branch of the GDPS to be opened in Braedon. A small postal hall was built, serviced by only a handful of couriers and clerks. Their numbers would slowly increase in the following years, but the GDPS’s activity in Braedon would always remain modest compared to its heyday.

For many years the GDPS flourished and remained a respected organization all around Rohsk. This did not go unnoticed by the Order of the Black Seal, a criminal organization which had its roots in the unrest that eventually led to the aforementioned Interregional War of 1149. Their main objective was to gather influence and power, but they operated from the shadows. They had a network of spies all over the four Regions of Adhonaqlamar and had infiltrated many courts and noblemen’s households. A campaign by the Monarch of Nearon to eradicate them had left them weakened in that region, but they remained strong and active elsewhere.

In the summer of 1185, the Order started focusing their attention on the GDPS. They began by infiltrating the lower ranks of the workforce. Slowly they worked their way up through the hierarchy until several Postmasters and Masters of Clerks were connected to the Order. By 1187, their main operations were managed through the GDPS due to the advantage its network, speed, and influence provided them. They moved their headquarters inside the Main Postal Hall in Risha where they excavated the Black Room underneath the hall as their main base of operations.

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For several years, they could work unchecked, spying and gathering wealth throughout Rohsk. It was their strength in Rohsk that eventually allowed them to slowly rebuild their activity in the region of Naeron after the Monarch’s death in 1190.

The beginning of the end for both the Order and the GDPS came in the fall of 1192. The Order had grown bold and was ever more openly meddling in the state affairs of all four Regions of Adhonaqlamar. After several of their agents were caught and questioned, the Grand Duke of Rohsk ordered his State Marshal to start an investigation into their operations. The State Marshal brought together a small group of handpicked men—all shrewd bailiffs whom he trusted absolutely—and set them to the task of unraveling the network of the Order.

In secret, the bailiffs investigated every lead they had. They were highly effective at their task, so much so that the Order wasn’t aware of them until it was too late. By February 1193, they had identified almost all the agents of the Order, including their entire network within the GDPS. In one perfectly coordinated move, they raided all postal halls and arrested nearly three quarters of the GDPS’s staff. Only a small handful of couriers, who had been on the road during the raids, managed to avoid arrest. Most of them fled across the border into the other Regions.

The trials and executions were as swift as they were harsh. Crippled and bereft of most of its senior ranking officials, the GDPS was disbanded by the Grand Duke. The Black Room in Risha was laid bare and filled with rubble, their assets sold off.

Author’s note

And so the Grand Ducal Postal Service—of which I, Belonos Orlion, am the last Head Postmaster—has come to an end. While I await my execution, I felt

obligated to safeguard the history of my beloved organization for posterity. Although I know none will believe me, I am innocent. I never had any part in the Order, nor was I aware of what they turned our organization into.

Under the circumstances however, no proclamation of my innocence will save me from my fate. I am resigned to it.

Delivered, or dead...

B. Orlion

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A Collection of Nerd Content



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ASK US ANYTHING

by B.H. Pierce

This *Ask Us Anything* is presented by a senior member of the Amalgamated Order of Interdimensional Persons, Percival Aluminus Illumnius, Adjunct Professor of Gateways, 3423 WestNorth Street, Dunny-on-the-Spire.

How do you decide which faction is going to be “the heroes” and which are going to be the bad guys?

NotBreadalus

Let’s talk about the idea of quantifiable evil. In some worlds, evil acts or deeds leave measurable marks on a person. In popular *Dungeons and Dragons* settings, evil is an alignment that can be detected by magical means and having that alignment can affect gameplay mechanics. In the Harry Potter verse, the act of murder damages the soul and that damage can be used to fuel a certain spell. Star Wars’ Jedi can sense when people dip into the Dark Side of the force. If your world has quantifiable evil, then it will be easy to sort out the good guys and the bad. Note that this is not about moral relativism. Most would agree that taking candy from a baby is an evil act, but the candy theft does not leave an identifying mark on the perpetrator. If you are telling a narrative with your world as a backdrop, then you don’t necessarily have to decide who is the good guy and who is the bad guy. You just have to work out who is the protagonist and antagonist. Within a story, the protagonist is the main character, and the antagonist is the person or force that causes problems for them. This relationship is more defined by the needs of the narrative than good and evil.

Absent a story, assigning the roles of good guy and bad guy to the peoples of your world is problematic. Every faction will view themselves as the good guys. They will consider everything they do to be moral and justified, or at least done in the service of the greater good. This problem grows more severe with scale. Suppose one of your factions is a small splinter group of a larger one and takes extreme action to solve some problem. Painting them as evil will be easier, as the group is small, and you can display and examine the motivations of those involved. The larger a faction gets, the harder it is to paint with a broad brush. You can paint a large organization like an army or a corporation as evil, especially if membership is voluntary and its nefarious goals are openly stated. But when you deal with larger-scale groups like nations, religions, or cultures, this judgment becomes difficult, especially because many of its members will be born and raised within the faction.

As stated, each group views themselves as the good guys. The Interdimensional Commonality Cataloguing Endeavour calls this phenomenon ‘Protagonist Centered Morality’. Not only will they see themselves as good, they will view themselves as normal and others as bizarre and strange. Whether or not they are heroes or villains will depend on the roles you place on them as storyteller or worldbuilder.

How can you take “medieval” fantasy in a new direction? How do you avoid the stale feeling most medieval fantasy seems to have?

Celestial_Bluz

Medieval Fantasy feels stale because it is familiar, and because it is familiar is why so much of it gets written. Presenting a new, unique world to an audience is difficult. Such a challenge that this very magazine has a multitude of articles devoted solely to that task. If you write for an audience that grew up with tales of knights, kings, and princesses, then you don’t have to explain what those things are and can focus on the narrative. But if you want to write medieval fantasy with your own flair, there are three simple options to explore: adding new influences, going wider, or going deeper.

Adding a “*but...*” or “*with...*” to your theme is an easy way to diversify the world. Medieval fantasy *but...*multiple species of humans evolved simultaneously and have gone to war with each other. Medieval fantasy *with...*dinosaurs. There’s endless combinations or exceptions you can tack on to add your unique touch to the world, medieval or otherwise. The popularity of the genre has led many authors to do this already, so be aware of what’s out there! If you’re looking not to diversify the world but just the story, using medieval settings provide a way to highlight how people of the age had to overcome certain challenges (disease, communication, commerce, etc).

If you want to go wider, take a look at the Middle Ages beyond the nobility. If you still want to write about intrigue, power, and politics, then take a look at the medieval Catholic Church. The church was an enormously powerful institution in those days and there was no shortage of ambitious, scheming people within the organization trying to climb the ladder. Monasteries and cathedrals were important centers of power as well as economic engines for the local area. These institutions were also responsible for

the preservation and spread of learning after the collapse of the Roman Empire. A medieval setting with a focus on the rediscovery or preservation of lost knowledge could prove quite interesting. Beyond the church and the nobility are the everyday people: artisans, merchants, farmers, servants, and everyone else. A medieval world viewed from the perspective of one of these people would be a breath of fresh air.

But suppose that doesn’t interest you. You want to make a world about knights, chivalry, war, and honor. Nothing wrong with that, so if you want to do so and not be stale, go deeper. Most stories and many worlds built around the middle ages portray a simplified version of feudalism as the main political structure. There is a king, then there are great lords who owe fealty to him, then lesser lords who owe fealty to them. While this structure is broadly true, the politics of medieval Europe were much more complicated. Many layers of nobility and loyalty overlapped, and one man could have many titles. A noble could be a duke in one kingdom and an earl in another and therefore owe service and obedience to more than one man. The twists and turns of titles of nobility are far too complicated to get into here, so some research of your own will do you good.

IF YOU FIND OUT WHY YOU WANT TO MAKE A SETTING BASED ON THE MIDDLE AGES, YOU JUST MIGHT OPEN THE DOOR TO GREATER OPTIONS.

Let us go even deeper. Let us look beyond the Middle Ages and peer into the worldbuilder themselves. Why do you want to write Medieval Fantasy? What about it fuels your creative engine? Is it the aesthetic? You can have stone castles and shining armor without necessarily building a setting based on Europe. Do you like

the idea of the Dark Ages, a world in the throes of uncertainty after the old order fell away? There is no shortage of post-apocalyptic periods in world history to draw inspiration from. The Bronze Age Collapse, the Five Dynasties and Ten Kingdoms period, and the Americas post-1492 are all possibilities. If you find out why you want to make a setting based on the Middle Ages, you just might open the door to greater options.

Music is an oft-overlooked area of worldbuilding. How do you work it into your world?

Kaibaman

To be perfectly honest, music is not one of my many talents. But fear not! While I am generally ignorant about compositions, melodies, and the like, I can tell you plenty about working music into your world. For example, we can draw inspiration from the Grandmaster himself, Tolkien. He used songs as exposition in the tales he wrote for good reasons. Songs were, and remain, a universal entertainment everywhere. Those who want to emulate Tolkien and fill their worlds with songs of significance should remember that there is more to a song than rhyming. Take note of the rhythm and flow of his songs if you want to emulate his success.

If you want to work out what sort of music your cultures would play, first take note of their technological development. A drum is the easiest

instrument to make, simply hit something with something else. Instruments like trumpets or violins require a more advanced level of technology, and devices like synthesizers are on a whole different level. How music would fit into a culture practically is another aspect. Nomadic herders likely would not haul around a tuba from place to place. Also be aware of how skills and songs are passed down through history. Sheet music as we know it today is only around five hundred years old, but there is evidence of written music going back to ancient Sumeria.

While just about everyone everywhere enjoys some kind of music, a culture will place certain forms above others. Some music will be for the wealthy, enjoying it will lend the listener an air of sophistication and class. Or, depending on the point of view, make one seem like a snob. Other music may reach a wider audience but be scorned by the elite for a lack of sophistication, perceived or otherwise. Everyone loves some kind of music. Figuring out which tunes are beloved or reviled by the people of your world will go a long way in making your creation seem real.

[Send questions to Percival on our Discord server!](#)


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Who or what is your most divine being in your universe?
What is their role in your world's mythology/cosmology?

What kind of superstitions exist in your world, and
which would your characters choose to believe in?

What is the fanciest thing you can buy with
5 [Local Currency Unit]?

Join us on Discord and sign up for weekly worldbuilding prompts!

 #worldbuilding-wednesday



MEET THE STAFF: IMACHINATE

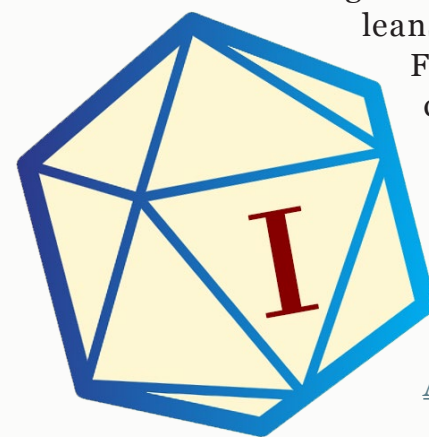
curated by ACGrad

Please introduce yourself! What is your role for the magazine, and what do you hope to do going forward?

I'm Imachinate! I usually show up in the contributor list as Ianara Natividad, but it's me, I swear. I started out as a writer, got wrangled into becoming an editor (which I still am), and now, I'm happy to serve as Managing Editor. I think we're in an exciting time for the magazine, having expanded with generating more content beyond just our issues (and other stuff in the works beyond that). I hope to provide whatever support I can muster for the organization's growth.

Tell us about your world! Do you have a final medium of choice?

Oh, well, I feel a tad embarrassed since I'm not all too active with developing my personal worlds currently. The one I've worked on the most, however, is *Zentrem*. I use it for my longtime *Dungeons & Dragons* campaign. It's a very high fantasy, high-magic, and—based off my tabletop game—apparently nobledark setting. I'm mulling over another world that



leans a bit more into Filipino and Asian culture, though that hasn't shaped up as extensively beyond "A Boy in the Woods," a short story I wrote for the [magazine's Architecture issue](#).

Through and through, I'm a writer; I lean more into creating articles, short stories, or scribbling bullet point notes for my worldbuilding. I do wish I could draw competently though, as I think visual art provides a fantastic medium for passively (as well as actively) conveying a setting's intricacies.

What topics for articles or short stories interest you the most?

When I say articles, I essentially refer to blocks of worldbuilding notes. I studied history, so I really like creating articles that cover histories of events, factions, people, and the like. In that regard, I have a real soft spot for outlining and writing biographies since people, and thereby the characters in the setting, are probably the most compelling lens through which a writer can express their worldbuilding—like living exposition. After all, these would be the people that experience whatever it is I make up, and I think the nuances of their perspectives, biases and inaccuracies included, give a world a more "living" feel. My interest in short stories follow a similar line of thinking: pieces that relate a character's experience in a bigger world.

Check out Imachinate's work on [Twitter](#) and her [website](#)!

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The *Worldbuilding Magazine* team is made up of volunteer writers, artists, editors, and organizers who all have a passion for worldbuilding in one form or another.

If you would like to contribute to this project, simply contact us and tell us what you're interested in doing. We're always looking for people to help out!

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