

ISSUE 6 | 2020

WORLDBUILDING MAGAZINE

SURVIVAL
& other topics

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THINKING SIDEWAYS

About Life After Death

Featuring:
BRIAN MCCLELLAN and
ANNA URBANEK

Analysis | Art | Interviews

A Community Project

Prompts | Stories | Theory

LETTER FROM THE EDITOR

Survival is not just about enduring the elements, but also about hoe people thrive despite them. What dangers are in your world, and how do your people manage them?

As we head into 2021 and our new quarterly schedule, I want to thank all of you for supporting our work. The next issue won't come until March, but we aim to have the third season of the Worldcasting Podcast out before then to hold you over.

The team has done an incredible job this year, and I could not be more proud of what we accomplished. At the start of this year we launched the podcast, and as it progressed we delivered six inspiring issues of this magazine. That would not have been possible without their support and so I just wanted to take a moment to acknowledge the work they all volunteered to do.

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



CIVILIZATIONS
THRIVE IN ADVERSE
ENVIRONMENTS



BRIAN MCCLELLAN
Author of *Promise of Blood*



ANNA URBANEK
And the *Herbalist's Primer*

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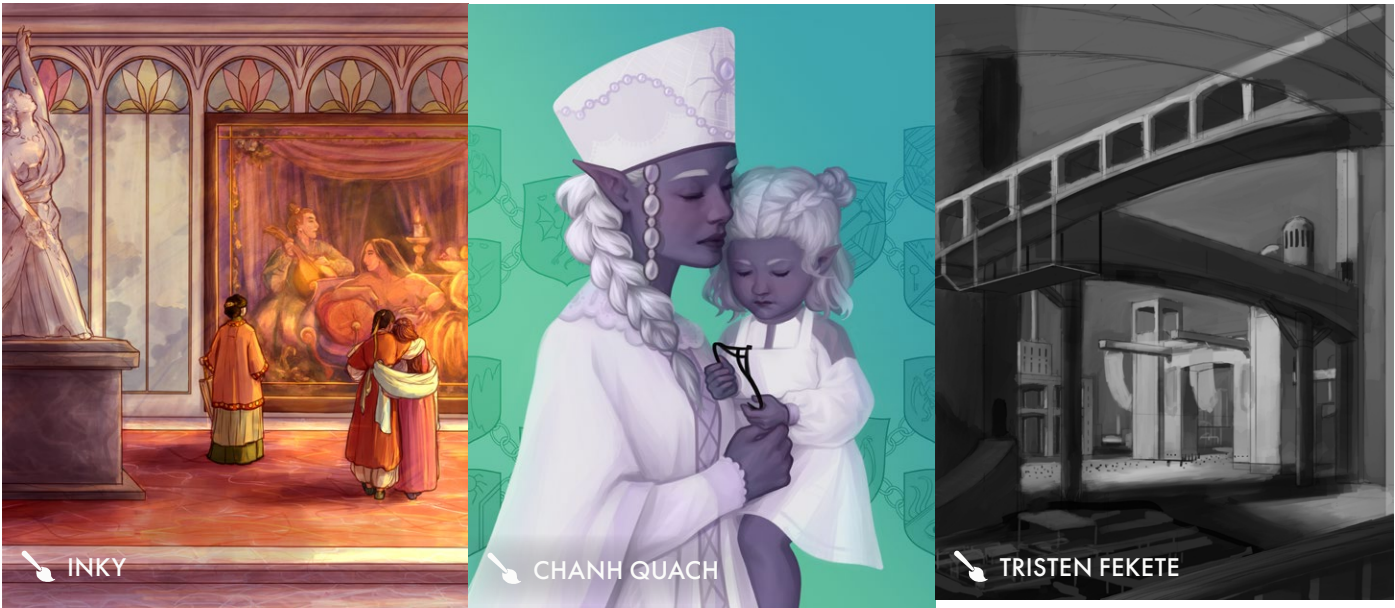


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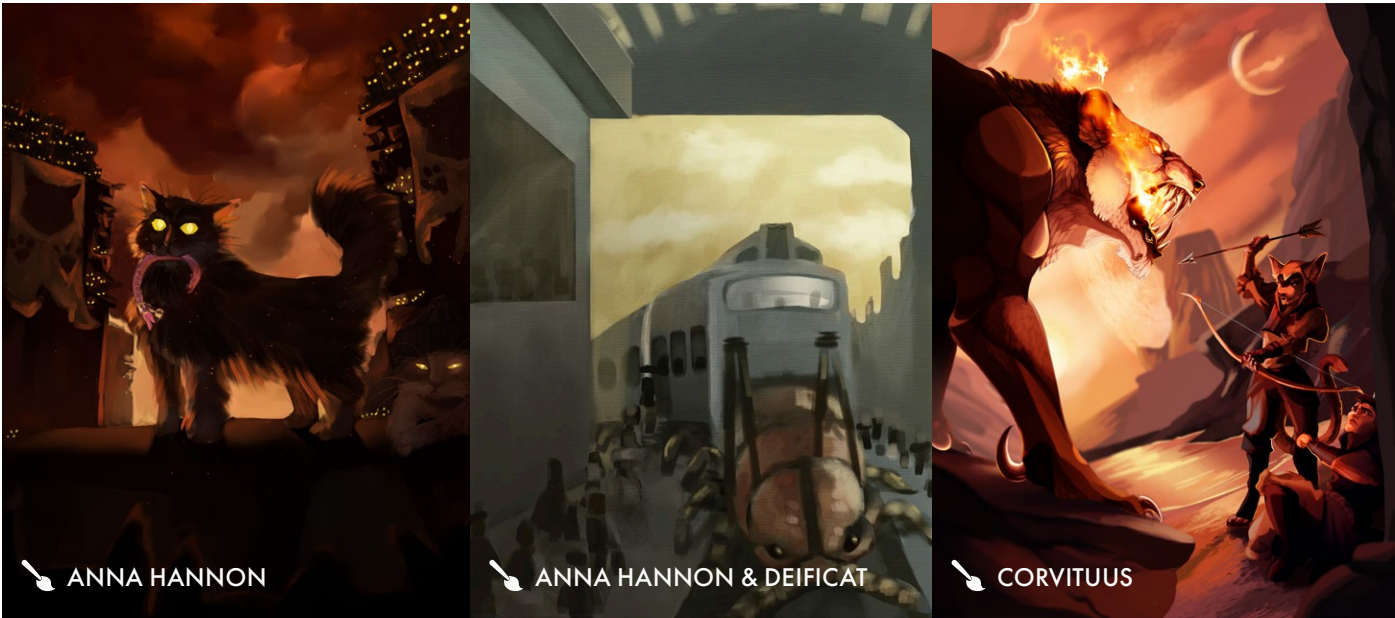
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THANK YOU

FOR ANOTHER YEAR OF WORLDBUILDING

Worldbuilding Magazine is kind of an insane project. We’re an international group volunteering our time to create resources for people who create worlds. Regardless, we pulled off another six issues—in 2020, no less! To everyone listed here, the staff and contributors and guests who participated in making this year a reality, thank you. And to everyone reading, we hope you’ve found something to inspire you in this year’s issues of Worldbuilding Magazine.



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WORLD SHOWCASE

REILLY KISSANE'S EKUNBI

Interviewed by Aaryan Balu



WRITING



INTERVIEW

Reilly Kissane has been creating *Ekunbi*, the homeland for creatures of legend. This is how she describes her world.

Ekunbi is a world parallel with the human world. This is where all fae, legends, and myths originated from. The fae have been traveling to the human world through a portal known as the flux tunnels, which is in the territory of Westroc, ruled by the dragon Jin Tian Shi.

There are 11 Territories, each of which has a ruler which is also a member of the Council or governing body of Ekunbi. The original Council (referred to as the High Council) included the more established territories: The Great Red Forest, Land of the Lake, The Glen, The Pine Forest and The Swamps and Boglands. During the Great War, a treaty was made that brought together the wilder territories: The Jagged Mountains, Land of the Clouds, The Plains, The Great South Desert, The Ice Realm and Westroc. These territories now make up the Grand Council.

What are some examples of the creatures of myth that reside there?

The creatures that reside in Ekunbi would include any myth the human world has ever heard rumor of—and a lot more besides. Some examples would include the puca of Ireland, the dingonek of the Democratic Republic of the Congo, the curupira of Brazil, te-tini-o-hakuturi of New Zealand, and of course all the more well known centaurs, pegasus, satyrs, elves, and trolls, etc.

Why did some of those creatures come to the human world?

The reasons fae went over into the human world varied. Some were scholarly and interested in exploring the human world, and some were trying to escape rivalries or harsh overlords. In the early days of the flux tunnels some were exiled to the human realm (a practice that was stopped shortly after Ekunbi realized the havoc these fae could cause amongst unsuspecting human populations), others simply wanted a chance at new territories.

As I mentioned, some fae cause havoc among the human population, giving rise to some of the more nightmarish fairy tales, while others are nothing but helpful to the humans around them.

We'll look at the dingonek then, famously seen and reported on by several travelers to the Congo. Originally they lived in the Swamps and Boglands Territory of Ekunbi. This territory is one of the harshest environments to live in and some very powerful fae come out of it. Several dingoneks left for the human world for a chance at an easier way of life. There they quickly occupied the rivers of the Congo. One of these dingoneks by the name of Oz was recently recruited by the dragon to mentor a human of the Congo and bring him back to Westroc.

The dragon, ruler of the flux tunnels, sometimes requests this of fae in the human world when he foresees a human in need and a fae who has strong ties to that culture. The pair will then come back to Westroc to attend Westroc Academy and learn how to survive the harsher elements of Ekunbi. Some of the graduates will become defenders of humans against unruly fae, some will guard the flux tunnels from unapproved fae, while others will be diplomats or gardeners, healers or craftsmen.

We could also look into the puca of Ireland, who has already been in several stories. Known as a trickster who often turns into a black horse and calls out a member of a household to go on a wild ride, he can also take the shape of a man and advise or warn a family against danger. The puca formed a pact with the High King of Ireland, Brian Boru, and ever since then has remained loyal to whichever clan he or she is a member of.

So there's a book set in this world. What are some of the primary creatures or regions that characters come across?

The first book is mainly set in the territory of Westroc, but some will also take place in the

Great South Desert territory. Some of the primary creatures would include the Puca, who is the mentor of the main character, the dragon, a troll who forges weapons at the academy, a wolpertinger who is responsible for the creation and maintenance of the flux tunnels, and a Curupira who mentors one of the MC's friends.

The territory of Westroc is a peninsula dominated by a colossal mountain on the cliff face of the western coast, from which it got its name. At the foot of the mountain is a valley in which lies Westville, one of three human villages in Ekunbi. The valley is surrounded by foothills which eventually give way to grassland where Westroc borders The Plains Territory. Being somewhat varied in terrain, Westroc has fae who are mountain-dwelling, hill folk, plains fae and although most of the coast is inaccessible due to the cliff faces, there is a bit of a coastal feel to it. It is a great melting pot of fae since it is the only territory who actively accepts transplants and is also the only place in Ekunbi with access to the human realm. The academy, flux tunnels, and military center are all located inside the mountain.

What are the people of Westroc like?

The dragon is a wise ruler with a dangerous past. He claimed the territory shortly before the Great War, which is considered ancient history to the fae. Westroc, being the most accepting of fae, would be a very unique territory to live in. Very different from the somewhat feudal way in which the wilder territories live and also different from the political intrigue that dominates the territories of the high council.

Westroc is a place where scholars tend to gather to share knowledge. For humans, it would absolutely be the safest place to live as many of the older fae dislike humans or look down on them. Humans took part in the Great War and helped save Ekunbi from being overrun by invaders so they have *some* protection, but that wouldn't

stop all of the fae, especially the tier two fae who are highly magical, but are not capable of thinking beyond that of animal instincts, or tier three fae who are very animal-like and have neither magic nor thinking beyond basic instincts and animalistic drive. There is still wilderness in Westroc, especially in the foothills, but the Rangers, the dragon's army, patrol the territory to keep the borders and lands within safe, or as safe as possible.

For a weaker fae, permission to live within Westroc's borders would be a safe haven. The next safest place to be would be in the neutral area where the Council meetings are held. It is not considered a territory of itself. The only village of humans outside of Westroc is in this neutral zone.

What are the social dynamics between Westroc and some of the other territories?

I would say the social dynamics could only be judged by the relationships between the rulers. The dragon is the champion of the border territories and openly liked by all the rulers of the Grand Council; the rulers of the original territories (High Councilors) fear or dislike him but are respectful to his face, with the exception of the Pine Forest Lord Goliath who is very good friends with the dragon.

Being a peninsula, Westroc only borders one territory, The Plains, and relations are good between citizens of both these territories. In fact, Chief Lightfoot, the centaur ruler of The Plains, was pleased when his daughter became a Captain in the Rangers of Westroc and is now teaching at the Academy there.

It would help more perhaps to look at the social dynamics between most of the High Council and Grand Council. The High Council feels they are very elitist and regret that the war forced them into peace with their "more primitive" neighbors; while the territories who joined the

council later chafe a little under the council's restrictions on fighting between territories.

Could you tell me a bit more about the High Council?

The High Council has been around since before any written recording. These territories form the main core of Ekunbi. The Forest of the Mighty Council (the neutral territory) is a nucleus in the center of these territories, with each of the original five territories touching part of this neutral zone. The rulers of the Great Redforest have historically been seen as the leader and most powerful fae in Ekunbi. Roma, Lord of the Reds, did not relinquish the seat at the head of the Council when it was expanded for the new members, although the dragon is arguably much more powerful than he. But the dragon, in the interest of peace, did not seek out the position for himself. In spite of this, Roma has feared he will attempt to upset the balance of power at some point.

The current Lord of the Lake, Napoli is pretty much a straight shooter and typically too infatuated with pageantry and his own reflection to worry about power. Still, he demands respect since it is his waterways that allow most of the trade in Ekunbi. Alvesta, the Swamp Lord, is a difficult read for anyone. She holds her cards close and looks way too intimidating for most to approach. Cinzano, Lord of the Glen, prides himself on the peace in his territory. It is a land of leisure with very few dangerous fae beside Cinzano himself. He is Roma's flunky though and rarely thinks for himself. Then there is Goliath, Lord of the Pines, who is a peacemaker. Life in the Pine Forest can be dangerous due to the numerous tier two and three fae. However, most will leave passersby alone so long as they keep their distance. The Pine Forest is also a place of learning and hosts a great library where scholars can gather and study.

How does the council make decisions, and what kind of things do they make decisions about?

The council settles any disputes between territories such as trade, borders, when to observe national holidays, permissions for fae to relocate between territories (if there has been disagreement about this). They use a voting system in which Imperial Sprites will fly a black stone or a white stone (representing "no" and "yes" respectively) to each council member. Each member will touch both stones but only one will be granted their power of vote. This is to keep other council members knowing which way an individual cast his or her vote. The stones are flown back to two basins. After all stones have been collected, the ones with the power of the vote will glow. An imperial halo (a fae without the ability to lie) will count each of the stones and announce the final result.

What are some of the larger conflicts that have come to Ekunbi?

The territories used to fight with one another to gain more land and resources. Then there was the Great War in which invaders from overseas tried to conquer the whole of Ekunbi. At the beginning of my current work-in-progress story, there is a dispute over the rulership of The Great South Desert. The acting ruler and son of the conqueror goes before Council and asks to be officially recognized as a Council member. For years the seat in Council had not been occupied because of the death of the former recognized ruler.

Humans' presence and abilities in Ekunbi are also a source of major conflict, but I'm afraid I cannot dive too deep into that without revealing too much of the book.

What was the inspiration for this world?

Well, don't laugh, but I had a dream about ten years ago that gave me the inspiration for the

puca. I built the world around that character based on what kind of a place he could have come from. My trip to Ireland helped further develop the storyline, but the world really came into being several years after I had started to toy with the idea of this character.

I should mention that reading your magazine helped me develop a lot of these ideas, and it's why I was so thrilled to hear back from you about showcasing Ekunbi.

Awesome! What's your favorite part of the world, if you had to pick?

I would have to say my favorite part about creating Ekunbi and writing the book has been discovering the myths, legends, and magical creatures from different cultures all over the world. I am always on the lookout for more obscure magical creatures to include in my books. A lot of people know the more common mythologies of Greece and Western Europe, and Japanese cryptids have gotten a good amount of traction in some circles. But we so rarely hear about legendary creatures from places like the Democratic Republic of the Congo, Brazil, Belarus, New Zealand, or dozens of other countries. So it was fun for me to delve into those cultures and learn about their traditions, fairy tales, and legends.

This interview was edited for Worldbuilding Magazine.

Thanks to Reilly for joining us! If you like what you heard about the world of Ekunbi, you can find her on [Twitter](#), or [website](#).

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

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A PODCAST BY WORLDBUILDING MAGAZINE



WORLDCASTING PODCAST

Worldcasting is a podcast led by hosts from Worldbuilding Magazine, plus special appearances by people such as Tim Hickson of *Hello Future Me*, plus Ed Greenwood, creator of the *Forgotten Realms*!

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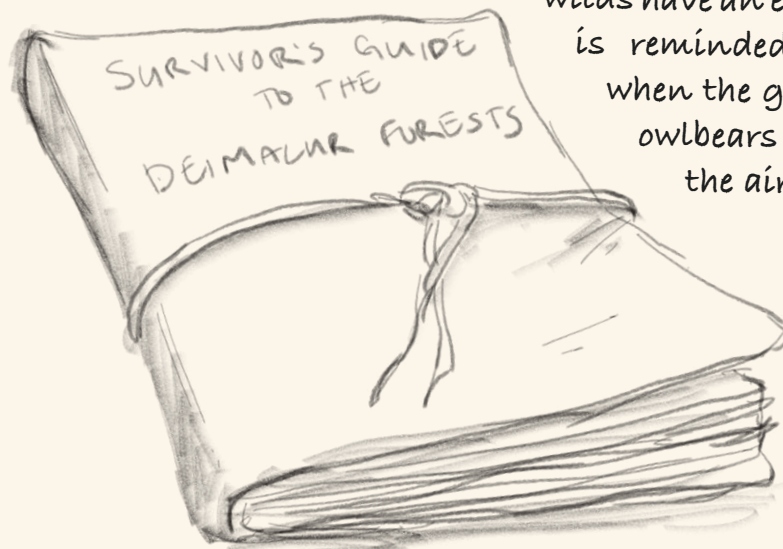
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by Adam Bassett

We all know of the forest-dwelling Imali peoples but few know more about them other than the fact that magic still runs in their blood. I journeyed into the wild alone last week. I was sure that I would make better time that way—and my usual companions were unable to make this trek. Now I wonder if I should have waited. Either I've made a wrong turn, or their village is further away than my map indicated.

I had a compass when this endeavor began, but something came prowling near my camp early in my trip and I seem to have left it behind. Since then, I've traveled with nothing but the stars as my guide, following the brightest among them to keep my northward path. It's easy enough to find in the night sky, though I worry I'll lose my way during the day. These woods are safe enough, but all wilds have an element of danger. One is reminded of this each night when the grumbles and howls of owlbears and dire wolves fill the air.



 ANNA HANNON

CIVILIZATIONS THRIVE IN ADVERSE ENVIRONMENTS

by Eleanor Konik, illustration by Ghranze

▲ HISTORY

The earliest human civilizations arose in conditions that were favorable for agriculture. Ancient river valley cultures gave rise to some of history's longest-lasting and most powerful civilizations, including the Egyptians and the Chinese.

This does not, however, mean that civilization arises exclusively in fertile floodplains, or that civilizations require the advantage of easy food production to do well. Although 21st century population density maps show urbanization centered around rivers, coasts, and temperate climates, humanity is a cosmopolitan species with permanent habitations on six of the seven continents. From the heights of La Rinconada, Peru (the highest human habitation in the world) to Oymyakon, Siberia (the coldest), we make it work.¹

Throughout history, humans have eked out homes in the most adverse places, surviving despite challenges that often seem insurmountable even to ourselves. But we've done more than survived—we've thrived, developing cities, complex governments, record-keeping, technological advances, and other hallmarks of civilization.

¹ I recommend looking at the population map maintained by Matthew Davis on his [website](#).

The Incas, Greeks, and Aksumites forged empires in the middle of vast mountain ranges, while the Venetians and Aztecs built their capitals on top of seemingly inhospitable marshland. The Mayans inhabited a jungle so thick that we've only recently managed to find signs of their remains, while the Nabateans forged a civilization in the middle of the Arabian desert.

MOUNTAINS

A cursory glance at a modern map shows us that mountain ranges, like rivers, make good borders. Mountainous terrain is difficult to cross and easy to defend, and the cultures that arose in it were often distinct, with roots reaching back centuries beyond the prevailing political situation. The Basque people of the Pyrenees Mountains were responsible for Charlemagne's only real defeat at the Battle of Roncevaux Pass.² To this day they are fighting for their independence from France and Spain. The people of Kurdistan, native to the mountainous region between Iran and Turkey, have built a reputation as skilled warriors while fighting for their independence.³

People who live in mountains are often more skilled in war and raiding—consider why this is. What resources are lacking in mountainous terrain that led people to fight instead of cooperate, and how can these issues of scarcity be solved? For example, mountains often have poor, rocky soil. Aggressive composting on an urban scale can work wonders. Is erosion a concern? Consider building terraces! Do impassable cliffs make trade and communication difficult? With enough manpower, even the mountains will move; the Romans tunneled straight through the Alps to ensure the swift movement of mail and their legions.

Throughout history, mountainous civilizations have maintained stable food surpluses and swift communication with outlying regions despite the challenges of their terrain. The Aksumites, Phoenicians, and Greeks were all located in or were restricted by coastal mountain ranges and relied primarily on sea trade for their prosperity.

TIP: Check out our [Transportation issue](#) for more worldbuilding resources about travel, roads, and shipping.

² Anne-Marie Chiramberro. "How the Basques defeated Europe's greatest army and how history erased them," History. *Hella-Basque*. August 22, 2019. Retrieved October 31, 2020. <https://www.hellabasque.org/basque-victory/>.

³ "Who are the Kurds?" Middle East. *BBC News*. October 15, 2019. <https://www.bbc.com/news/world-middle-east-29702440>.



The Aksumites lived in the Ethiopian Highlands, which are home to some of the most consistently high elevations in Africa. Though the land was fertile enough to support agriculture before the civilization's decline, Aksum's prosperity was largely due to the luxury trade.⁴ Like many similarly mountain-bound civilizations, Aksum was a trading center with a powerful navy. Aksum exported agricultural products, minerals, and precious materials like gems and ivory in trade for silk and spices from Asia. They were at the center of a major maritime trading system linking the Roman Empire with India and controlled the Red Sea trade for many years.

Phoenicia was a civilization of disparate city-states, united by culture rather than government. Tyre, located on a spur jutting from Lebanon into the Mediterranean Sea, is one of the oldest continually inhabited cities in the world. To the east of the metropolis of Tyre stand the Lebanese mountains—a welcome source of precious metals and shipbuilding cedar for the Phoenicians—who traded these resources with Egypt and other Mediterranean powers.

Like the Phoenicians, Ancient Greek city-states traded extensively, especially with southern Europe and the Levant region. Many Greek city-states established coastal colonies and sold what few quality exports they could produce in the poor soil of the Pindus and Peloponnesian Mountains, namely wine, olive oil and the accompanying pottery.

The key takeaway from this is that when placed between the sea and a mountain range, most civilizations will choose to take to the sea and trade, even if that means establishing satellite colonies to trade with. There are, however, exceptions.

⁴ Mark Cartwright. "Kingdom of Axum," *Ancient History Encyclopedia*. October 25, 2020. https://www.ancient.eu/Kingdom_of_Axum/.

The Inca Empire is perhaps the best-known mountain-based civilization. The Andes Mountains had an enormous impact on Incan civilization, which developed in isolation from Eurasian trade and cultural diffusion. Unlike the previous examples of mountain civilizations, the Inca didn't live in isolated valleys and ports, trading by sea. They built roads and terraces into the mountains themselves, traversing valleys by bridge and eking out a precarious living on the mountainsides. Because of the difficulty of traversing the mountains, Andean civilizations did not use wheeled transportation—with so many stairs and rope bridges to traverse, carts and wagons were impractical.

When crafting a world where creativity is a goal, consider how the limitations of the environment can be overcome. If there are no trees or clay deposits, or lime for parchment, how might records be kept? If weight isn't a concern, might someone etch thin sheets of rock or metal? What animals are available for hauling? Would basket-and-pulley systems be feasible?

MARSHES

Before an unknown catastrophe—most likely a drought—felled the Mayan civilization, the Amazon rainforest was home to a booming empire with flourishing cities, vast agricultural output, and towering intellectual breakthroughs.⁵ Although the region the Mayans controlled is often thought of as a jungle, the Mayan heartland was actually an infertile wetland before they built canals to drain the excess water and raise up the landscape for growing. These "floating gardens" allowed the people of the Amazon to support agriculture and provided land for urban areas.⁶

The Aztecs did something similar on Lake Texcoco. The original Aztec settlement was on an island in the middle of the lake, and when the capital outgrew the available land, the Aztecs built "floating gardens" called chinampas in order to extend the available land. They dredged channels into the swamp, then piled the mud and decaying plants onto artificial islands stabilized with reed fencing. To maintain the chinampas in the face of seasonal flooding, farmers created complex drainage systems. In addition

For an excellent example of how to make mountains a vital part of your setting, consider Anne McCaffrey's Pern. Settlers built their civilization under threat from a voracious organism that came from the sky and destroyed all organic matter it came into contact with. They carved halls and homes from stone mountains and volcanoes and bred beasts of burden to help them communicate and protect vital cropland from attack. Every aspect of society was informed by the environmental threat, and the bunker mentality that came from living underground.

⁵ Robin Wylie. "Severe Droughts Explain the Mysterious Fall of the Maya," *Earth*. BBC, February 22, 2016. www.bbc.com/earth/story/20160222-severe-droughts-explain-the-mysterious-fall-of-the-maya.

⁶ Erin Blakemore. "Amazon Jungle Once Home to Millions More Than Previously Thought," *National Geographic*. March 27, 2018. www.nationalgeographic.com/news/2018/03/amazon-jungle-ancient-population-satellite-computer-model/.

to the initial infusion of compost from the decaying swamp matter, farmers fertilized the chinampas with human waste collected from the urban centers. This helped keep human waste from entering and poisoning the water supply.⁷

The thing to remember about water is that—although it is as critical as sunlight for the growth of most crops—too much can be just as problematic as too little, and the challenge of keeping it clean should not be underestimated. Disease is just as much a threat to survival as starvation or war.

The Medieval Italian city-state of Venice didn't let marshland halt its progress either. Since the lagoon community was originally founded as a trading post and later became home to Roman refugees who banded together to create a republic in the face of local threats, it had a different social structure and therefore different agricultural needs compared to analogous empires. Rather than eliminating the marshes or covering them up, the Venetians relied on the disease-infested swamps to help defend them from attackers. They built bridges, canals, and stone fortifications but integrated with the sea rather than overcoming it. With their incredible navy, they were able to control substantial portions of Mediterranean trade, including control over the Adriatic Sea.

When crafting a world where creativity is a goal, consider how different aquatic challenges might be handled. If “swamp fevers” like leptospirosis or malaria are a major threat, people might wear clothing that keeps their skin from being exposed to mosquitoes or bacteria. They might mythologize biting insects the way some cultures view crows. On the waterways, mapping changeable routes might become a key form of recordkeeping. Divers and dredgers might attain the high status that firemen in other cultures see. Canoes, rather than carts, might become the most common form of transportation—consider how their form might differ depending on the nature of the marsh, the depths of its channels. Would keels be suitable? Paddles? Or would a flat-bottom boat moved via poling be more suitable?

To see an example of a fantastical civilization centered around people surviving in a toxic swamp-land, check out the excellent worldbuilding in Robin Hobb's Rain Wild Chronicles. The rich history of the world grows out of the environment, particularly its flora and fauna. The struggle to eke out enough resources to live on is evocative. The adaptations people make in order to survive are a great example of humanity's boundless ingenuity.

To take it one step further, consider a world in which dry land is nothing but a myth. Waterworld, starring Kevin Costner, shows what civilization might look like if everyone lived aboard ships on a world dominated by oceans. The worldbuilding is not, perhaps, as robust as it might have been — but the premise is clever and the unyielding spirit of humanity is on full display as the characters fight to survive despite living in the opposite environment from which humanity evolved.

⁷ Amanda Pell. “Chinampas: What They Are, How They Work, and Why They Matter Today More than Ever,” Most Shared. Upworthy. December 12, 2017. www.upworthy.com/chinampas.

⁸ International Water History Association. “Qanats,” *WaterHistory.org*. Retrieved October 27, 2020. www.waterhistory.org/histories/qanats/.

⁹ Taflin Laylin. “How an ancient civilization flourished in the desolate Arabian desert 2,000 years ago,” *Water. Inhabitat*. July 12, 2016. inhabitat.com/how-an-ancient-civilization-flourished-in-the-desolate-arabian-desert-2000-years-ago/.

DESERT

The key to surviving in the desert is, of course, water. *Qanats*, like those built by the ancient Persians, are underground water-supply systems that function similar to aqueducts. Because they run underground, they don't suffer water loss from seepage and evaporation.⁸ They are dependent on underground water tables, but in true deserts, they can prove unreliable as these water sources dry up.

In Arabia, the Nabatean people hid water cisterns in defensible locations throughout the desert, which helped them solidify their power. The construction of their capital—Petra—was a massive feat of engineering. Skilled workmen cut channels into the rock walls and created cisterns and reservoirs lined with cement to ensure the water stayed where they wanted it. They left no possible water preservation method unexplored, carefully measuring gradients and creating diversion systems for the flash floods common in the region. Terraces controlled runoff systems and prevented erosion, allowing the Nabataens to cultivate drought-tolerant plants like olives, dates, pomegranates, and figs.⁹

Yet the Nabateans were not living at subsistence levels. Like Las Vegas—the USA's quintessential desert city—Petra was home to large, open fountains. This, and their creation of safe trade routes through the desert allowed them to patronize the arts—a key indicator of a thriving civilization.

Civilization, whatever the precise nuance of its definition, implies more than desert warriors wandering through the sands, herding animals from oasis to oasis and eking out survival in the heat of the day. Although many cultures have occupied the world's deserts over the thousands of years of humanity's existence, most human civilizations have thrived in deserts thanks to their control of trade, which is something to bear in mind when creating a fictional example.

In Medieval Africa, the city of Timbuktu leveraged its control of the gold and salt trade through the desert to stand as the capital of several West African kingdoms, including Songhai, Ghana, and the famous Mali, which was wealthy enough that its ruler, Mansa Musa, famously destabilized the value of gold in Cairo by giving alms to the poor on his way to Mecca. Although the climate has changed significantly since the city's heyday, its status as a powerhouse of desert trade was the secret to its flourishing.

The ur-example of desert worldbuilding is, of course, Frank Herbert's Dune. The harsh environment is key to the story and Herbert does a masterful job of displaying human ingenuity and the struggle to survive despite extreme adversity.

But my favorite example of exemplary worldbuilding in a desert environment comes from Michelle Sagara West, whose Sun Sword series is told from the perspective of women from the desert rather than an Imperialist savior. In the Sun Sword series, the desert is omnipresent and oases are key to civilization's hold on the empire, but the desert is not a monolithic expanse of unrelenting sand. It feels real, and the people who live in the Dominion of Annagar do too.

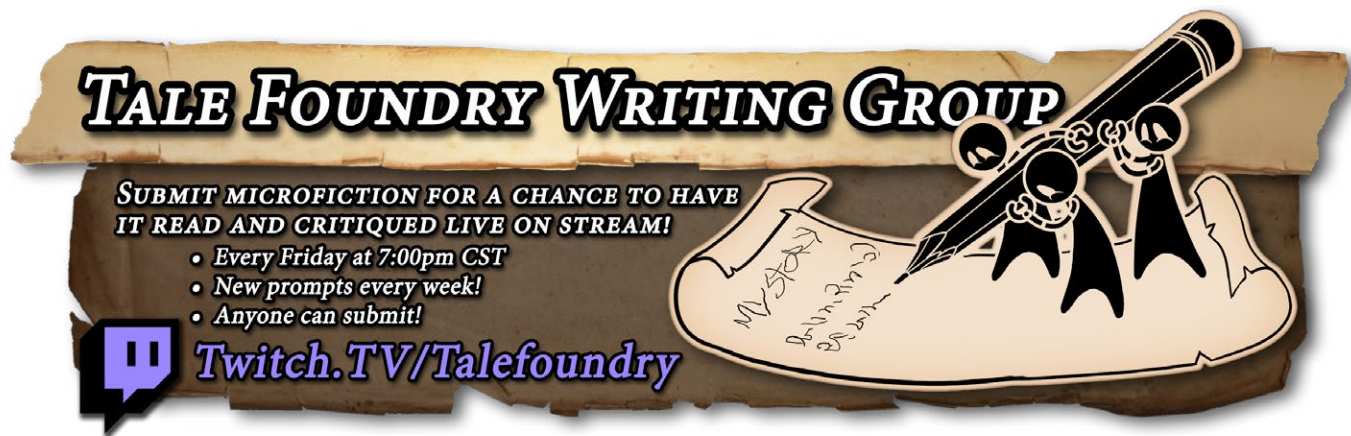
Water is key to a city's presence in the desert, but there are many ways a fictional society might acquire such a vital resource. Qanats and cisterns deep below the earth, protected from the heat of the sun, are one way. Another might be importing in exchange for a valuable resource controlled by a desert kingdom. A civilization with sufficiently advanced technology might extract water from minerals like talc. Such a society might be secretive, to ensure control of secure paths through the desert, or warlike for the same reason.

TAKEAWAYS

A civilization is, at its core, a complex society resulting from urbanization. Food surpluses allow labor to be divided into specific jobs, which allows for formal recordkeeping and dedicated craftsmanship. Civilization coalesces around groups of people coming together to survive in large numbers. Collaboration and cooperation allow humans to overcome even the most extreme environmental challenges.

The key to survival is willingness to change. Whether that means adapting to their environment, or changing it to suit their needs, humans excel at surviving in adverse conditions. History offers a wealth of different examples in which people have adapted to difficult environments, but many more are possible. Earth may not offer many instances of complex societies emerging from the tundra, but *The Girl and the Stars* by Mark Lawrence imagines what such a civilization might look like brilliantly. What might a civilization arising in the depths of space look like?


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The banner features a parchment-like background with a torn edge. On the right, there's a cartoon illustration of two characters in dark robes and hats, one holding a quill pen over an open book. The book has some handwritten text on it.

EXCLUSIVE INTERVIEW

BRIAN MCCLELLAN

Interviewed by Adam Bassett

 WRITING  INTERVIEW

Brian McClellan is an American epic fantasy author known for his flintlock fantasy *Powder Mage* series, which recently concluded its second trilogy. He is working now on a new epic fantasy and a self-published series of urban fantasy stories. Brian sat down with us to talk about these works, the lessons he learned from them, and about publishing.

Hi everyone! I'm Brian McClellan, and I write fantasy novels for a living. My first book, *Promise of Blood*, is a flintlock epic fantasy that came out in 2013. It opens with the overthrow of a traditional monarchy by a group of powder mages—people who can imbibe common gunpowder to gain magical powers—and follows our heroes through the war that follows. There are two trilogies in the *Powder Mage* Universe, as well as a number of short stories and novellas that follow side-characters and fill in the backstory.

The *Powder Mage* books are done (for now) and I've moved on to a new epic fantasy, *Glass Immortals*, a series I sold to Tor last fall and should be out in 2022. In the meantime, I'm also working on an urban fantasy series, *Valkyrie Collections*, based around a collection agent who works for the supernatural out of Cleveland, OH. This is meant to be a counterpoint to my big epic fantasy novels. It's short and punchy, and has two books out so far (*Uncanny Collateral* and *Blood Tally*).

The Powder Mage universe contains four types of magic systems: Bone-Eyes, Knacked, Privileged, and the titular Powder Mages. How did you come to create each, and why? Perhaps most importantly, how did you balance the four magic systems and communicate what they meant to the reader?

The four magic systems are, in retrospect, way too much and made me a victim of my own enthusiasm. I went into it with the idea that I'd have three systems to mirror the three social classes of the real-world time period equivalent. Privileged were the entrenched upper class, Knacked were the lower class, and Powder Mages were like the rising middle class that occupies a sort of middle between the two.

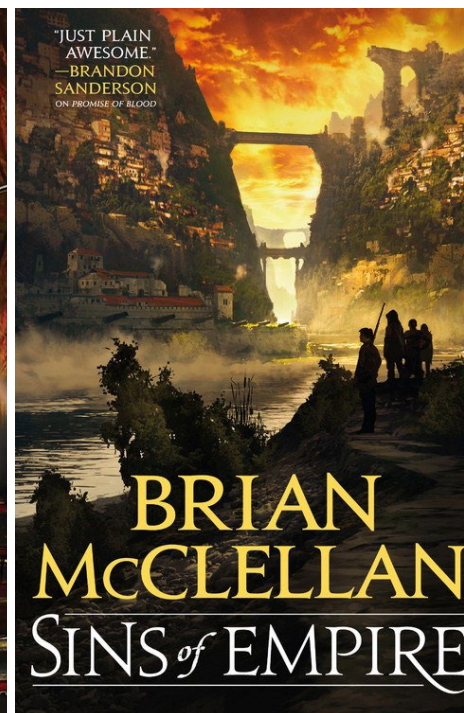
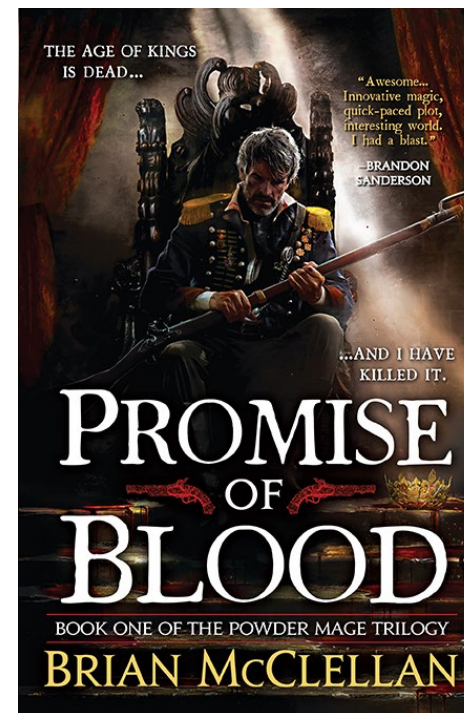
Balancing them was kind of a pain in the neck (hence calling myself a victim of my own enthusiasm) and I never really succeeded in giving them equal time on the page. The Bone-Eyes



EMILY BISCHOFF

were meant to be something apart from the status quo: something older, perhaps lost in this part of the world. They are explored in much more depth in the second trilogy, starting in *Sins of Empire*.

If I recall correctly, you've commented before that you created some of the world on a whim, including the character of Mihali, who had quite the impact on the story! First, how did you handle worldbuilding on a whim like that, and work it into the narrative and world? Additionally, I know for your next major series (The Glass Immortals) you've said in an interview with World Anvil that you've only completed part of book one and yet you already have more worldbuilding for it than you ever had for the entirety of the six Powder Mage books. What lessons did you learn from them that you are changing as you develop the world of The Glass Immortals?



Mihali was one of those characters that survived from a mostly rewritten first draft. Originally he was going to be a marginal side character, imported from a short story I never sold in which a traveling cook-magician helps small towns against marauders. But his role just seemed to grow, and I fell more in love with him, and by the time I was on the second draft I realized he would be a central character to the overall plot. It helped that people really seemed to love him.

The biggest thing I learned from *Powder Mage* is that throwing stuff at the wall to see what sticks is a really frustrating way to build a world. I managed to get through it with enthusiasm and a lot of writer trickery, but I would prefer not to have to do that in the future.

On the note of lessons like avoiding “throwing stuff at the wall” when worldbuilding, what lessons are you learning now from your other projects—the Valkyrie Collections and The Glass Immortals?

This is a lesson that I have to relearn each time I start a new series. I'm definitely getting better at it, but I still struggle with overcomplicating my first drafts. Luckily, I'm better at the editing process so I'm not suffering from my mistake of “throwing stuff at the wall” in the final draft. What hurt me in *Powder Mage* was that all the stuff that made it into *Powder Mage* was then canon and I had to reference it (or in some cases quietly minimize it) in the sequels.

In a short piece on writing that you wrote for Tor.com, you commented on having trouble writing the sequels to A Promise of Blood. Eventually, you were told that you “didn't have



Promise of Blood cover art by Gene Mollica and Michael Frost, design by Lauren Panepinto

Sins of Empire cover art by Thom Tenery, design by Lauren Panepinto

Uncanny Collateral cover art by Shen Fei, design by Shawn King

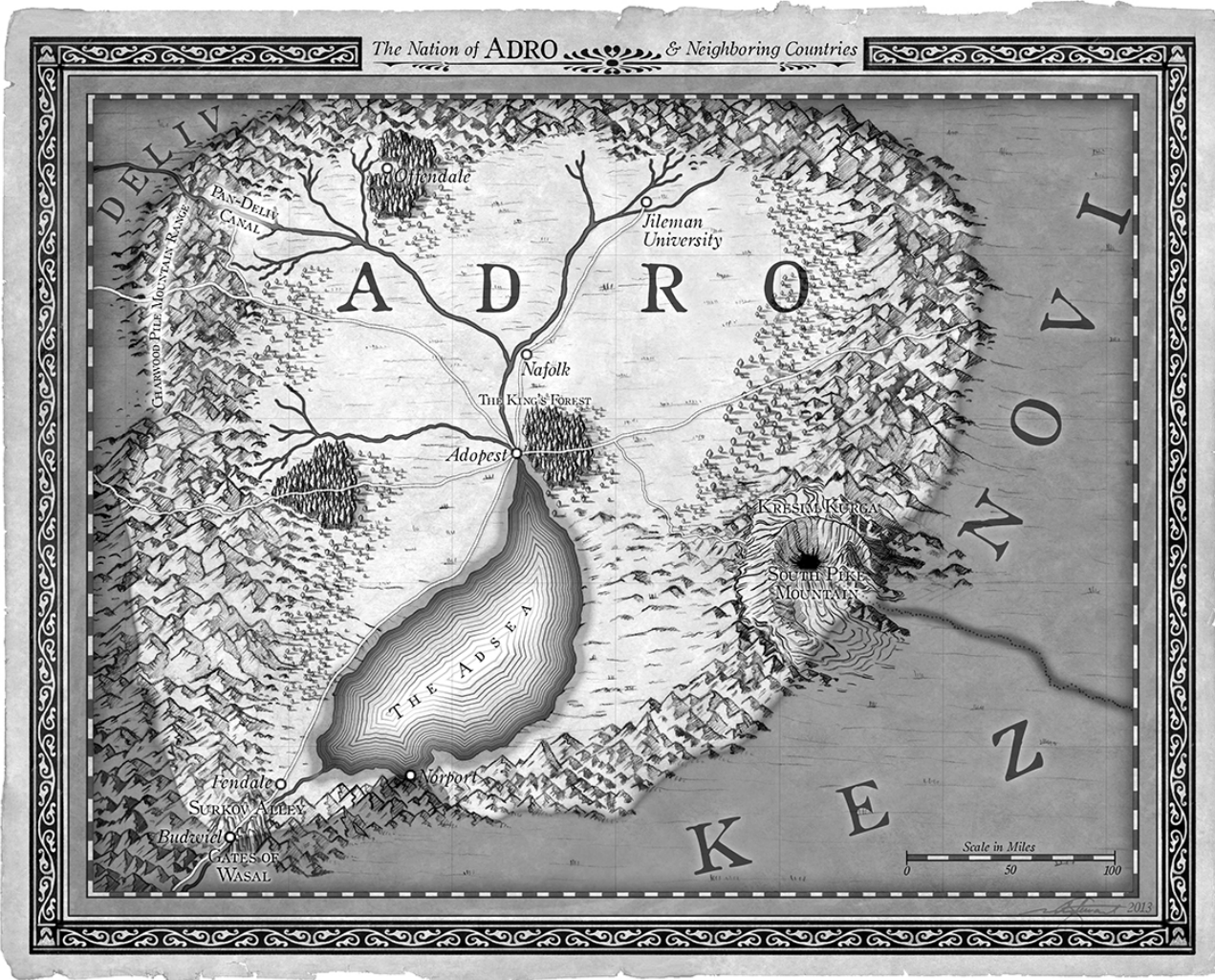
to stick to that original summary for books two and three.” You just needed to write a good book. How did that piece of advice from your agent change the trajectory of the story?

The original outline for books two and three [of the first *Powder Mage* trilogy] were way bigger and more expansive. They brought in the Dynize Empire and explored blood magic and did a whole bunch of stuff that eventually ended up in the sequel trilogy. The problem with this is that it introduced too many things too quickly to the story, and made it a muddled mess of excessive worldbuilding. My advice to people having a similar problem: simplify. Even (or perhaps especially) massive epic fantasies need to have a simple central plot that the reader can follow easily.

You set your self-published series, the Valkyrie Collections, in Cleveland, Ohio. How did the fact the story was set in our world change the process of worldbuilding for it?

Setting a book in the real world, even if it’s a magical facsimile of the real world, requires you to actually know the area you’re writing in. I grew up just outside of Cleveland, and had the idea for *Valkyrie Collections* while working in the call center of a collection agency, so I already had a decent grasp of the setting. I built out the magic with an eye toward making it fun rather than strict, so I could kind of do whatever I wanted in that regard.

ISAAC STEWART



The self-publishing part was simple enough because I’d already gone through that process with my *Powder Mage* novellas. Leaping to a self-contained story allowed me to play with advertising and promo a little more freely, but was otherwise nothing new to me.

What sort of research goes into your projects, and how does it inspire you?

I don’t do a lot of research for my books. The whole “having to get details right in a real world sense” is a huge turn-off creatively, and one of the reasons I write secondary world epic fantasy. When I actually do research, it’s usually simple stuff like how far an army can march over rough terrain in a day.

That being said, I look for a lot of inspiration in real-world history and that’s where I usually start with the story. For example: I recently listened to *Chuchhill’s Ministry of Ungentlemanly Warfare*, [a book] about the spies and saboteurs that fought in World War II. The individual stories of these people help me sketch out narratives in my head, from actual events to character psychology to side tangents that can give my own books a really interesting flavor. I might be writing secondary world fantasy, but this kind of thing helps me make it feel real to the reader.

What are some difficulties you ran into when seeking an agent/publisher? What tips might you be able to give the rest of us who are interested in that path?

I was actually very fortunate in that my trip down that road went relatively smoothly. Write a good book, write a good query letter, and don’t take rejection personally.

Thanks, Brian. Before we go, do you have any quick hints at what we can expect from you in Glass Immortals?

I think both regular and new readers will be pleased. It’s a whole new universe with a new magic system, new politics, characters, etc. But it will also feel familiar with that 1800s aesthetic of an industrializing fantasy world. I lean more into the industrializing part [in *Glass Immortals*], and play a bit more with the political aspect; but there will still be big battles, character drama, magical duels, and all the other cool stuff readers have come to expect from a Brian McClellan book.

This interview was edited for Worldbuilding Magazine.

Thanks to Brian for taking the time to talk with us for this issue! You can find him and his work on [Twitter](#), [Goodreads](#), [Amazon](#), and [Facebook](#). Or, check out his [website](#).

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THIRTY-THREE TALES OF WAR

STORIES TWENTY-NINE TO THIRTY-THREE

by Emory Glass

 FANTASY (HIGH)  FANTASY (DARK)  CULTURE

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](#).

XXIX: CASTER

AND so,” the Caster said to the Academy board, “It is my belief that, with proper care and attention, all three disciplines of anatomancy *can* be taught and used in a safe and benevolent manner.”

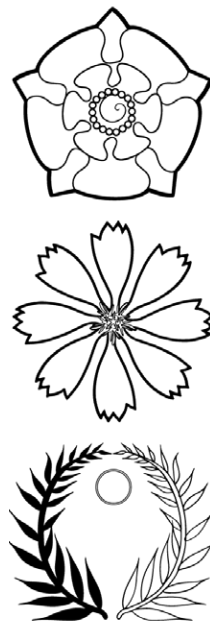
The Academy sat back in their chairs, some looking bored, others downright hostile. The Caster breathed in quick, shallow puffs. This could end the war if the Academy only gave it a chance.

“And whose responsibility might it be if this becomes another Mazrija?” One of the scholars asked.

“Let’s not catastrophize now,” the Caster replied.

“Another *Mazrija*? What about another *Moonwar*?” Someone else interjected.

“It—” the Caster’s voice was cut off by a rising chorus of voices.



“The entire Nastkatev Order was laid bare by a single anatomancer and you expect us not only to condone its use, but to *teach* it?” asked someone from across the meeting hall.

“That was a unique and unusual—”

“I motion to deny tenure on the basis of this research subject being dangerous, inconsistent with this Academy’s values, reckless, and *highly* suspect,” another voice called on the crest of an emphatic glut of “Yea.”

“But what I’ve found indicates that—”

“Who oversaw this so-called research? Which one of you signed off? Are you willing to personally shoulder the burden of another Mazrija, another Moonwar, another Nastkatev Order, another Bendrasif? Who will stick out their neck on the mere possibility that reintroducing a dangerous, volatile, chaotic—”

“May I speak, *please*?” the Caster shouted.

Dead silence overtook the meeting hall. Sweating, the Caster exhaled. “Sorry. Sorry. No need to be rude, I understand, but my research was funded by this very Academy and the thought of wasting my life on—on something no member of this faculty is willing to entertain the idea of is simply—” the Caster fumbled for words. “Simply disheartening and indicative of a greater problem with the state of academia and scholarship in this day and age. There. I’ve said it. That you are unwilling to see this from another point of view is extremely frustrating and frankly anti-intellectual. I urge you to consider that this is a discipline worthy of further consideration and study. The impact of the organized and well-controlled education of promising casters in the art of bloodhealing alone would be nigh-on immeasurable.”

The section headmasters, who encircled the Caster in the first row of tables and chairs, conferred with one another for long enough that the Caster began to think they may have actually listened. But, when the Headmistress of Essencecasting stood, the Caster knew the end was nigh.

“The Academy has elected to deny further funding or cooperation for research concerning this or related topics,” she stated. “We regret to inform you that you’ll have to find another subject to earn your tenure.”

XXX SPY

SHE knows,” the Spy emphatically said to the man. “Your wife knows, and if you choose this, she will have you *and* your lover killed.”

“Why do you care?” He hissed, looking around the moonlit garden they stood in, which surrounded his mistress’s house. “What does it matter?”

“Your insatiability will lead us all to ruin,” exclaimed the Spy. “Have you not read the letters she writes? Do you not know she waits for you in Nilova? Can you even imagine the danger your wife has put herself in *just* to see *you*? Her husband, her *betray*er?” The Spy huffed. “You are here for one reason and that reason is to ensure the war is won, yet you insist on sleeping with the enemy.”

“The *enemy*?” The man chortled, raising his voice ever so slightly. “She has just as much a stake in this menagerie of lies and treachery as me, you, or my wife. She is on our side.”

“Is she?” The Spy laughed. “Then you won’t have the slightest problem with telling her the next time you lay eyes on her that you’re married and that your wife is—”

“Shut your fucking mouth,” he snarled. “I will not put her in any more danger than she’s already in. Never. If my wife wants to be angry, let her be angry—let her kill me if she wants. But I will not let my Lady be abused and mistreated anymore than she already has been. It’s cruel. *Cruel*.”

“*Your Lady*,” the Spy mocked. “Tell me—do you really believe your lady loves you? That she would care for you at all if necessity did not bind you? I know your lady well, you fool, and someone like you could never compete with the one she truly loves.”

“To protect her is enough,” he strained to choke out.

“It will *never* be enough.”

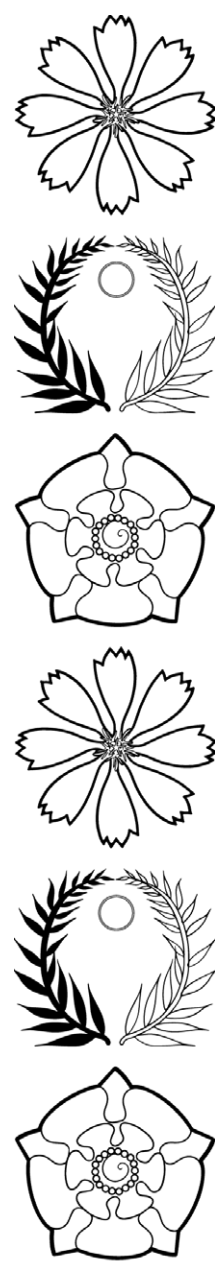
“I—”

“Hello?” Called the voice of their Lady near the garden gate. Soon she appeared, looking as stunning and dazed as ever, no doubt having eaten one too many tablets of poppy leaves. “Hello? Who is there?”

“Just me, Your Elegance, and your maid,” the man replied.

Their Lady drew nearer, asking, “What are you arguing about?”

“Your *maid* has stupidly forgotten to prepare your outfit for tomorrow’s performances.” The man cast a sidelong glance at the Spy. “I know how important it is to you that everything is prepared the night before.”



The Spy bowed her head toward her Lady, as she had been taught. “I am foolish and wrong, Your Elegance. Please reprimand me as you see fit.”

“No, no, there’s no need for that...” her voice trailed off into the night.

The Spy cloaked her wolf-like smile with a sheepish grin. “Thank you, Your Elegance. I am unworthy of your benevolence. Shall you sleep soon?”

“Yes, that would be nice.”

The Spy took her arm and led her indoors, glaring at her true mistress’s husband as she passed. Only fools and simpletons believed that a bud could blossom with nothing more than hope.

XXXI APOTHECARY

WHAT do you mean you’re out of honey? How is it possible for an *apothecary* to be out of honey?”

Pressing her lips into a thin line, the Apothecary put her hands on the counter and, head bowed, told the healer, “I told you three times already: there was an attack at the monastery last night and we donated everything we had to keep their wounds clean. We don’t have any more and we won’t for some time. The roads are treacherous and the vendor won’t be by until it’s safe. I can give you garlic instead.”

“*Garlic*?” the healer scoffed. “What will I do with *garlic*? I need *honey*!”

“Then I suppose you’ll have to find another apothecary.”

“No, I suppose *you* will need to go down to that monastery and bring it all back. You can’t just *give things away* at a time like this. And to a bunch of monks and nuns? They’re useless! This is *war*.”

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The Apothecary drew in a long breath before replying, “They provide essential services to the townsfolk. Everyone needs a bit of hope right now. That’s their use. Hope.” She crossed her arms. “Unless you’re going to buy something, you need to leave. You should still be able to make it to the apothecary in Zagleskrod if you don’t tarry.”

The healer sneered. “Thanks for nothing, I guess.”

The door slammed shut behind them, rattling the jars and ceramic pots lining the shelves in the tiny shop. Drawing in the silence, the Apothecary withdrew a stack of parchments from beneath the counter and read the first order. Sighing, she went to the garlic hanging in the corner and pulled down eight heads. That customer would be the first of many for the day.

XXXII JAILER

THE Jailer spun a wooden chair around and plopped down on it, elbows resting on his knees, hands clasped, and head lowered to glower at the woman in the tiny stone cell before him. The prisoner had only just arrived, but her mere presence made his blood seethe with rage. He ran his tongue along the inside of his cheek, nodding his head ever-so-slightly.

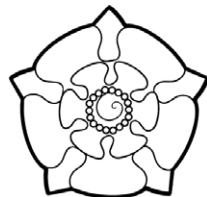
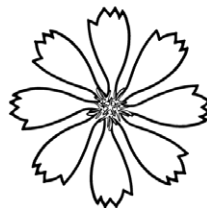
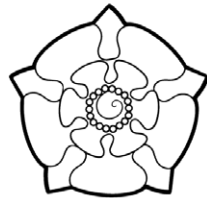
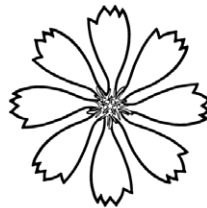
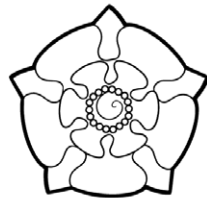
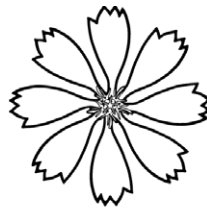
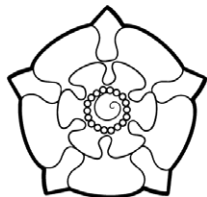
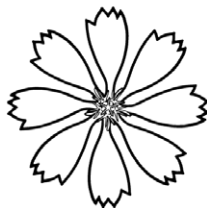
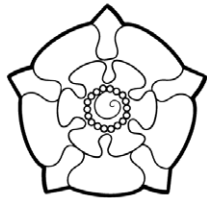
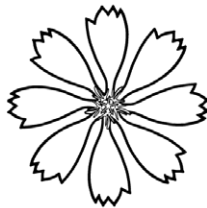
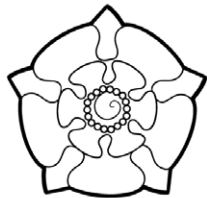
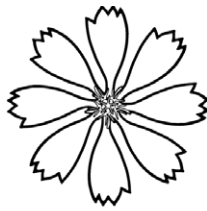
“You deserve this,” he finally said, nodding more assuredly now. “You and all them caste whores for what you’ve done to our federation, our traditions, our lives. But you—” The Jailer wagged his finger at her. “You especially. You’ll die for it, and good bleeding riddance. You aren’t worth the rope they’ll hang you with.”

The prisoner said nothing. She was skeletally thin, with chapped lips, frayed nails, and a thick layer of filth and grime caking together her once-silvery hair.

If the Jailer didn’t know any better, he would think she was just some street urchin carried in from Misgrad for pilfering crusts of bread. “Ain’t you got something to say?”

When she didn’t answer, the Jailer sprung up, knocking the chair aside, and rattled the portcullis bars. “Speak!” Spitting and swearing, he lifted the chair by its backrest and broke it against the bars. He jabbed the splintered end of a leg at the prisoner. She recoiled, wincing when he managed to dig in hard enough to draw blood. He grinned and yanked the chair leg back.

“I hope they torture you,” he chuckled. “I hope they drive hot iron under your nails and chop off your hair. I hope they break your kneecaps and brand your cheeks. I hope they rip out your teeth one by one and shear off your skin until you’re nothing but a pile of bloody flesh. Then, when you’re good and ready, I hope they hang your corpse from the redoubt walls in case any more caste whores forget their place.”



Finally, the prisoner looked him in the eye and murmured something he couldn’t quite hear. He thrust the chair leg at her again. She raised her strained voice and asked, “Why are you so angry?”

The Jailer’s stomach dropped, but he sneered at her and scraped her arm. “Why am I so angry?” he asked, jabbing her again. “That’s none of your damn business, you dumb bitch.”

XXXIII ROPEMAKER

LOTSA ropes this week,” the Ropemaker said as she began loading two score bundles of rope from the ropery porch into the back of the gallowsman’s cart. “Working overtime?”

The gallowsman grunted and remained hovering at the cartside, saying and doing nothing.

Taking it in stride, the Ropemaker kept moving. Most folks didn’t care to speak more than was needed lest the Rosehearts raise a stink about it. Since the invasion of Sosna Chonok—and the Blue Queen’s death—the air in Kandrisev had become downright putrid.

“These all, you know,” the Ropemaker asked as she hoisted a particularly heavy bundle into the cart, “for the condemned?”

“Wouldn’t tell you even if I could say,” the gallowsman muttered.

The Ropemaker bit her tongue and threw the last ten bundles into the cart as fast as she could go. When finished, she held out her hand. The gallowsman dug around in his vest pocket, eventually producing ten dull coins laced onto a hempen string.

The Ropemaker counted the coins. Since the Red Queen invaded, business was grim, what with the gallows weighing more bodies than sacks of grain nowadays. The latest of the Red Queen’s campaigns into Chariv wiped out most anything that wasn’t made of stone this side of Mount Pobritsya. Hers was the only ropery for leagues; a good thing, one would think, until the realisation set in that one measly little ropery wasn’t enough to support an entire region—and that coins once worth ten were now just two.

“Hey! This ain’t enough.” The Ropemaker looked to the gallowsman, who had already lifted the cart by its handles. “A single one of those ropes’s worth six times this. You’ve gotta pay the rest before you go or give ‘em all back.”

“Alright.” the gallowsman dropped the cart. “Only need one today anyway.”

The Ropemaker glared at him. “And you’ll be givin’ me ten more tadril for the pleasure of loadin’ *and* unloadin’ for you.”

“Four.”

“Six, and you can help me unload.”

“Eight, and I won’t.”

“Fine.” The Ropemaker arched her back to crack her spine and rolled her shoulders, heading to the back of the cart. “Sure you only need one?”

The gallowman grunted. “And I wouldn’t tell you who it was for even if you handed it over for free.”

The Ropemaker stopped and, two bundles on each shoulder, stared the gallowman down. “Did I ask?”

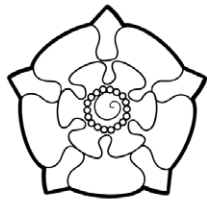
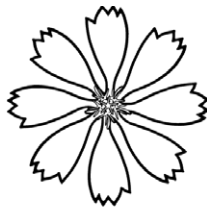
He held up his hands and looked away. “Seemed like you wanted to talk earlier.”

“Seemed like *you* didn’t,” the Ropemaker mumbled. Once the second-to-last rope landed on the ropery porch, she faced the gallowman.

He handed her a string of eight coins and lifted the cart. “Pleasure doin’ business with you.”

The Ropemaker watched him push the cart into the distance. If the last few months meant anything, he’d be back before the day was out.

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WHITE GOLD

by Cassidy Hammersmith

 SURVIVAL  FICTION

They called it a sea because there was no other word. Marco Rodriquez Guillermo thought that was a strange kind of lie.

Not that it wasn’t wet and didn’t have beaches—and not that the water didn’t taste of pickled brine when it splashed in your face. Just that it was so small. Barely five-hundred miles from end to end, and that was on the longest stretch. In the time before the Gods’ great cosmic bickering, the sea used to wrap around the globe. No place was untouched by it. Now—here in Holomirth—the only water to be found was this over-brined puddle that no self-respecting sailor would have ever called a sea six millennia ago. But on this dried-out, Fallow rock, one made do with what one had.

And Marco, in particular, had very little.

That wasn’t exactly new. He had lived these past three-dozen and four years on practically nothing. The Guillermo ‘estate’ was not large, even with four parents all pooling their wealth together. Barely three acres, half of them peppered by a sparse orange grove. The idea of pooling together with three or six other paupers had never quite agreed with him. So when he came of age, he took his share of the estate in gold and bought himself a ship. A ramshackle little sloop called “The Mirage”

They called it a ship because there was no other word. Marco knew this was a strange kind of lie.

Ships were big. Really big. Behemoths of timber and canvas meant for plying open water. His was small, barely six measures long stem to stern, with wheels and axles hoisted up against the sides for when it made landfall at the southern sound. Ships had two or three masts. The Mirage had one that an adult couldn't safely climb. Ships had crews of six or eight sailors working round the clock to run the bastards. His was crewed by himself and his wife Carmen. And his daughter, of course—little Aurora.

"Papa!" Aurora cried from the top of the mast. He had tried telling her not to climb it once when she was six, but it was of little use. That dark ginger hair on her grew straight from her ghost—showed that fire in her belly. Now that she was ten, he sort of liked that she did it so regularly. And this was why. "Sails! Coming over the west horizon!"

He scratched the salt and pepper tangle he dared to call a head of hair and peered into the distance,—but could make out nothing—blood on these old eyes of his. Swearing under his breath he pressed his fingers together in the air before him. He asked his own ghost, that force which drives all mankind to light fires on their own, for a dollop of its essence, and to command the air before him to gather and pile and flex into shape. A wind lens, they called it; air forced to refract like polished glass, to enlarge the tiny specks on the far horizon and give him some semblance of an honest-to-dead-gods image. Sure, there were sails. Not one set, but two. Sloops, by the look of it. The one thing a sloop had over a proper ship was speed. In the right gale, they could practically fly through the water. These two from the west were doing just that.

"Can you see a flag on 'em?" He called up to Aurora.

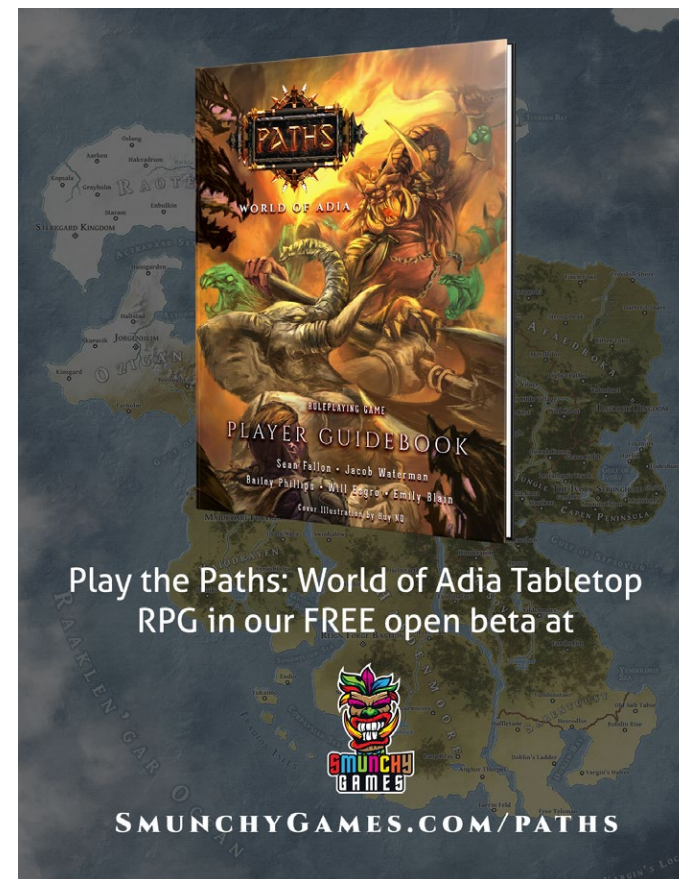
"Nope!"

"Shit," he whispered quietly. "You'd better get off that mast in a hurry!"

Every sailor on the Holomirth Sea knew a boat sailing under no banner was suspect. Everyone knew this because nearly everyone had been boarded at least once. No banner meant a black banner. A black banner meant your dim-ass was toasted. Especially if you were running hard water from a Torvelisk glacier to all points south in the Great Fallow Waste.

Marco's family ran almost nothing but ice. Sure it was risky... but good Gods—the paydays.

Rounding the back of the cabin, he stomped down three stairs and shook Carmen awake. No time to admire her pale green eyes, auburn hair, or sleepy 'good morning love' smile. "Get up! Two sloops coming in fast from the west."



"Nnn, so what?" Carmen muttered quietly, rolling back into the blankets. She yawned and wriggled and rubbed her feet together under the covers. "What are they flying?"

"They aren't."

Her eyes snapped open and she sat bolt upright. "They aren't?"

"Get up, we need wind!" Marco hollered back over his shoulder, already on his way up to the deck. "Aurora! Get the sheet out, we're going to need every scrap of sail!"

"On it!" the girl yelled, already drawing the main sheet hand over hand, her small muscles bulging as her sorcery gave her the extra strength to haul the line double-time.

Carmen was already out of the hold, tying her hair behind her head as she hopped up behind the helm, eyes glowing blue. If asked, Marco might have said he married her for that bright spark in her ghost. In truth? That was just a bonus. He married her because they both loved the same woman: the Sea. "Marc—keep an eye west, let me know when to lay it on thick, true?"

"Yea, true," Marco replied squinting at the horizon as he untied the line for the mizzen. Ell's Scythe—they were already so much bigger. "Better get started, love! Aurora, how's that jib?"

"It's out, Papa!" Aurora called back. "Mama, let me take the helm, you can run faster that way!"

"No, girl, get in the cabin and stay there," Marco said, clanging the the sail's grommet against the pulley and looping the line to hold it fast.

"Papa, I can do it!"

"You'd better let her, Marco. I haven't eaten yet today," Carmen called back. Her eyes were already rolling backward in her skull as the light

cross breeze slowed, shifted, and transfigured itself into a steady gale blowing from directly behind. The Mirage rocked, righted, and cut through the water like a toasting knife.

“Ell on a faminetide rut, I love you Carmen, but you’re going to get her killed!” Marco hollered as he ducked the swinging mizzen.

“And if I can’t out-run them we might all be dead anyway,” Carmen growled. “Aurora, sweetie, get on the wheel!”

Eyes sparkling, Aurora vaulted over the cabin and seized the helm as her mother let her grip fall away. The Mirage gained speed instantly, rocking the ship hard again on the wind as Aurora braced herself against the side rail and hauled the rudder back center. The two ships were closer now. Cutters, it looked like, with short mizzen masts for catching extra wind. Marco couldn’t help but envy them just a little. With just one extra measure of hull and a second mast he could haul so much more per run that upsets like this one would be nothing; just dump the hold and pull about back to port for another load. But not in this little tub. Three of these in a season and they’d starve for sure.

But Marco’s wistful daydream of a more prosperous future was short lived. Now half a horizon away, the two racing ships raised their banners. Black as a Sombre-day night.

“Black flags! Both of ‘em! Lay it on!”

Carmen thrust her arms forward. The Mirage leapt forward as sparks darted through her hair. The unbound tail of it floated about her head like a waking dream. Aurora planted her feet firm and whooped in glee as the force threw her backward, knuckles white on the wheel.

“Bring us hard to port!” Marco shouted.

“Aye, Papa!” Aurora cheered and spun the wheel with all her strength. The boat listed to the left as it leaned into the gale and surf with the force of the turn. But Carmen, on her empty stomach and half a day’s rest, was already flagging with the effort—sweat beading on her forehead.

“I can’t... keep... this pace,” she said, panting, andand the wind rolled back to half its power. “Marco I need food.”

Scampering like a squirrel, he plunged back into the cabin to rifle through the stores. Half a roll here, a pouch of dry locust there, nothing close at hand of any real juice, but it would have to do. Grabbing the waterskin from the wall, he jumped back to the deck and passed it to Carmen one handful at a time. She devoured it with all the ferocity of a feastide storm, and the Mirage again drove the wake from its bow.

“Papa!” Aurora said, eyes lighting up. “What if we could bethe lighter? That would make us faster, right?”

“This isn’t the time, girl!” he said, handing Carmen the waterskin.

“No! I mean. They want the ice, right? Why don’t we just leave them some?”

“Because we need...” Marco’s words caught in his throat. They needed to survive the next two hours more than they needed the extra gold for their next buy. They needed speed to survive. They needed less weight for more speed. He snapped his fingers. “Gods you’re right, and it’ll float. Snappy little whip, you are!” he said, tousling her hair as he jogged past to the cargo door at the bow.

Under a layer of straw he found them. White gold. Cubic blocks of ice, a half measure to a side, cut from the glaciers of Torvelisk to water the whole gods-be-damned world. Each cubic measure, bought for an ounce of gold, could be sold for eight ounces in Baar Tethun down south across the desert. That meant here in the hold sat roughly two gross ounces of gold. Enough for next season’s buy, all the food they could eat for a four moon span, four nice new shirts and trousers for each of them and some books to help teach Aurora arithmetic and literature with. And after all that? Enough to buy a bigger ship and talk about hiring a crew to run next year. It was an enormous score, especially for a ship this size.

His eyes traced the line of the ship back to his wife and daughter, and beyond them to the two black flags flying high over two ships too fast to outrun. Throwing the first eight cubes overboard was the easiest decision he’d ever made. Muscles swelled and rippled against the load as his ghost got to work hauling the weight. After unloading five and a half dozen bricks, arms and back screaming, he still had over a gross and a half to go. It wouldn’t be a bad score for the pirates if they just scooped up all that he had pitched already. But no pirate company running two ships would be content with less than six dozen.

Marco poked his head out of the hold to see Aurora’s face blanched with terror while Carmen’s hair swam in the wind of her own making. The cutters hadn’t gained on them yet, and the trail of icy chunks floating in the brine was not nearly long enough to be the whole load. They were collecting as they kept chase. Good. He said a silent prayer to Gods long dead that soon enough they’d break off the chase and let him keep at least half of it, but resigned himself to the truth that they would not. Still. He had to try.

“How are you holding up, loves?” the sailor grunted as he shoved another pair of bricks over the rail.

“Blood and shit, Marc! How do you *think*? Just keep bailing!” Carmen cried out.

“Cross wind is jerking the rudder hard, Papa!” Aurora whimpered, scrunching her brow.

“I know, *miha*, you’re doing great! Papa’s almost done!” he lied. There was no way on the whole Fallow rock he’d be done by the time her arms gave out. Gods, she was so small. They had been so lucky doing short hops from port to port. Marco had been so sure they could make the four week crossing from corner to corner without getting spotted. Tiny sloop, raggedy sails, paint chipping off the side of the hull. The Mirage looked like the exact opposite of a target. How could they know?

Resolved that it didn’t matter, Marco stoked the furnace of his ghost in sheer desperation and strained to carry three blocks at once though his gloves were soaking and his fingers numb. More tossing than hauling now as blue arcs of spectral fire jumped between his whiskers and stung his chin. The next three dozen flew by like a faminetide gale, all cold and razor blades with none of the relief of rain. And the next three dozen were fixing to follow suit when in the midst of a haul-up the squeal of a rocket tore past their starboard side and sent a column of water erupting just off the bow.

The Mirage rocked up on her aft and rolled hard to port, slamming into the water like a firebomb. Marco wrapped his arms around the side rail as Aurora screamed in shock and horror. Ice clattered against itself in the hold. Pots and pans scattered in the cabin, and the mast groaned as loud as a fairy-story beast from the bowels of the Black Shroud.

“That’s it! Enough!” Marco screamed loud enough to break his voice. Carmen’s eyes went dark as she cradled her crying daughter close to her breast and knelt on the still rocking deck. The sails fell slack. Quiet reigned, save the lapping of the sea against the planks of the hull. And Marco’s heart beat an entirely different rhythm of dread and fear. Practically leaping, he raced to his family’s side and gathered them up, showering their heads with kisses and clutching them close as the world tore apart around him.

Now what, dim-ass? His mind screamed.

“Aurora, listen to me,” He said suddenly, seizing his daughter by both shoulders. Her face was covered in surf and tears—contorted by her wailing. “No, sweetie, stop. Black your eyes girl!” he pleaded, shaking her. From his boot, Marco pulled a five inch dagger and placed it into her hand. The cold reality of leather and steel in her hand must have called her back to herself, for the girl stopped howling in that very second. “Go to the secret place. You know the place we talked about?”

She wiped snot from her beet red nose and nodded.

“Good. I need you to go in there, lock yourself in from the inside, and no matter what you hear—”

“Papa, no!”

“SHUT UP! No matter WHAT you hear, you stay put, do you understand me? You wait until nightfall when it goes quiet and if we haven’t knocked for you, you come up and you sail this tub due west until you find another ship or some land.” Marco demanded.

“Papa I can’t —”

“Well you better find ‘can’ quick. Your mother and I will handle this. You stay low, true?”

Aurora looked pleading to her mother, but Carmen was holding her daughter’s shoulders every bit as steely and cold as Marco and more so. “Yes. Yes, true tale, Papa. Stay low, lock myself in.”

“That’s a brave girl,” Marco said, and kissed her hard on the forehead. “I love you. Go. Now.”

“I love you too, Papa. I love you Mama!”

“I love you too, my firesprite,” Carmen said, and pushed her daughter into the cabin, slamming the door behind her and bolting it from the outside. “Fucking asshole!” she said, slapping Marco across the jaw. “One big score?! What are we going to do if they find her?”

“They won’t,” Marco said, running to the mast and lowering the Deistolan banner from atop it, hands fumbling with the knots as he raced to attach the blue flag of surrender and haul it high.

“They could have sunk us!” Carmen hollered at him, grabbing up an oar and hefting it like a club.

“YES Carmen. Yes, that rocket would have split us in half and they’d have their pick of the ice as it bobbed up to the surface. But it *didn’t*.” Marco was running on a hunch and half a prayer but gods-be-damned it had better work or this run would be the last dim-assed notion he’d ever have. “Put that thing down. You want to get us killed?!”

“Better that than... Than whatever they have planned!” Carmen said, voice crackling, tears biting her own eyes now.

Marco grabbed her around the waist and pulled her close, hand on the back of her head, keeping her body tight against his as she slowly came undone in his grip. “They didn’t sink us, Carmenita. They *didn’t* sink us. That means something, I’m sure.”

“How do you know?” she said, clutching back at him, nuzzling harder into his neck.

“People survive raids every day, love. Just keep your head. We can do this.”

Marco knew that this, too, was a strange kind of lie. But so long as Aurora stayed put and stayed quiet, they had a bloody good chance of making it so.

The pair of them drew in the sails and dropped the anchor as the Mirage bobbed up and down in the midst of blue oblivion. There was nothing left to it but to wait as one of the black-bannered vessels drew closer and closer, until it was upon them.

Pirates had come to call. May they rot in the Black, eternal with the rest of the forces of darkness. The cutter had its name covered with a canvas sheet and on the deck stood five salty young bastards, cutlasses hanging from their hips and fire in their hands. A ballista was trained on them. In it was a shell filled with fire bright enough to shatter their ship to vapors. Leaning against the mainmast was a mountainous man with a black flaming skull tattooed on his bare chest and a captain’s tricorn perched atop his head.

“Clever move, dropping cargo in yer wake, pop!” the Captain called as they got within earshot. Grappling hooks flew across the space between their vessels and the four others on the deck hauled them close. The pirate captain, smirk still painted on his face, threw down a plank and trotted across it as calm as a lamb. “More clever that ye stopped runnin’... Where’s yer crew?”

“We’re it,” Marco said, standing to full, hands empty and open held out beside him. “Just my wife and I.”

Two other pirates ran over the board and hit the deck beside their captain, whose smirk turned sneer fast. Gods, the Captain was young. Faderlander, by the look of him. Had to be two dozen years younger than Marco. Sandy blond hair and arms as big as boat axles. “Family business? Ah, that’s a great shame. Keep yer asses put and we’ll not trouble ye further, yeah?”

“You’re Black-bound bastards anyhow,” Carmen said and spat overboard. “We worked ourselves ragged for these ices, just to have a bunch of layabouts—”

The Captain tossed his head back and laughed, leaning against their mast with one arm. He whistled once and the other two took straight for the hold. Two more brigands hit the cutter’s deck from below as the two on the deck made for the Mirage. “Layabouts? Lady, I dunno if ye kennit, but ain’t just any crew can run a black flag. Lookit that lot! They’re working the blood out their veins right now!”

“You want I should shut her up good?” a squirrely little thing said from behind the captain, drawing his cutlass and setting it alight in one smooth motion. “We could fillet her up right afore this one, too. ‘At’d be a sight, wouldn’t it?”

Clenching his jaw the Captain sent one boot backward into his mate’s groin, doubling him over. “What part of ‘when I give my word that’s final’ ain’t you reckoned right yet? Git the fuckin’ ice and hold yer gob, *du fershctayen?*”

“Yessir Mr. Stone sir!” he squealed through clenched teeth, sheathing his sword and trotting away.

Marco’s brow kissed the sky and his jaw hit the deck. “Stone? Black Ronny Stone?”

Captain Stone smirked and tipped his hat. “Always a joy to meet a sailor what knows yer work.”

Marco bit holes in his tongue and wrapped an arm around his wife, pulling her close. Her arms had gone ice cold, as if a candle inside had been snuffed by Lady Death herself. Yes, he had heard the stories. They were not good.

“Are we...” Carmen swallowed her nerves and pressed closer to Marco’s shoulder.

Raising a hand, Captain Stone shot her a hard look. “I told ye already. Sit tight, don’t make no trouble. We’ll be gone afore ye know it.”

“Ain’t no personal effects in here, Cap,” one of the pirates said, pulling up two blocks under each arm like they were made of paper. “You want we should toss the cabin?”

Stone looked the pair of them up and down. Rags for trousers. Shirts more patch than native fabrics. Frayed lines on the mainmast. Marco could see the gears turning behind the young man’s eyes as he took inventory. “Aye... Aye they’re raggy enough it might be a play. Just metals and jewels though, aye? I reckon they live on this rat-tub.”

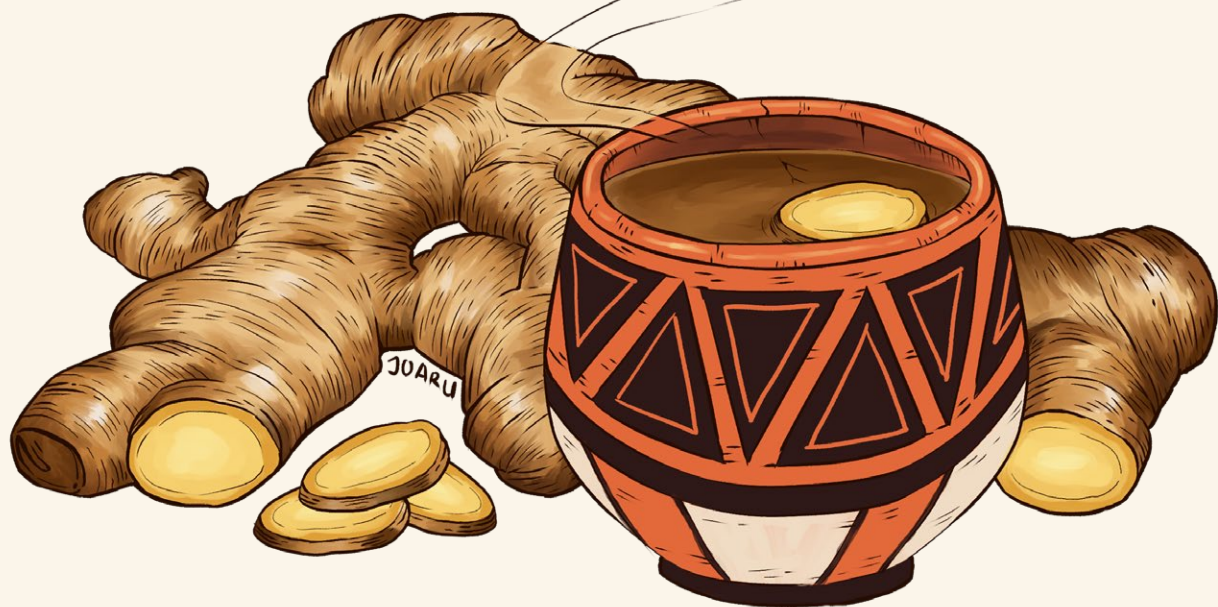
“Just leave us an ounce or two of gold. Please,” Marco half-begged. “Leave us with more than nothing for food. One working man to another.”

The captain shot a look that could kill a man at two-dozen measures and Marco felt his breath catch in his throat for a moment, as though he’d taken a fist to his guts. But the feeling slid away and a small thing happened to Stone’s eyes Marco recognised.

“I’ll take what I please, *danke*,” Captain Stone said flatly, but winked once, fast as a rocket.

A crash from below. A howl of pain, and a yelp as the pans in the cabin scattered across the floor. Marco’s blood ran cold. At the stern, a fully grown man wrestled to subdue a ten year old girl. But Aurora was small and nimble, dodging his grasp and waving her dagger, now hot enough to glow bright red from hilt to tip. Marco

I found the Imali village on the tenth day, just as I was ready to turn back south. They were more welcoming than I could have imagined and quickly offered me a gift of hot tea. I later learned that they added ginseng to it. I wasn't accustomed to the taste, to say it politely, but it seems to be a staple of this place. Also, I'm feeling quite good as of late. Energized, and quite relaxed, I must admit. I cannot say for certain if these things are connected, though the folk here insist the tea has this effect.



JOARU

wanted to stop her. To cry out and order her to toss that damned blade over the side and come to. He wanted to scream that this was going to get them all killed.

But for all that, he had wanted her to stay locked in the lower hold until nightfall. His wants were clearly irrelevant. That fire in her belly would never be quenched.

It was over in a mere moment. Captain Stone caught one of her wrists from behind, looped an arm about her chest, grabbed the wrist that held the knife, and forced the edge of the fiery blade to her forehead. Aurora cried out in agony and dropped the dagger on instinct. It faded back to cold in less time than it took for it to sink a quarter inch deep in the planks between her feet.

“THAT’S ALL’ IS IT?” Stone bellowed, his eyes flashing back to Marco. “When did ye plan on telling me you had a monkey aboard?”

“She’s a child,” Marco said meekly, apologetically even, and cursed himself for it. “I told her to stay put. Please —”

Carelessly, Stone tossed the girl onto the deck and planted a boot on her back. The pirate drew his sword. Aurora screamed and reached for her parents and finally—wonder of all wonders—Marco found his spine.

“Get OFF of her!” He screamed and dove forward, right into the arms of two other pirates who grabbed him by the arms and, through some sorcery he did not know, planted themselves so firmly in the deck that no amount of kicking could budge them. Steel pulled again. Another blade, this one steaming and starting to glow, was raised level with Carmen’s neck. “Let them both go, you Black-bound *bastards!*”

“ENOUGH!” Captain Stone shouted and put the flat of his blade against Marco’s chin. His eyes went dark. His shadow grew longer. And the black flaming skull on his chest seemed almost to laugh. “Fuckin’ hero fathers are a copper a dozen, but I reckon to *these two* yer worth a Black-sight more’n that, aye?” Marco let his body fall slack. Aurora did the same. Carmen looked for all the world like her mind was leagues away. The whole deck stank of mortal terror. Satisfied, the captain lowered his blade and put it away, picking the girl up by the scruff of the neck and tossing her hard into her father’s chest. Stone shot eyes back and forth to his crew, three of which stood stock still on the deck with arms full of ice blocks and incredulous eyes. “Fuck are you lookin’ at, then? LOAD UP!” he bellowed. “And you lot, tie these to the mast. Buncha blood-drunk amateurs, get yer shit together and get me off this rat tub!”

In a dreamlike haze, Marco let his family be led to the mainmast, let their wrists and ankles be bound with hard woven hemp—backs to the mast—so they could watch as their sloop—their home—was ravaged by the invaders.

“I’m sorry, Papa,” Aurora said, doing her very best not to cry and failing at it miserably. “I’m so sorry.”

“Shhhshshsh, not now firesprite.” Marco cooed softly over his shoulder, gripping his daughter’s hand tightly. “Hang on just a while longer.”

A dagger buried itself three inches in the mast next to his right temple—so close it bit his ear. He winced and turned and there was Captain Stone, mad as a starving griffin. “We had an understandin’, I thought.”

“I thought so too,” Marco replied, meeting the pirate’s eyes. “I’ve still got a family. We’ve still got to eat. You’ve still got a business to run. Nothing’s changed.”

“I’m going to ask once more, and if’n I find surprises in the next ten minutes, it’s yer little ‘un’s belly, aye?” Captain Stone growled. Marco tightened his lips and nodded. “Is there anyone—ANYONE—else aboard this ship? Any other secret hidey holes with sprouts in ‘em fit to slash my men to bacon?”

“No.”

He said no because there was no better answer. But Marco knew this, too, was a strange kind of lie.

“Brandstock,” the captain said, pulling his dagger from the mast without the slightest effort. “Pray yer right.”

And that was it. No more words were spoken. The pirates had their tasks and Stone had his ice and the Guilleemos had their lives. They watched helplessly as their life’s savings were hauled away by the armful and taken to the belly of the cutter across the gangplank. Then, without so much as a ‘fare thee well,’ the bootfalls on the deck ceased, the plank hauled away, and the hooks fell off into the water. Marco watched their wake fade into the distance for maybe an hour, maybe two, before he felt safe enough to start working the ropes that held his family to the mast.

Anyone that’s ever seen a stage play would think burning hemp bindings is an easy thing. Light a flame and poof—you’re free. Not so. The fire was easy to light but the rope burned hot and long and took over ten agonizing minutes to weaken enough for Marco to free his badly-roasted hand from its binding. Sucking the heat away with sorcery was easy—but Gods—the pain stabbed him as hard as a thousand mold ants all gnawing away at once. Quietly, he walked to where Aurora’s dagger had fallen and cut the other two free.

Her face still ashen, Carmen did her best at butchering to keep her husband’s burns from rotting out from under him completely. Together they pressed a bit of dry venison and a small handful of water on it to give her sorcery the raw material it needed. A soft blue flowing light wove around it and through it and dissolved the dried meat into fresh live tissue until the burn was repaired. Or at least as near as it could be with what little they had left on the tub.

“That’s it then,” she finally said to break the silence. “It’s all gone.” Aurora curled up tightly against her mother’s leg as the sun began to set, too broken to cry any longer.

Marco figured now was as good a time as any. “Not quite,” he said quietly, and reached behind the cabin door for a pry-bar. “Come on.”

Together the family walked to the hold. Marco hopped down and ran his fingers along the floor, found the notch he wanted, and stuck the prybar in. With one loud pop, a group of planks gave way. Below them, under a burlap cloth, were four dusty oaken casks.

“That... That can’t be—” Carmen’s breath caught and she covered her mouth. “Marco, is that *rum*?”

“All four casks your cousin gave us at our wedding,” Marco said with a smirk. “He said they were aged three years when they were new. Bound to be worth at least five-dozen ounces each by now.”

“Liquor is illegal. Bootlegging could get us both Black’d!” Carmen hissed.

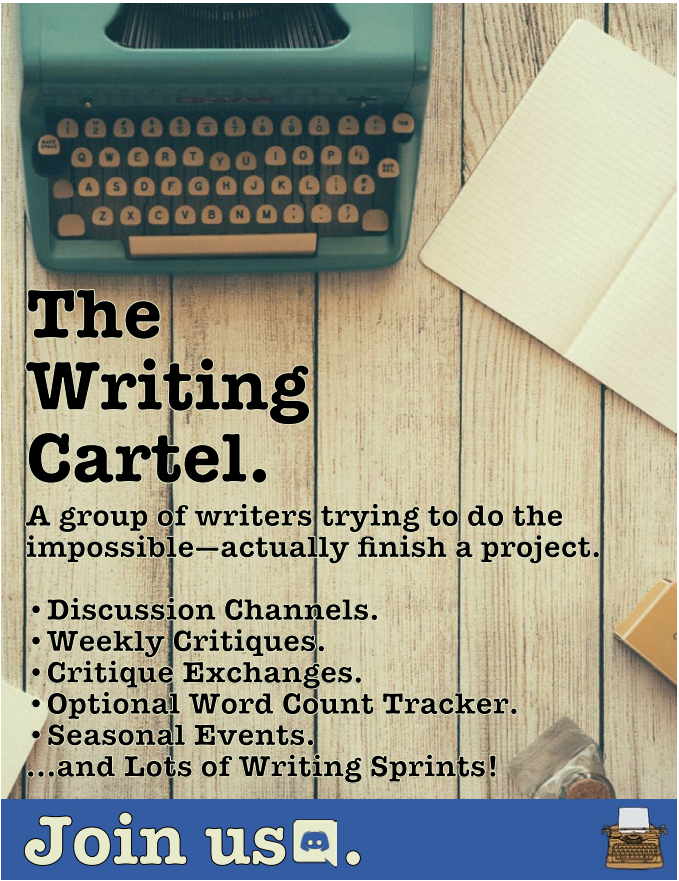
Marco turned to face his ashen wife and broken daughter, and swept an arm across their empty hold. “Have you got a better idea?”

Carmen closed her eyes and took a long deep breath. “...No.”

The sailor smirked and nodded, slamming the trap door closed “Best we set out south for the coast, then. If there’s one crew in these waters, there’s seven. No sense getting hit twice in one day.”

After thirty minutes of cleaning and hauling, trimming sail and sometimes weeping, the Mirage and her crew weighed anchor, and set sail.


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COARSE, IRRITATING, AND GETS EVERYWHERE

by J D Venner



SURVIVAL

Water, food, shelter. That's the way that survival is drummed into us humans with our hairless, water-filled, meatbag bodies. This three-word mantra is especially important in extreme environments, whether burning hot or icy cold.¹ While most of us are at least dimly aware of these requirements, the order, method, and means of acquiring them is often a mystery; the information usually locked away in vague memories of seeing *127 Hours* in the cinema, or a random factoid from Mr. Grylls.² If, like me, you're a soft-bellied city dweller whose only experience approximating desert survival is running out of mimosas at the beach, it can help to know where to draw inspiration from when creating deserts in your own world. In this article, we'll be looking at how our characters might survive in the deserts of our world.

Luckily, we have plenty of inspiration to choose from, as it seems something about the harsh, inhospitable environment terrifies our inner ape and presents a fascinating backdrop to any story. In this way, the anthropomorphic desert itself is often presented as an extra character, an antagonist of sorts, almost intentional in its attempts to foil and destroy our heroes. This anthropomorphizing of a setting generates an innate hostility and deadly threat that often provides an author with the ever-essential "tick-ing clock." In most desert settings, this clock is water, with the steadily diminishing resource providing both tension and a sense of progress. However, this isn't the only danger available in a desert. Even if water is abundant, or magically provided, there are still the issues of food and shelter. And that's before we've even considered

the vast array of horrifying beasts that could surge from the sand at any moment...

In a world where getting stranded in a desolate environment is a distinct possibility, it is reasonable to assume that the world's inhabitants would have at least thought about what they might do.³ That's why it can be useful to look at existing desert systems, whether in reality or fictional. Analyzing how people in these scenarios deal with these hardships is the next best thing to actually getting stranded in a desert yourself, something that this writer doesn't recommend.⁴

So how can we best draw inspiration from these settings? This article will approach it by looking at the main hazards in a desert, and seeing how people, both fictional and real, have dealt with them. It should be noted from the outset that, as a human myself, much of the information in this article will be aimed towards my own species. Unfortunately, this article will not be nearly as useful to species specially adapted to such environments, or to species dwelling on planets without the conventional deserts of Earth.⁵

WATER

"Water is the driving force of all nature."

—Leonardo da Vinci

When we think of desert survival, the first thing we think of is water. How much do we need? How long can we live without it? Where do we get it from? And, most importantly, will drinking the "quenchy" water from a cactus make us go on a hallucinogenic trip like Sokka in *Avatar: The Last Airbender*?⁶

To answer the first two questions, we can turn to real-life survivalists who've written accounts of their experiences. The general consensus seems to be that we could survive around three to four days in a desert without water, though we would begin to become pretty deranged after the first two. In terms of water consumption, most survivalists agree that around three to four liters of water per day (approximately a gallon for US readers) is the minimum necessary to keep you functioning. Unfortunately, if you're moving, you'll be needing a lot more.

One day's worth of water weighs four kilograms, or just under nine pounds. So, if you're planning a hike across the sand dunes, you'll be lugging along a lot of weight just to survive. All that weight being dragged or carried across a surface that continually shifts and sinks beneath your feet, and beneath a blazing hot sun (or suns), is bound to make you pour with sweat. Ray Mears, a British survivalist, conducted an experiment with the Institute of Naval Medicine where he found that, when exposed to midday Sahara-like conditions, we need to produce approximately 0.7 liters (24 fl.oz.) of sweat every hour to maintain our body temperature.⁷ This considerable amount of water needs to be constantly replaced if we're to survive. Unfortunately, it's not as simple as finding a way to stop sweating, as without the evaporating water on our skin keeping our body temperature down, we would likely be dead within an hour.

We can find an innovative solution in *Dune*, the epic fantasy sci-fi novel by Frank Herbert. For the few unfortunate readers who haven't yet read it, the novel takes place on the inhospitable desert planet of Arrakis, where water is

¹ We'll ignore the dark vacuum of space for the moment, where oxygen becomes a tad more pressing than the other three.

² Was it to never drink my own urine or to always drink it?

³ If your main characters are knuckleheads, you can ignore this point.

⁴ Unless you really, really want to, then go ahead and fill your boots. Who am I? Your mother?

⁵ If you find this narrow focus discriminatory, please direct all complaints to the Worldbuilding Magazine Editor in Chief, who will be more than happy to provide a lengthy and detailed response in whichever language you choose to correspond in.

⁶ Macmulla, Lauren (director). "The Desert". *Avatar: The Last Airbender*. Season 2. Episode 11. July 14th 2006. Nickelodeon.

⁷ Think Bear Grylls with less excitement and a lot less edible excreta.

more valuable than gold. The planet's population is largely split between city dwellers and the native Fremen who live in the desert itself. Water forms a key part of Fremen culture, from entering a tribe (*"Your water shall mingle with our water"*) to leaving it (*"A man's flesh is his own, his water belongs to the tribe"*). As such, they have developed unique ways of storing and preserving every drop. While out in the vast deserts of Arrakis, the Fremen utilize *stillsuits*, an all-encompassing body suit that collects and processes all fluid expelled from the body.⁸ Once reprocessed into drinkable form, the water is available to the wearer through drinking tubes. In this way, the Fremen only lose "a thimbleful of moisture a day" while out traversing the dunes. An innovative, effective, yet slightly gross way of being able to still work and move amongst the dunes.

Those people who don't have a means of converting their own sweat and urine into drinkable water will either have to carry all of their water with them or subsist on the small pockets of moisture they can find. Obviously, if a vehicle or pack animal is available, carrying water for an extended trip may be significantly easier. But if you don't have access to such transportation methods, and don't feel like carrying jugs of liquid with you over the dunes, you need to turn to what you can find.

Oases and underground springs or rivers are features of all but the driest deserts. However finding them amongst the dunes can be nigh impossible, especially when you take into

account the infamous mirages caused by hot air rising from the sands. To locate bodies of water in the desert, most experts seem to agree that following desert-dwelling creatures are your best option. Hear the irritating buzz of a mosquito cloud? Brave the bites and look for water nearby. See animal tracks, especially ones heading downhill? Follow those footprints and hope whatever made them isn't a man-eater. These signs may only lead you to a darker patch of sand or a dried-up riverbed, but don't panic!⁹ Digging down a small amount (around one foot) into these areas often leads to small water pools forming in the newly created divot. In fact, digging can often reveal water just under the surface even in areas where there's no surface moisture. The bases of sloping rock features, and the shaded sides of canyons (usually the side facing towards the nearest pole), are excellent places to dig, and may just reveal some liquidy goodness for your parched lips.

If there are no animals or rock features nearby, keep your eyes out for greenery. Most deserts are not completely barren of flora and there are a plethora of plants adapted to the harsh conditions. They mostly survive by rapidly absorbing as much of the minimal rainfall as possible, and then storing it for very long periods of time until the next rainfall. Due to this, they are usually only located in areas that see occasional rainfall and so digging below these roots can yield small amounts of water. These plants tend to have wide, shallow root systems for absorbing rainfall quickly across a large area, and they

**"IN FACT,
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usually have very small or non-existent leaves to prevent moisture loss. Water is normally stored in the fleshy parts of these plants, whether in pads like cacti, or in their central stem. Unfortunately, and this is a biggie, *humans should not drink this stored water*. In fact, contrary to popular belief, cacti are not just big barrels of water waiting to be chopped up and slurped from. The juice of most cacti, and other related species, can actually give humans a range of debilitating symptoms, from diarrhea, to blindness—something you definitely don't want to happen in a desert. There are a few cacti that have barely any drinkable water or juicy edible fruits, but unless your protagonist knows their

stuff, they're far more likely to have a hallucinogenic trip like Sokka than to quench their thirst, no matter how *"quenchy"* the cactus. This is something we should definitely consider when worldbuilding deserts. If the desert plants were simply big barrels of easily accessible water, we'd see far more animals surrounding them and most of the plants would be quickly destroyed or consumed. Evolution has likely led to these plants developing vicious spines and toxic liquid as a means of self-preservation. They hoard a much-needed resource and protect it whichever way they can. Therefore, looking for plants is useful, but mainly as a sign of potential underground water.

FOOD

"Let food be thy medicine, and medicine be thy food."

—Hippocrates¹⁰

As mentioned above, many plants in the desert cannot be eaten. They protect their valuable, "quenched" jealousy with spines and poison. So, where do we get our food if we're stranded out in the dunes?

Well, firstly, food might not even be that necessary. If you have access to water, you can survive up to three weeks without food.¹¹ And if you don't have access to water, the general advice is not to eat anyway as it only makes you thirstier.¹² However, for extended travel within a desert, or if your protagonist has access to water and is feeling a little peckish, there are some things to look out for amongst the dunes.

⁸ Yes. All fluids.

⁹ And bring a towel.

¹⁰ I know, the 'Father of Medicine' said this. It can't have been reassuring to his patients when he only prescribed them a bowl of chicken soup.

¹¹ A fact that makes my stomach rumble just thinking about it. In fact, I think I'll order a pizza.

¹² Good point. I'll order a soda with the pizza.



JOARU & TRUEDEVIL

The first of these are insects. As unappetizing as they sound, insects are some of the most useful and abundant sources of protein you can find in the desert. Care must be taken to avoid poisonous ones, but given the vast array of insect species in the desert, you're far more likely to pop an edible wriggler in your mouth than a deadly one. If in doubt, cooking the insects can neutralize the poison of some of the more inedible species and, more importantly, add a delicate, smoky taste to the meat. In the great deserts of the *Mad Max* universe, maggots are considered one of the key sources of edible protein.¹³ Some delightful communities put great effort into creating maggot farms, where lovely, ripe corpse chunks are left out for the

"INSECTS ARE SOME OF THE MOST USEFUL AND ABUNDANT SOURCES OF PROTEIN YOU CAN FIND IN THE DESERT."

flies to grow their larvae. While certainly entrepreneurial, you have to wonder how sustainable such farms are, given the number of maggots necessary to sustain a human being and the number of flies that have to make it to maturity. Still, I suppose if someone dies of malnourishment, they simply become a new source of fertilizer for the maggot farm.¹⁴

If insects don't appeal to you, you may have to go out hunting for other animals for your protein. Lizards, snakes, and tortoises all live amongst the dunes and most of them can be eaten. Catching them can be tricky, especially when you're trying to conserve energy and sweat, but a protagonist who knows how to build a trap may just

be rewarded with a fat, juicy reptile. One thing to be aware of, though, is salmonella. Yes, really. It's not only possible, but highly likely that you could survive days in the most inhospitable lands imaginable, only to die of salmonella. Unfortunately, many reptiles are practically covered in it. So thorough washing of both hands and meat should take place before sitting down to a lizard luncheon. This is something you don't need to worry about if you catch yourself a mammal, like a desert rat or fox. Although it is definitely advisable to cook the meat first, in a pinch some mammals can be eaten raw. Unfortunately, in a desert environment, mammals are usually both very scrawny, and very rare.

Plants, while considerably more abundant, run into the same issues we encountered earlier: so many of them are poisonous! Some of these poisons can be mitigated through cooking, or by only eating specific parts of the plants, but in reality, either your protagonist knows which plants they're looking for, or they don't and will most likely die horrifically. If they're smart, and don't go wolfing down the nearest berries, they may utilize something similar to the Universal Edibility Test.¹⁵ I won't go into the full set of tests here, but it is something that is well worth looking up if your protagonist has half a brain and needs to find food in the desert. It effectively consists of trying very small parts of each plant, firstly against your skin, then against your lips, your tongue, and then chewing and swallow-

ing a small amount. While this test can take several days before you're relatively sure something is safe, it could definitely help save someone in a tight spot, and it's certainly preferable to having diarrhea with only cacti for toilet paper. Even if employing the above test, the general rule is to avoid plants that have a milky sap, red berries, or an extremely bitter smell or taste.¹⁶

SHELTER

"Gimme, gimme shelter."

—Rolling Stones¹⁷

Deserts may be desolate, barren wastelands mostly devoid of life, but one thing they do have in abundance is sand. Lots and lots of coarse, irritating sand. And, as anyone who's been to a desert, a beach, or the Outer Rim planet of Tatooine will tell you, it gets everywhere. Unfortunately, it is also excellent at conducting heat, which means that in a desert it soaks up the hot sun and can transfer it to any part of your body

in contact with it. As the key to desert survival is to remain cool and reduce moisture loss, one of the first things you need when building a shelter is a way to insulate your body from the hot sand. This can be done in one of two ways. Either you raise yourself up off the sand on some kind of platform, or you dig a trench so that you're sitting on the cooler sand below.¹⁸

"AND WHERE DO YOU RUN TO? THERE'S ONLY DESOLATE, FEATURELESS SAND FOR MILES AROUND."

¹⁵ See <https://www.backpacker.com/skills/universal-edibility-test> for more information.

¹⁶ Most of those probably apply outside of a desert setting as well, which is why I don't eat grapefruit.

¹⁷ I'm getting lazy. Don't judge me.

¹⁸ If you can levitate or fly, also give that a go.

¹³ Alongside other humans. Unfortunately, we won't be covering "longpig" in this article.

¹⁴ It's the ciiiiircle of liiife!

The next thing to do is to create some shade. Sunlight on exposed skin dramatically increases the rate of perspiration, which is why you so often see locals fully covered in desert communities. Coverings are especially important when it comes to the head and face as, not only does the sun beat down on you from above, but it also reflects off the sand and into your eyes causing sand blindness. This affliction, effectively a sunburn of the cornea, often begins as a feeling like there is grit or sand under your eyelids. As it progresses, and you continue the exposure of your corneas to the sun, you eventually lose your sight. A most charming side effect of desert survival that can be counteracted by reducing the incoming visible light by around 90%, so crafting some cool-looking slitted sunglasses may be your best bet.

In addition to being blinded and dehydrated, you'll also have to look out for sandstorms. On earth, these enormous roiling banks of flying dust and sand can extend up to a mile high, sixty miles wide and travel over fifty miles an hour. They form when thunderstorms travel over hot desert sands. The air in the thunderstorm, cooled by the moisture, rapidly drops through the hot air, evaporating as it falls. This air hits the surface with enough force to displace the top surface and forms a cloud of dust and sand, that is then forced forwards in front of the storm as it travels. They can form rapidly and without warning, often catching communities unawares. They don't usually kill instantly, but they can cause long-term respiratory problems due to the inhalation of sand and dust. The best way to avoid these effects is to keep everything covered. Eyes, mouth, nose and every other orifice you can think of. When in doubt, remember Anakin's words of wisdom: *"I don't like sand."*



*It's all coarse, and rough, and irritating. And it gets everywhere.*¹⁹

One, often overlooked, aspect of desert travel is the nights. In many deserts, the temperature swing after the sun sets can be brutal, often dropping below 0°C (32°F). The desert sand loses its heat quickly, and you can be at risk of hypothermia within hours of the sun going down.²⁰ This risk is exacerbated by the fact that you may be wearing damp, sweat-covered clothes, or lack the energy even needed to shiver, a bodily function as vital to regulating your body temperature as sweating. The secret to surviving these cold nights is similar to surviving the days, insulating yourself from the sand. Other surfaces, such as rocks, retain heat far longer and can save

¹⁹ From Attack of the Clones. You may remember other subtle gems of dialogue such as "I'm just a simple man, trying to make my way in the universe."

²⁰ That's right. Hypothermia. In the desert. That would look bloody stupid on your gravestone wouldn't it?



TRUEDEVIL

your life, but if you don't have a convenient rock you can use anything from clothes to a bedroll. It's also useful to have fresh clothes to change into, or at least something dry to prevent your damp clothes from wicking the heat away from your body.

MONSTERS

"Do you think God stays in heaven because he lives in fear of what he's created?"

—Dr. Romero, *Spy Kids 2*²¹

Monsters are a key feature of fictional deserts that we often don't have in our own. I mean, sure there's a plethora of wee beasties and poisonous plants that would kill you if you let them, but where are the giant, subterranean sand worms ready to swallow us whole at the slightest vibration?²² Unfortunately, our deserts are boring, desolate, barren wastelands with very few toothy maws in sight.²³ But you don't have to follow boring reality in your worlds. Stick something horrifying in your deserts, something that makes your reader never want to set foot on a beach again.

²¹ A surprisingly genuine quote. Ah Steve Buscemi, you never disappoint.

²² If you haven't yet read Dune, close this article immediately and go purchase it from a local bookshop.

²³ Obviously, this probably isn't unfortunate for the people that live in them.

The first thing we have to consider is all of the above. If this monster is to live in the desert, it must not only survive, it must *thrive*. Take some of the things above that make it difficult for us humans and use them to your monster's advantage. Take the creature encountered by Ciri in the Korath desert of the *Witcher* novels. It's an insect-like monster that lives beneath the sand and hooks passing creatures into the sinkholes it digs. Once inside the trap, its prey cannot escape up the steep walls of sand and the sand-monster kills their prey, slowly sucking the blood and moisture from their bodies. This monster uses the environment to its advantage. Submerged beneath the surface of the sand it is sheltered from the sun, remaining still for most of the day, only moving when a creature comes close enough. Amongst sand dunes, sinkholes are nearly impossible to see, especially in the glare of the sun and so the first you'd know of this monster is a hooked claw reaching towards you from the sand itself. A perfect predator for a sandy scenario.

Insects and reptiles tend to be the main basis for desert monsters. As mentioned earlier, mammals struggle to live in such conditions. However, looking to the skies we see that the rising hot air from a desert floor lends itself to the idea of vast birds that soar high above the sand. Of course, such birds would likely need to be within flying range of a safe place to nest. So, a desert on the leeward side of a mountain range may be the hunting ground of birds such as the Roc from *Dungeons & Dragons*. These gargantuan birds, with a wingspan roughly equal to a Boeing 747, can travel long distances in search of prey. Such a creature, seen from

the ground, may resemble nothing more than a vulture, until it dives towards you and grows larger, and larger... And where do you run to? There's only desolate, featureless sand for miles around.²⁴ A terrifying prospect to incorporate into your deserts.

IN SUMMARY

"There is no real ending. It's just the place where you decide to stop the story."

—Frank Herbert²⁵

Deserts can be vicious, cruel settings to place within your world. While capable of developing vibrant, interesting cultures and creatures, they are places where it seems nature itself is conspiring to kill you. This article, while not a definitive guide on survival, aims to provide aspiring worldbuilders with the basic tips and tricks necessary for their characters to survive in such an environment. Survival is not something guaranteed, it is something that must be fought for every day amongst the dunes. But whether your characters are experts or novices, it's my hope that the information in the article above goes some way to helping you craft a realistic and exciting sand-covered piece of your world.

And, if it doesn't, please don't forget to contact the editors with a long and rambling complaint. I promise you that they love replying to each and every one.

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²⁴ Have I mentioned that deserts are barren, desolate wastelands?

²⁵ It seems only fitting to finish with a quote from the author of *Dune*. This is also a good quote for us worldbuilders to remember, especially if, like me, you have 100,000 words of lore but not a single word of prose.



I am a librarian by education and a graphic designer by trade. Most of the time, I work on layout in the tabletop roleplaying and board game industry, making books, cards, boxes, and all other pieces of the hobby that should be pleasant to look at. I've been living in imaginary book worlds since early childhood, and I've written numerous pieces of worldbuilding fiction before I've realized I actually prefer my worlds well-researched. It made me turn to environmental sciences and I haven't looked back since.

My main project at the moment is [Herbalist's Primer](#)—an illustrated guide to real-world magical plants. It's a whimsical mix of occult, ethnobotany, folklore, and tabletop RPGs, all packed into one volume; it's a handbook for beginner herbalists, healers, magicians, and survivalists. The book includes a hundred magical plants, from aconite to yew, taken from all around the globe, as well as chapters on basic botany, preparation of various salves and ointments, recipes for magical potions, lists of magical and medicinal correspondences, and a whole pile of material useful in worldbuilding. As it's slowly creeping towards the 400-page mark, we're planning a Kickstarter in the spring of 2021 to cover the printing costs.

The book is going to be the first in the series—at [Double Proficiency](#), we're planning to continue in a similar vein with other worldbuilder-friendly materials. We're currently collecting materials for books on animals, geology, occult, cartography, cryptog-



raphy... And all things 'fantasy survival' in the upcoming *Adventurer's Primer*. We're also running a monthly series of [Globetrotter's Guides to Greenery](#) (guides to biomes and plants, full of sensory descriptions and all things worldbuilding) and [Wayfarer's Decks](#) (cards with writing prompts, encounters, mysteries, and puzzles); all of them are available on our [Patreon](#).



What programs and media do you work with, and why?

My software choices are highly influenced by my workflow—I do layouts first, then draw whatever fits the space I've assigned on the page. I've sold my soul to Adobe; I use InDesign on a daily basis as it's the industry standard that most of my clients demand. For illustration, I go with Photoshop as well, although that's mostly because of Kyle Webster's [digital] brushes that I've been using for years and which are now a part of the Adobe package.

From time to time, I also use the Affinity package (Publisher and Photo)—it allows me to seamlessly switch from one app to another and edit images without leaving the layout software. I keep promising myself to find the time to learn how to draw on paper, but the lack of 'undo' option is a bit of a deal-breaker for me.

What's your work process like now?

For various reasons, I dropped illustration for almost ten years and only picked it up again a couple months ago. That's why I do what I can to draw every day, no matter how much other work I have to do. Right now, as I almost exclusively draw plants, I start with research. I'm using original botanical illustrations from the

18th-19th century as references for the style and organization, and modern photos (taken by me or found in the public domain) for colors. I have aphantasia¹ and visualizing is incredibly hard for me—I cannot work without references, so it's probably a good thing I've decided to draw flowers, not dragons!

Where do your ideas usually come from?

I have been fascinated by folklore my whole life. My bookcases are full of books on magic, vampires, werewolves, witches, poisons, nature spirits, and imaginary lands—and I mean scientific publications, not novels. I love research (like a proper librarian should!), and I can never stop myself from sharing the amazing things I've learnt. That's exactly why we've come up with the "Primers"—to save other worldbuilders some work and deliver the juicy goodies without the need to go for a deep delve into 12th-century Old Slavic epic poems for that one paragraph about invoking the forces of nature to one's benefit.



Do you have a world you create for?

My partner, Jakub, and I are now working together on a science-fantasy world for a game called "Blazing Aurorae." It's a world placed in an icy tail of a comet: think opalescent mists, rainbow bridges, floating islands with magically-protected atmosphere, giant leviathans, underground stalkers, and longboats traveling from one island to another, sailing through outer space on solar winds. We've been having the most fun coming up with flora and fauna that could have evolved in this kind of environment

¹ the inability to form mental images of real or imaginary people, places, or things. *Miriam-Webster Dictionary*.

— we actually wrote it down, and you can read about the process on our [blog](#).

What’s your favorite subject matter?

As somebody who has been doodling flowers since preschool, I find that ornamental art is my favorite. I love filling spaces with tangled vines and colorful petals—whether it’s in illustration, layout, embroidery, or gardening.

What subject matter, technique, or method have you had difficulty with?

I am constantly trying and failing to use real watercolors—I use digital ones all the time, but the flow of real paint is just something I cannot control. I know I should embrace the ‘happy accidents’ of color spills, but I find myself more frustrated than enjoying the experience.



What sort of obstacles do you face today in your art?

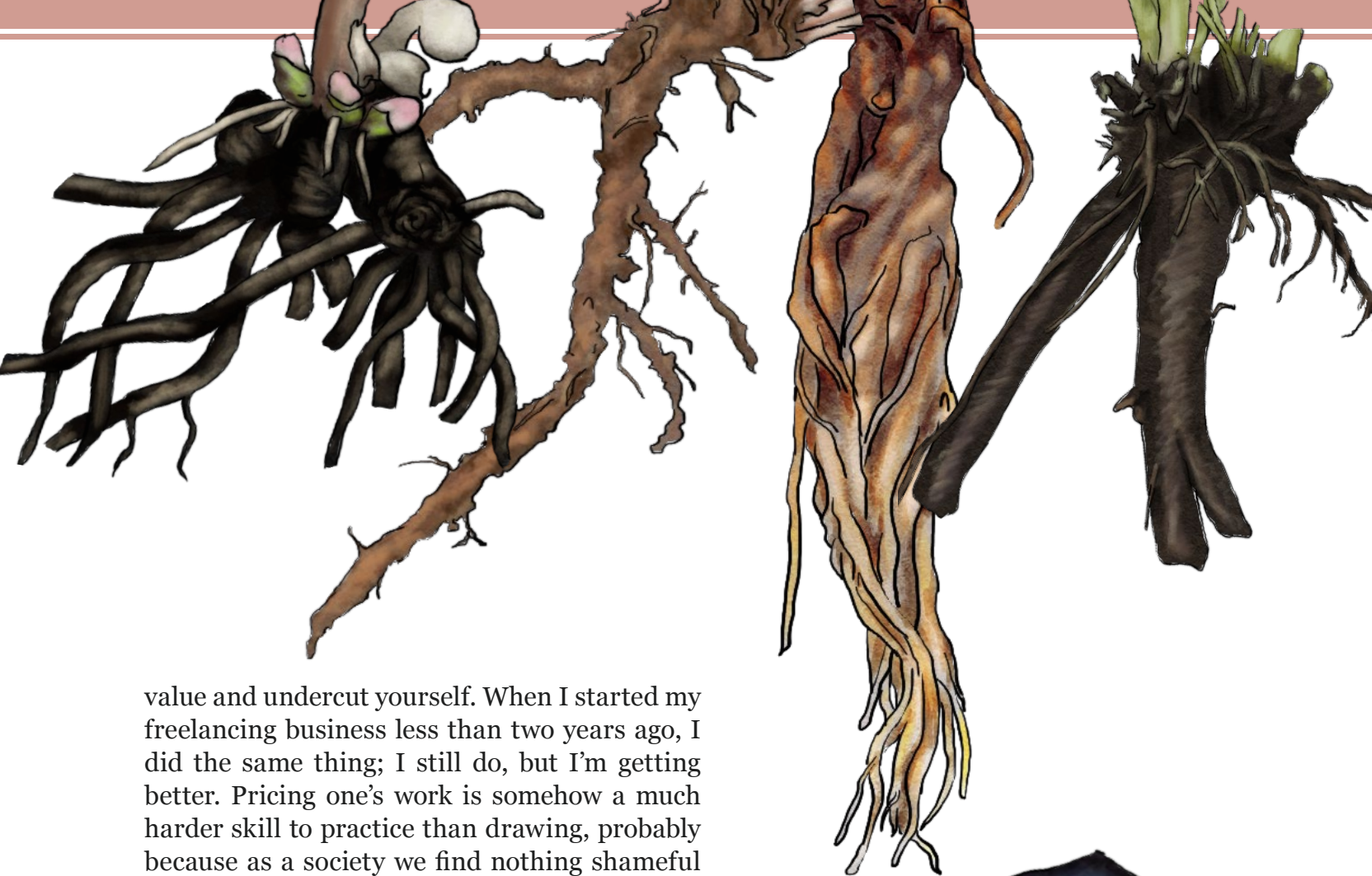
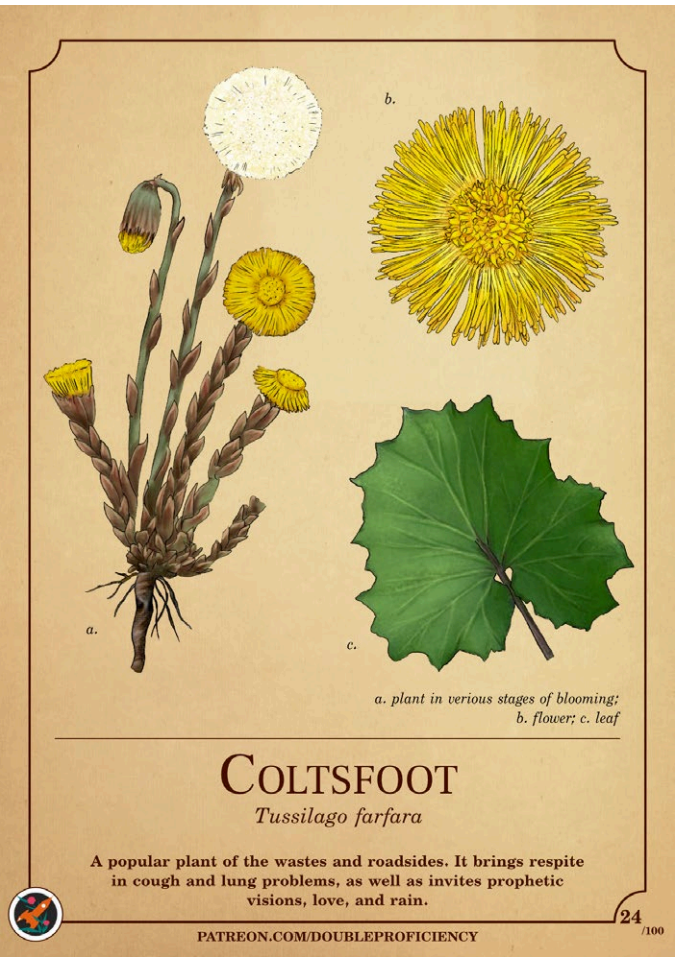
I don’t have much time for it, between a full-time freelance graphic design job, writing a book, and family obligations. I love drawing—but because it’s so closely aligned with my work, it sometimes feels just like that—work, and on a deadline. There’s a lot of truth in the idea of ‘personal art’ being what helps an artist to stay sane.

What inspires you?

I find endless inspiration in the natural world. It should not be surprising, as plants are almost all that I draw these days—but I keep taking photos of every interesting sight I find on my walks with the dog. My current project keeps me somewhat contained to this topic—with *Herbalist’s Primer* needing over a hundred illustrations and my limited free time, I try to stay laser-focused. But the pile of photos of lovely sights, animals, sky patterns, rock formations, and people’s faces is growing each day, patiently waiting for the day I close one project and start another.

What do you wish someone had told you earlier about entering the creative field?

That the artistic freedom often comes after financial freedom. You can be an incredible artist and keep making peanuts, as you constantly under-

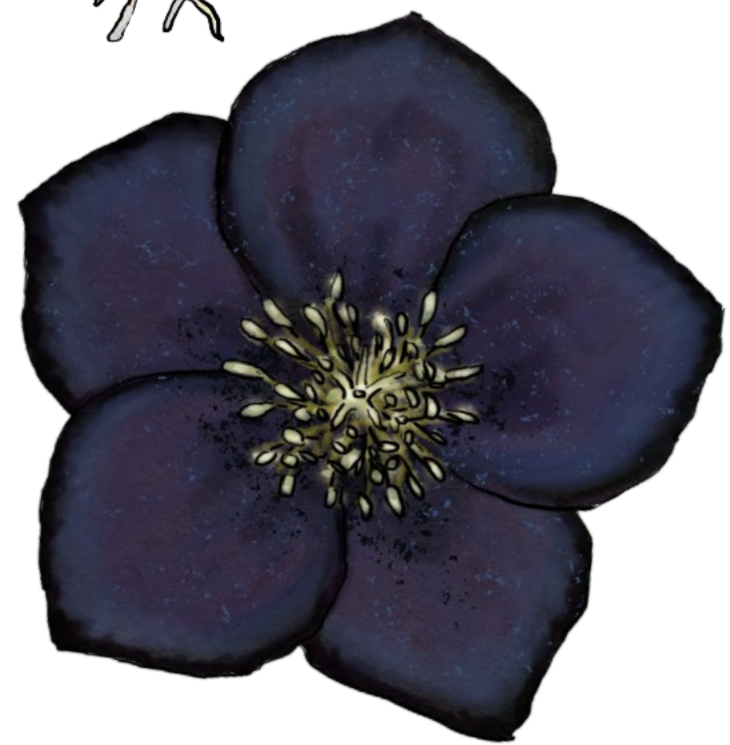


value and undercut yourself. When I started my freelancing business less than two years ago, I did the same thing; I still do, but I’m getting better. Pricing one’s work is somehow a much harder skill to practice than drawing, probably because as a society we find nothing shameful about being a great artist, but many scowl at the idea of an artist wanting to get properly paid. However, we all have bills to pay, and the sooner we acknowledge the fact, the sooner we can get rid of the idea of working for exposure.

This interview was edited for Worldbuilding Magazine.

Thanks to Anna for joining us! If you enjoyed learning about the Herbalist’s Primer, or any of their other projects, you can find more about it on Double Proficiency’s [website](#).

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



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THINKING SIDeways

ABOUT LIFE AFTER DEATH

by Robert Meegan, illustrations by Tristen Fekete

SCI FI TECHNOLOGY

Cyberpunk, as a subgenre of near-future science fiction, reached its zenith in the last decades before the turn of the millennium. Its popularity began to fall when the future arrived and people realized that “jacking-in” actually meant finding a coffee shop with free Wi-Fi. It plummeted with the discovery that when given ridiculous amounts of pocket-sized computer power connected to the world’s store of information, most people would use it for watching pet videos, taking photos of themselves, and spreading conspiracy theories. The sudden stop that marked the end of the fall was the

realization that the all-powerful corporations that cyberpunk authors used as the heavies completely lacked the proper level of menace. Instead, we got one corporation that trades all sorts of really useful services in exchange for showing you targeted advertisements; another that doesn’t bother to use those ads, because they know that you’re going to buy from them anyway; and a third, most famous for theme parks and animated movies, that has acquired much of the entertainment industry to make it as inoffensive as possible.

The future is never what we thought it would be. Where is the edgy nastiness that we had been warned against? If we want to bring cyberpunk back, we’ll need to *think sideways* about it.

People say that eighty percent of life is simply showing up. The rest largely consists of sticking around. Those who can’t pull off the second part serve as object lessons and plot hooks. As creators, we appreciate those who are willing to give their all for the cause, but sometimes the story would benefit from a character not staying dead. This is where the various fantasy genres have an edge over science fiction. Fantasy offers options for returning a character from the far side of death’s door; while you, as a worldbuilder, don’t have to use all or even any of them, no one is suddenly going to start pointing fingers about the implausibility of your wraith or mummy. Disembodied spirits wandering about the castle are almost *de rigueur* if you want to set a properly dismal mood.

Science fiction isn’t so lucky. Sure, if you’re dealing with far-future space opera, you can use Clarke’s law and point to advanced technology that essentially serves the same purpose as magic. With each step backwards from that, the situation gets worse. If you’re dealing with the near-future, no one is going to accept your resident technician saying, “Captain, I’ve reconfigured the polarity of the interface protocol and with a little luck and a wee dram of whisky, we should be able to reintegrate all of the bits and bobs of our red-shirted colleague who had the misfortune to trigger that micronuke.”

Here is where we need to get creative. Let’s look around at what the fantasy crowd is doing and see what we can appropriate and repurpose. With a bit of imagination, we can restore some edgy nastiness to cyberpunk and when faced with a shortage of edgy nastiness, the best place to start is with death.

IN MY TIME OF DYING

The standard approach in fantasy when all precautions fail and someone vital to the plot dies is to bring them back to life using resurrection magic of some kind, which generally requires the deceased’s surviving companions to gather up as many pieces of the victim as they can find. These are then bundled off to someone who can perform the appropriate ritual. This must usually be accomplished with some degree of haste, as there is normally a “Best If Used By” date associated with the body. Although details about the resurrection process are rarely well-documented, it seems likely that the steps must include reassembling the components into something approximating their original locations, reanimating the body, getting it healed to basic operating mode, and then restoring consciousness.

In an example of reality catching up with fiction, at least the first few steps can be accomplished today. In the event that someone loses all or part of a limb, if reasonable efforts are made to keep the severed part chilled, it can be reattached several hours later. More sophisticated measures can preserve tissue for several days, which might be necessary if the patient requires immediate treatment for other conditions such as infection before the reattachment surgery. The most recent research has shown that mouse limbs preserved in a protective fluid at liquid nitrogen temperatures (–196°C) for as long as seven days can be successfully reattached. Other work suggests that extremely high pressure during the freezing and thawing process can prevent the formation of ice crystals that damage cells.

We can make use of that. The well-equipped medic of our future has a cryogenic chamber for body parts or even whole bodies. At the scene of an accident, instead of pulling the sheet over the victim’s face and watching the coroner haul them away, authorities call for the “popsicle truck.” When it arrives, the recently deceased are stuffed into tubes, which are then pressur-



ized with cryopreservatives and flash-frozen. At this point, the frantic race against time will no longer be a concern as the corpsicle will be held in a state of “mostly dead,” which offers far more options for recovery than “all dead.”

The “putting the pieces back together” step has also greatly improved over the years. Microsurgery has allowed doctors to reconnect even tiny blood vessels and nerves, making limb reattachment far more successful. Relatively small patches of the patient’s own skin can be used as seed material to create laboratory-grown graft material to cover large areas of trauma. Early experiments growing three-dimensional structures such as bone and organs have already shown tantalizing signs of progress. Even the regeneration of spinal nerves, once considered impossible, has been accomplished with real-world results, albeit on a limited scale.

While the unfortunate corpses remain frozen, they are scanned and a surgical plan developed. Any missing or severely damaged parts are regrown and readied for transplantation. Instead of a single marathon session of surgery

to repair the trauma, the process can be spread out over days or weeks, with breathing and circulation initially handled mechanically until the body can take over these functions for itself.

The tricky bit has always been the brain. Long-standing opinion has held that the brain would suffer irreversible damage after three to five minutes of oxygen deprivation. Rare cases where someone had been revived after drowning in freezing water offered hope that brain cells might be somewhat resilient to damage caused by temporary death. This optimism was rewarded in 2019 when researchers at Yale took the brains from thirty-two hogs decapitated at a slaughterhouse and demonstrated that four hours after death they could be revived using equipment to provide oxygen, nutrients, and chemicals to repair the decomposition caused by toxins that had developed. The cocktail also specifically included drugs to prevent the brains from recovering consciousness, although the scientists were prepared to administer additional anesthetics if it appeared that pain sensations were being generated.

All of the brains studied were restored to metabolic health. That is to say, nerves and blood vessels began to operate normally. While normal activity of the brain was suppressed for ethical reasons, samples of the tissue were taken and individual neurons were found to function normally. It’s not possible to say definitively that brain function would have autonomously restored itself—the brains might have remained in an inert state, not regaining consciousness. On the other hand, as we are able to use advanced imaging to observe the transition between unconscious and conscious minds, we are likely to develop new methods of “jump-starting” a brain.

Given all of this, characters in our society don’t necessarily need to fear a violent death. If they can afford the right insurance coverage, their demise will trigger a device within their bodies sending a message dispatching a team of first responders on a recovery mission. In a matter of weeks to months, they can be back on the streets, as good as new—albeit with the possibility of a few new quirks and some memory loss.

SPIRITS IN THE MATERIAL WORLD

Of course, bringing someone back to life in a literal sense might not be practical. The bits and pieces left over from whatever caused demotion from the ranks of the living might prove insufficient. Another alternative is that when the character failed to keep up with the payments on their insurance, it was impossible to get reinstated with the pre-existing condition of “dead.”

Fortunately for us, not all forms of fantasy resurrection result in a physical body. There is a long tradition of ghosts and spectres haunting the world of the living, neither dead nor alive. These spirits are generally limited in their interactions with the mortal world. They may communicate verbally or through dreams and visions. Physical interactions, if at all possible, might involve nothing more than a chill wind,

a tap on the shoulder, or the slight nudge that sends a vase toppling off a shelf.

There’s no reason why we can’t have ghosts, too. We just need to work out a few details.

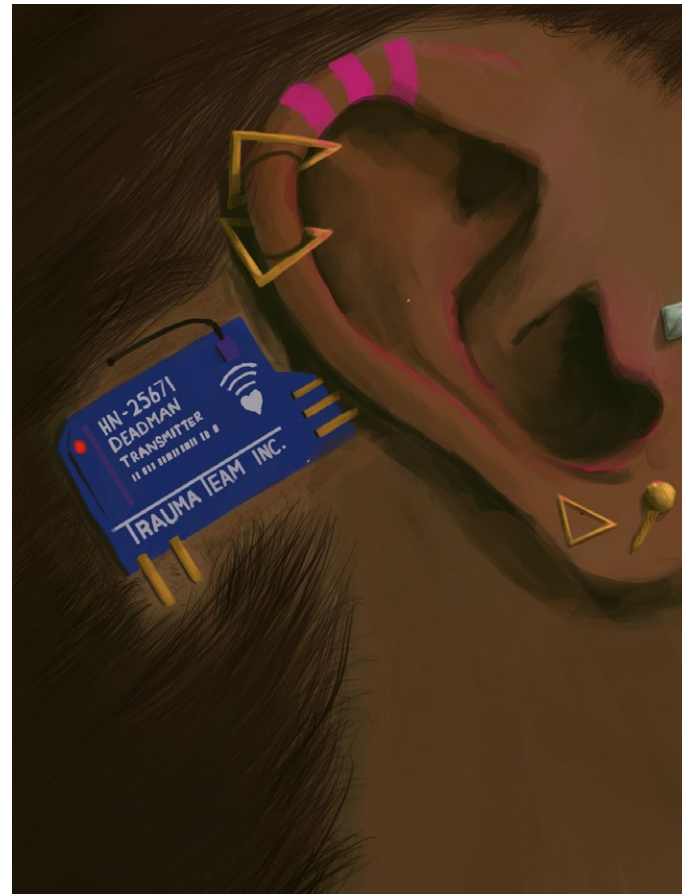
If you look at the literature, you’ll find wildly varying estimates of the memory capacity and computing power of a human brain. There’s a reason for this—brains and computers are very different things. Brains are comprised of a huge number of very slow neurons. Computers have far fewer transistors which operate many orders of magnitude faster. Connections between the transistors in a computer are incredibly reliable, while signals between neurons only trigger a response about twenty percent of the time. Data stored in a computer’s memory is also dependable, with a very low probability of corruption. Human memory, on the other hand, is notoriously unreliable and subject to gradual fading if not frequently refreshed.

Because of these differences, brains and computers operate very differently. Computers are deterministic because transistors behave consistently, given a set of inputs, the output is known in advance, at least theoretically. On the other hand, brains are probabilistic; given a large enough sample, neurons will produce statistically consistent results, but any one neuron may or may not give a response when stimulated. A consequence of this is that brains are what engineers call “highly redundant,” meaning that neurons serve as backups to each other. Memories are stored holographically, with each aspect of the memory spread across multiple neurons so the failure of any particular neuron to fire doesn’t necessarily mean that the entire memory is lost. It’s quite possible that some details are recalled clearly, while others are fuzzy or misremembered.¹ Holographic memory is one reason why a smell might bring back vivid memories, while a name makes no connection.

Brains also make use of *parallel processing* on multiple levels. You can walk and chew gum at the same time. Both of these normally run in the background, but it's possible and even necessary at times to move these to the front; for example, when walking on an icy sidewalk. There are other levels of parallelism, too. For one, your eyes are looking at this and interpreting what they see. Somewhere in your visual cortex, a decision is being made that you're looking at text and the image is, in some way, being passed to the language centers. That image is then converted into the word elements that are matched with your stored vocabulary. This happens smoothly and at high speed. If you'd like to see your powers of parallelism, pick two nursery rhymes that you know by heart. Now start speaking one while writing the other. Despite both of these skills needing the language centers of the brain, most people are able to pull this off.

At the very lowest level, multiple neurons process the same information. Some indications of this are when something is “right on the tip of your tongue.” You know that you know it because that part of the processing has completed, but the correct synapses haven't successfully fired. This has also been suggested as a cause for the experience of “*deja vu*.”

All of this is fundamental to a question that has been asked for at least a half-century: is it possible to capture a human mind and transfer it to a computer? The answer is a most definite maybe. Since we're building our own worlds, we can take that as a “yes,” which leads to the question of what it would look like.



The first requirement is some way to download the contents of a person's brain. In most science fiction, this is a matter of attaching a few electrodes to the subject's head and watching lights flash on the computer for a minute or two. This is fine if you're looking for a retro or comic approach, but we want to create a grittier, more realistic world, and when you look at the details, mind reading turns out to be a lot more complicated than it first appears.

Most people learn about the concepts of short-term and long-term memory. This being biology, the truth is more complicated, of course. It turns out there are many levels of memory. When someone tells you their contact informa-

tion and you're frantically typing it in before you forget, you're using what your teacher called short-term memory. It's a high-energy process, which is why you can't store much in there and why it doesn't last long. You actually have much faster and even shorter-lasting memory. Earlier, when we talked about seeing a page and having it passed to the language center, we were talking about a special form of *very* short-term memory. It lasts tens of milliseconds and then it's gone. This is called sensory memory and the time between when those neurons are read and when new sensations are received is what allows movies and television to work—your brain has learned to ignore these brief intermissions, so you don't see the brief flicker as the next frame is repainted on the screen.

Intermediate- and long-term is much more complex. As memories become more long-lasting, the mechanisms used to store them has to become both more stable and less energy-intensive. The brain does this by moving from electrical charges to chemical and even structural changes in the neurons themselves. Intermediate-term memory requires the establishment of an ionic imbalance that preserves the neuron's state. Long-term memory appears to involve the encoding of specific proteins that can maintain this imbalance as long as they are regularly refreshed. At any given time, only a small fraction of the memory neurons are going to be active in this way. The frequency of refresh is not known at this time, but it appears to be on the order of months. There seem to be some chemicals that can trigger or suppress the refresh system, although testing of this is still at the stage of individual neurons.

Since we want the ability to read those intermediate- and long-term memories, we need to stimulate the refresh cycle for all of those neurons, to get the memories into the highest possible energy state. Dumping massive amounts of stimulants into the brain runs the risk of quite literally cooking it, as all of those chemical reac-

tions generate excess heat. It also has the potential for inducing mental trauma in the patient. The onrush of every memory all being recalled at once would undoubtedly be overwhelming. To counter this, let's say that a brain dump requires the person being recorded to spend a month in the laboratory, sedated, while a steady low-level dose of refresh chemicals percolates through the brain. This could keep things under control.

Even in this environment, all memories aren't going to be recovered. Some will have faded below the threshold where they can be refreshed. Others might be subtly altered in the copy, as connections were either lost or wrongly created. Perhaps the memory of a long-ago event substitutes someone who wasn't there for someone who was. This sort of false memory is common even without artificial stimulation and it's one of the reasons why eyewitness testimony is so unreliable. On the process side, we can throw in the benefit that when the process completes, the patient will be pleasantly surprised at how sharp their mind seems. If we really want to make a brain dump special, we can also say that there is a chance of temporary or even permanent psychosis afterwards, as memories that might have been best left forgotten are recalled.

Now that we have an image of a person's mind, can we build a computer that can run it?

Most personal computers have a single CPU. These usually contain anywhere from one to eight processing cores, each of which can handle one or two “threads.” This means that the computer can be doing somewhere between one and sixteen simultaneous things. In practice, it looks as if it's doing much more because the cores can perform billions of operations each second, making them able to switch between tasks, usually without the user noticing. Still, even though our neurons only cycle roughly twenty times per second, you can glance at a photo and recognize a friend far quicker than your computer can.

¹ It's important to note that the term “holographic” as used here does not refer to visual holography, the science of storing a three-dimensional image using photographic material. Instead, it's a term of art used in computer science to describe a memory structure where data can be stored and recovered using multi-dimensional vectors. You can use a few well-defined vectors or many vague vectors to locate a piece of information in this way.

Fortunately for computer scientists, people like to play video games. What's more, they're willing to pay considerable amounts of money to play games that are as realistic as possible. While early video games used blocky graphics with very low resolution, the newest games are almost photorealistic and can be played in high resolution. To put a video game onto a display, the millions of pixels that make up the image must be calculated many times per second. These calculations are *relatively* simple; it's the sheer number of them that is the limiting factor. To solve this problem, the makers of video cards have developed special purpose graphical processing units (GPUs), the latest of which contain more than ten thousand cores, with each core still operating at more than a billion operations each second.

Extrapolating from this, we can see that the computational power needed to host a functioning mind is certainly practical. Storage capacity for data is well within reason. What's missing is an understanding of how the mind works—the source code, as it were, that the brain runs. Given the recent utter failure of a billion-euro project to build an artificial brain, the best option here is to make this the point where we hand wave the science and attribute a breakthrough to some mad genius.

So what would our ghost in the machine actually be like? The difference between billions of neurons operating slowly and tens or hundreds of thousands of cores operating quickly should definitely create noticeable effects. Some might be trivial, such as a tendency to do tasks such as mathematical calculations unnaturally quickly. Others might be far more subtle. With the change from probabilistic to deterministic processing, recall might be more certain, but the random bursts of insight that well up as a half-formed thought might not appear.

As mentioned, the downloaded memories might be incomplete or inaccurate. New memories will

need to be processed with some sort of a filter that discards most sensory data, so that the available storage is not overwhelmed with recordings of everything seen and heard. With old memories remaining perpetually sharp, the possibility of psychoses and other mental illnesses—such as post-traumatic stress triggered by recall of past events that would gradually fade in an organic mind—can't be overlooked. These conditions might manifest themselves in a manner similar to those displayed by the ghosts of fantasy: a tendency to dwell upon the past and, in particular, on old injustices.

The decision as to how the ghost interacts with the rest of the world could be handled in several ways. Most would be purely virtual, hosted on servers located in the data cloud, while those with particularly deep pockets or good reasons for paranoia might choose to have their own servers, locked away safely in a private data center. Ghosts might only have access to those sensors they actually own or lease, as well as certain public units. A friend or employee might wear a sensor pack to provide mobility, but those who lack access to these options might find themselves more or less pinned to a small number of locations.

Those who can afford one might invest in a golem—a cybernetic body. Depending upon finances and tastes, this might be something obviously mechanical or virtually indistinguishable from a living person. There's no need for it to even have a human form factor. Wandering around in the body of a robotic dog or cat or even soaring through the sky as a bird might be a diversion for the rich and famous. The golem itself would have sufficient processing power to take care of basic mobility and other motor functions. For all of the higher-order thinking, a high bandwidth wireless connection back to the ghost's servers would be needed. A golem might be disabled by jamming communications back to its brain, but the ghost itself would be out of reach of physical harm.

LIVE AND LET DIE

Now that we have resurrection and the spirit world sorted out, it seems like something is still missing. By making death less permanent, we've removed a level of risk from our world. To maintain the proper balance of terror we need a fate worse than death, just to spice things up. Our ghosts are physically dead, but mentally alive. That's pretty bad. Being physically alive but mentally dead would be worse. For our inspiration here, we need to go full sideways and look to fantasy's third cousin—horror.

There are reasons why zombies are terrifying. We harbor deep taboos about the dead, many doubtlessly originating from the basic fact that hanging around decaying bodies is generally unhealthy. Religions and cultures in the hotter regions of the world generally practice quick burials, often within twenty-four hours. It's much safer to mourn the dead after they're safely packed away.

Another frightening characteristic of zombies is their brutal mindlessness. As generally depicted, they act without thought, just moving toward the nearest source of food. This is not merely subhuman, it's beneath our expectations of even animal behavior. Instinctively, we expect a creature to display some sort of strategy that shows a measure of intelligence. If an animal is low on the food chain, we anticipate it showing caution, checking for more dangerous predators before darting out for food. If it's a natural hunter itself, we look for it to stalk its prey and possibly work in unison with a pack of its kind. In all cases, we know that if it's wounded in its pursuit, an animal is going to fall back and reconsider the situation. The fact that zombies do none of these things emphasizes their *wrongness*.

The problem is that rotting people either shuffling or sprinting around a modern city (whether silently or while chanting “brains”) isn't going to work particularly well for most cyberpunk settings. Sure, a zombie apocalypse is one thing, but

it involves the entire collapse of society. That's not the genre that we're working with. There's a reason why everyone in the early “living dead” movies was trying to hold out until dawn. Dawn was when the authorities would show up, well-armed and organized. Even well-armed and disorganized works when the menace is mindless, and one characteristic of cyberpunk is an abundance of lethal hardware. If we want to use zombies (and who doesn't?) as anything more than mobile target practice, we need to refine how we think of them.

One of the primary roots of zombie mythology comes from *Vodou*, a religion that developed in Haiti during the colonial period. Vodou is a complex religion that incorporates aspects of West African religions brought by slaves as well as the Roman Catholicism practiced by the Europeans who enslaved them. While monotheistic, with a supreme deity, it also has many *lwa*, which can be described as supernatural spirits. The practice of Vodou is built around these *lwa*. If they are appeased by suitable rituals, they are benevolent to the practitioners. When they are offended or angered, they can be vindictive.

Vodou has both male and female priests—*oun-gan* and *manbo*, respectively—and ceremonies often feature spirit possession, where an *lwa* takes over the body of one of the participants. Usually, a ceremony is focused upon summoning a specific *lwa*, but occasionally another one crashes the event. Unlike many evangelical believers who seek to be possessed by “the holy spirit,” most Vodou practitioners try to avoid possession, as it's believed that their own spirits have been pulled from their bodies to be replaced by the *lwa* for the duration of the possession.

Human nature being what it is, there are those who would use the *lwa* to gain power or for harm. One who does this is called a *bòkò*, and they are considered, for lack of a better word, to be a sorcerer. Their power comes from their ability to create a *zonbi*.

Most of these are *zonbi astral*, a spirit zonbi. These are created when a portion of a person's soul is captured after their death and then trapped by the bòkò in a bottle, along with shavings from the person's skull and various "spirit-admonishing medicines" that force the spirits to work as they are instructed. Considering that Haiti was settled specifically as a slave colony, having one's spirit enslaved in this way holds an existential terror among Vodou adherents that is hard for outsiders to understand.

There is another, much less common, type of zonbi. The zonbi astral is a spirit without a body. A *zonbi kò kadav* is a body without a spirit. To the extent that most non-Haitians are aware of zombification, this is what they are thinking of. From the perspective of Vodou, a zonbi kò kadav is a person whose spirit has been removed from their body by a bòkò, usually to be trapped as a zonbi astral. The body, spiritless, becomes a slave to the bòkò.

Anthropologists and ethnologists have reported on the phenomenon at least since the 1930s and Wade Davis published a rather sensational book on the subject, *The Serpent and the Rainbow*, in 1988. In it, he claimed that a zonbi kò kadav was created, usually by a member of a secret society, using a neurotoxin to simulate death. After the victim was entombed (the nature of the terrain and the climate in Haiti means that many many people are interred above ground), the bòkò would recover the body and administer a mixture of stimulants and psychoactive drugs that would both awaken the person and render them susceptible to coercion. The zonbi would then be sold into slavery and taken far away from their home village.

Later researchers cast doubt on much of Davis's information, although they did independently verify certain aspects. Certainly, the adherents of the Vodou religion believe that it is possible for a bòkò to capture souls. And, while some purported zonbis turned out to be cases of mental

illness or mistaken identity, there were reports where the possibility of enslavement through the use of drugs could not be ruled out.

All of this is interesting, but how can it be used in our cyberpunk worldbuilding?

There is a vast, barely tapped pool of knowledge among practitioners of traditional medicine (including sorcerers). Researchers have recognized this and have begun to seek these practices out. Modern scientific laboratories are fully capable of exploiting that knowledge and producing drugs that produce the same results more consistently. We'll create a corporation in our world that is doing just that—Invate Pharmaceuticals, dedicated to a simple philosophy: everyone deserves the best possible health that they can afford.

Invate has taken note of the bòkò practices and has decided that this is how they're going to staff their security forces. Around the world, special forces operatives, expert assassins, and top bodyguards drop dead. Not all at once of course, just here and there. Some might vanish mysteriously while on an assignment. Others might be picked up by a popsicle truck but never show up at any hospital. Instead, they find themselves in an Invate lab, where they are subjected to drugs that break their connections to reality.

Do you remember when we talked about chemicals that can enhance the refreshing of long-term memory? Well, there are others that can suppress that same refresh. Constant training keeps their combat skills fresh in short- and intermediate-term memory, but their pasts fade away forever. Within a year or two, Invate has a virtual army of the most deadly people on the planet, utterly without personality, and completely devoted to Invate, even to suicidal levels.

And our heroes? Well, all they have (besides an impressive arsenal of very dangerous equipment) is the cranky old ghost of the person who

designed the Invate security systems before falling out with management and ending up both dead and destitute. Now the ghost is all but forgotten and only accessible through a handful of public interfaces. That's the kind of edgy nastiness that allows plenty of room for creative storytelling.

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One of the Imali started a fire tonight. It was peculiar to watch the process. I'm used to matches and the like, but their ways here are older—more arcane. The young man began by creating tinder, tearing the fibers from inside birch bark and combining it with strips of old clothing and pine pitch. When he wafted his hands over the pile of rubbish, his magic ignited it.

In response, I showed him my matches, which they were delighted by, though I suspect they were mostly humoring me and my reliance on them.



RED IN TOOTH AND CLAW

by Taylor Frymier, illustration by TrueDevil

 FANTASY (DARK)  HORROR/SUSPENSE  EXPLICIT CONTENT: VIOLENCE AND GORE

Her cry was just a whimper, barely audible over the pops of burning wagons and strangled screaming from down the forest road. Steel on flesh. Teeth on flesh. A shadow loomed over the woman's body, obscuring the firelight from the torch she'd brandished moments before.

"Help me," she managed. A surge of courage gripped Arne. He charged toward the shadow.

"Get off her! Ye rotten beast!" He froze in place as the shape lifted its head. Red in tooth and claw, the creature lifted its jowls and a low, edged rumble rose from its chest. Its pointed ears were flat against its furred head. Blood dripped from its short snout. Arne steeled himself. "I ain't 'fraid of you, ye gory hound!" He stepped forward again, with legs shaky but determined.

A bark broke the air to his left. A second beast slammed into his side, pinning Arne against a tree. He dropped his axe in the snow. The beast snarled as it bit into Arne's right thigh. Great fangs ripped through his breeches and deep into the flesh beneath.

The burly man beat the creature's back and head with the iron rim of his shield until it yelped and pulled back. A longsword blurred out of the darkness and sliced the thing clean in half. Its torso landed with a thud, long tongue limp in the gory snow. The abandoned legs and pelvis teetered for a moment before pitching forward, spilling fetid viscera into a snowbank.

The huge figure holding the longsword roared. The beast first-seen abandoned its meal, scampering off into the wintery wood. The giant knelt in the blood-spattered snow and felt at the woman's neck.

"Dead, or near enough besides," his resonant voice rumbled. The giant turned and looked at Arne, "Best get that leg bandaged. Might be some alcohol left that hasn't yet caught fire."

Eloquent for a giant, Arne thought. He spared a wary glance at his injured leg. Blood seeped from the wound. His mind raced. Thoughts rushing. Adrenaline pumping. No pain though. His eyes rolled.

"Hey!" The giant stood and stepped over to him with surprising grace. With his massive hand, he slapped Arne across the face, "Hey! Focus, pig. You can't slip away yet." The nightmare sharpened. The shadows and flickering fires became clear. The giant's craggy features and wide, flat nose came into focus. His bright blue eyes glowed in the moonlight.

"Th—the woman," he sputtered. "We have to save the others. What were those things?"

"You can't do a rotten thing until you pull it together. As for what those things are... *Vulcae*, in my tongue. Warg in yours, I believe." He paused, looked at Arne, "Breathe, pig." The human sucked in air and breathed out slowly, shakily. His heart calmed.

"If you call me pig one more rotten time, I'll feed you your teeth, *cow*."

"That's better." The giant said with a grim smile, "Now, survivors." He stalked away into the darkness. Dumbfounded, Arne collected his axe and slipped it into his belt before picking up the torch the savaged woman had dropped.

The giant found three survivors. Vassily, a grizzled southerner who'd a shallow scalp

wound that looked worse than it was. Hilde, a former *doppelsoldner* from Austerlund. And Aedrich, a smarmy northern lad who'd been recruited in a village not far from Arne's own. Arne found two others. Bruen and Brittle, a pair of local girls who'd been with the company for less than a year but had proven themselves more than capable: their swords and shields were vital during the skirmish at Yver Delta. They'd often entertained around campfires with a quick joke and a ready song. Bruen was hiding a limp. Her sister stole furtive glances, concern written on her face.

All were company men and women Arne had known for a season at least. Some longer.

Except for that giant. He was new, hired specifically for this caravan tour. Arne thought that the company must've spent a fortune on him. Giants were in high demand as mercenaries and *doppelsoldners*. Arne had seen the giant, of course, during the tour, but he'd not said a word and Arne didn't know his name.

Gore, black in the night and glistening with reflected firelight, daubed the snowy forest pass. The caravaners and merchants were all killed during the attack. Limbs and other remains littered the road. Wagons and carts burned. Most of the goods were either destroyed or weren't making it out of this place. Fortunately, Arne found a bottle of Virratan vodka in the wreckage, from which he took a long draught and dumped on his wound. Whatever he wasn't feeling before, he sure as all rotting hells felt now. He gritted his teeth and tied a strip of cloth tightly around his thigh.

"Well," Aedrich broke the silence, "That seems to be that. Likely won't be gettin' paid this time 'round."

"We have more to worry about than pay at this point, boy," the giant said.

"Boy? Who in the thirteen rotting hells does this *cow* think he is?" Aedrich scoffed. Arne and Hilde, who'd both performed over a score tours with the company and known each other nearly a decade, shared a withering look. The giant said nothing. Just stared at Aedrich. There was a long, tense moment before the boy relented. The giant broke his gaze.

"Should we try to make camp?" Arne asked.

"No," the giant replied. "When the fires die down, they'll be back to feed on the dead. We need to move now. Make our way across the frozen lake on the other side of this rise and out of their territory. Grab everything we might need."

"What were those things?" Brittle asked. The giant paused his rummaging to look up at her.

"Death," he continued rifling through provisions. "Now move. Don't wait to find out more."

They were out of the forest, upon the wind-blasted surface of the frozen lake when a blizzard descended, as if to punish the mercenaries for daring to cross the expanse. The wind piled the snow in swift-forming drifts, impeding their movement. All except the giant struggled with each step. At his urging, they'd pilfered as much fur and clothing as they could wear from the caravan. Despite their best efforts, the frigid gale still cut through their garments.

Arne couldn't see much through the storm. Just the barest outline of the giant's eight-foot frame at the head of the column. Neither could he hear anything over the howling winter winds. Hilde had tried to tell him something just after the gale bore down on them. Although she clearly shouted, he still could not catch her words.

The deafening wind and impenetrable snow veil gave way to Arne's imagination. He saw shadows and phantoms streaming through the whiteness. Horrible slaver beasts with blood-soaked fangs watched just beyond his sight. He thought he caught a glimpse of a chasing shade here, a rushing shadow there. No longer was he able to discern between the howl of the wind and the howls of... something else. Something hungry. Something angry.

Arne shook his head to rid himself of the nightmares. He trudged on, through knee-deep snow, towards the distant treeline, obscured almost entirely by the blizzard's veil. The cold seeped into his bones, cutting through layers of cloth and leather. He shivered uncontrollably.

A scream cut through the storm's wail. Arne knew he couldn't have imagined that sound. He whipped around to a mess of writhing grey shadows some way off behind the column. He recalled seeing Bruen's limp. *She'd been at the back of the column. She fell behind. Oh, hells.*

"Hey!" He shouted from the back of the line. Brittle had already begun trudging back to save her sister. "Hey!" He shouted louder. Still no one turned. He shoved Hilde just ahead of him. She saw Arne's panicked expression, Brittle running through the snow, and the chaos that was Bruen and her attackers beyond. Her eyes widened in terror. She shoved Aedrich ahead of her and took off through the snow with Arne.

Desperately, he lifted his burning legs above the rising winter snowdrifts and down again into the next one. The snowfall reached just above his knees.

Looking up, he could see the shadows clearer. Frost-matted fur and frenzied violence came into alarming focus. Bruen lay in the center of three wargs, one was ripping at her arm, another at her injured leg. They threatened to tear the woman in two. She kicked at the third and beat at the one gripping her arm with her free, albeit mangled, hand. Her taken arm was lifeless. The furs around her shoulder and under arm were dark.

Brittle was close now. She'd brandished her blade and was plowing through drifts at a pace that only those burning through the last dregs of adrenaline could ever hope to match. A blur barked from the blizzard shade and she was tackled into the snow, spattered red with her sisters' blood. The fourth warg's teeth clamped around Brittle's throat. Red gushed from its maw and seeped into the drift. She beat at the warg with bare fists, despite her grievous wound, teeth barred and snarling like the beasts themselves.

Arne and Hilde finally reached the scene. They shouted, drew weapons, and swung at the bestial attackers. The wargs yelped in surprise and scampered off into the storm, swiftly disappearing into the haze.

Brittle twitched in the rime of her own gore. Bruen's right arm was limp at her side, her hand a meaty mess. She dragged herself one-armed—a fast-freezing scarlet trail in her wake.

“B-Brit,” she stammered upon reaching her sister's body. Arne could just make out her whimpering above the din of wintery rage, “Brit, come back. No no no no no no... Here, I'll help you.” She shovelled dark snow into her sister's gaping neck. *Shock*. Bruen's frantic attempts slowed as realization seeped into her eyes.

All was still for a moment, except for the living sister's wracking sobs. Snow was piling upon them. Arne crouched down beside her. “Time to go, girl.” He placed his hand on her uninjured shoulder and pulled at it lightly. She didn't move, didn't respond. He noticed she'd stilled completely. Her sobbing breaths faded. “Hells,” Arne swore. Standing, he locked eyes with Hilde. An icy tear clung to his cheek. She simply nodded and turned. The giant surveilled the scene, his stony gaze inscrutable.

“We move,” his deep voice sliced through the wind. “Their corpses might distract the pack.”

The storm subsided by the time they reached the treeline. They trudged through snow at the top of a hillock leading down into the silent forest below. The blizzard's rancor had left a peaceful night in its wake. Arne couldn't help but think it merely a false respite—a cruel deception before fangs ripped at their throats.

A vast forest of evergreens, much like the one they'd left hours before, sprawled before them. Miles and miles of green-black blanketed the rolling land until yielding to the southern leg of the Ard Carraig Mountains—just a shadowy line rimming the night's eastern horizon from here.

Arne's beard was stiff and frozen, pulling at his face with every gelid movement. His red nose ran a river of snot into his mustache. Snowflakes and icy tears crusted his eye lashes. He could feel the windburn on his cheeks and forehead. Despite his fur-lined leather boots, he couldn't feel his toes. He assumed that wasn't a good thing.

“Move quickly,” the giant's deep voice broke the fragile silence. “We should take refuge in the trees before the wargs catch up to us.” He began making his way down the rise.

“I'm sick o' this big bastard bossin' us 'round,” Aedrich muttered. The giant halted and craned his great neck, peering into the dark. Aedrich froze, eyes wide.

“Run!” The giant shouted, breaking for the trees. The rest followed his gaze to the north, where black specks sprinted along the treeline toward them. The company took little further motivation to work their frozen limbs. Fortunately, the snow upon the slope was considerably thinner than that which blanketed the lake. Unfortunately, that only served to make the hill more treacherous.

The mercenaries took the slope as quickly as possible without falling. They couldn't yet hear the wargs but they knew it was only moments before the creatures set upon them.

Arne heard someone swear behind him. A second later, Vassily rolled past Arne, the momentum of his fall carrying him faster down the hill. He tumbled, casting and collecting snow along his descent. He stopped suddenly when he slammed into a tree. The sound of snapping bone could be heard over over Arne's heart drumming in his ears.

Arne took the rest of the slope at a slide. Digging in to control his stop, he reached Vassily who was gasping for air, his arm bent the wrong way. Sparing a glance to the north, he could see flashing shadows between the trees.

“Come on, old man,” Arne said. “Those devils are right behind us. Come, on! Up!” Vassily mumbled something incoherent, his face pale in contrast to the dried blood from his scalp wound. “Aye. Now walk!”

Arne had a feeling they wouldn't make it out of this alive. He could hear yipping and growling behind him now. They set off down the remainder of the slope as quickly as possible. Hilde appeared suddenly, longsword drawn, having shrugged off some of her excess furs.

“Go! I'll hold them off!” Hilde shouted.

“Don't be stupid,” Arne panted. “You'll kill yourself!”

“Go! Gods dammit!” Her look brokered no argument.

They struggled down the hill. Legs already burning from keeping his balance and supporting Vassily. Not to mention his own groaning wound.

The growling crescendoed behind them. A flurry of yelps and screaming from the swordswoman and wargs alike. Arne had once helped the woman hold a gap against an entire battalion for five whole minutes before reinforcements had arrived. She was steel made flesh. *She'll make them bleed... If they bleed at all.* Nevertheless, he choked back tears, his throat constricting, thinking of what those beasts might do to her. *Not sure even Hilde will make it out of that alive.*

They'd made it down the slope, far enough for the sounds of the fray behind them to echo across the snow-blown wood. Snarling and growling, ripping and tearing, a symphony woven of steel and claws surrounded the pair. Vassily seemed to be losing consciousness again, his weight drooping toward the ground. Arne hoisted him up, gritting his teeth under the burden.

Great arms appeared out of the forest's shadows.

"Where's that *bellum*?" The giant asked as he hoisted Vassily onto his shoulder with seemingly little effort.

"What?" Arne's limbs ached with relief.

"The... warrior woman. Where is she?"

"Oh, she... held them off for us."

The giant trudged on silently for a moment. "Ebura-Bellus shall welcome her into Valabor's Hall," his deep voice rumbled in the shadows. Arne would have gaped at the giant if he wasn't so rotting tired.

"We need to get a fire going," the giant said. The four remaining, Arne, Aedrich, Vassily, and the giant, made it to a small dell against the south edge of a sudden rise.

"I grabbed a flint from the caravan," Vassily replied, having recovered somewhat from his tumble and walking on his own now. He produced a sharp piece of flint stone and held it out.

"Good. " the giant said, turning to Aedrich. "Gather all the dry bracken you can, boy."

"I'll ask again," Aedrich replied. "What fool put a cow in charge?" The giant turned his great head toward the young man, jaw muscles working in his stony face.

"Aedrich," Arne hissed.

"What? This plainsman's been ordering us around since the attack. I'm asking: who put him in charge? I certainly didn't." He moved to stand toe-to-toe with the giant, his six-foot frame dwarfed by the giant's towering physique. *Idiot child.* The giant lifted Aedrich off the ground by the collar and pinned him against a nearby tree. Arne imagined the boulder-like arm muscles of a full-grown male giant pulled taught beneath the layers of leather, cloth, and fur.

"You wish to strut around, flashing your feathers like a cockrel? Do so whilst being ripped apart by those beasts. I aim to survive. I've fought those things before. I know their ways. You wish to live through this? Do as I rotting say you impotent speck. You *hom-enfant*." The giant's piercing blue eyes were iron and flame. "Otherwise, I'll feed you to the wargs myself." He dropped Aedrich, who gagged and choked in the snow. The boy glowered at the giant but sulked away obediently. The giant motioned for Arne to follow him. They stepped away from the group.

"You should know," the giant began, "I doubt we'll make it through this alive. These beasts aren't wolves. They're... more."

"What do you mean," Arne asked. The giant paused, thinking.

"I don't know. They are a form of undead. I am assuming you northerners have seen undead, yes?" Arne nodded. He and the company had been sent to root out a few draugr hives before and he'd even faced a puk or two, but he'd only ever heard folktales and ghost stories of wargs, at times named *werevargen* in the North. He'd assumed they were merely myth.

"You're saying they were once *people*?" Arne asked.

"Aye. My folk say those who do beastly deeds in life rise as beasts in death." A far-off look overcame the giant's visage. "Regardless, they act like wolves but think like people. Take comfort that these rose from humans and not my kind. We would already be dead otherwise." The giant shook the memory away. "We are to get as far away from their den as possible."

"How do we know where that is?" Arne asked.

"We don't." A dread silence fell over the pair. Arne felt sick. His emotions were shreds, his consciousness fading. He'd not last much longer on his feet.

"What is your name?" Arne asked the giant.

"Epatus."

“Arne.” Epatus took his glove off and proffered his massive hand. Arne did the same and human and giant greeted each other.

“We should return. Gather some firewood. Wouldn’t want the whelp to whine any more.” A grim smile spread across Epatus’ face.

“I didn’t want to shout,” Vassily said. “She’s feverish and losing blood fast.” They’d returned to find Vassily crouched over an unconscious Hilde.

“Bloody gods in thirteen hells, I’ve never met a cannier woman than she,” Arne said kneeling beside her. She had numerous cuts and bruises across her face and blood spatters covered nearly every surface of exposed skin. The woman was bleeding from a grizzly looking stomach wound. Her eyes fluttered open. Brown. Simple. Sharp. Uncomplicated. He’d known her too long not to notice the warmth within.

“Dammit Arne. What’d I tell you ‘bout crying in front o’ the others. The captain’ll dock yer pay ‘f he catches ye.” She slurred and slurped her words through swollen cheeks and cut lips.

“Aye, he might at that,” was all he could manage. “You rest now.” She closed her eyes, losing consciousness again.

“Doubt she’ll make it through,” Vassily said. “Gut wounds are difficult to treat when equipped to do so. I have nothing to work with that might not make her death worse in the end. And, I’m down a hand.” Arne swallowed a knot in his throat.

“Just keep her comfortable then,” Arne looked around. “Much as possible anyways. I’ll take the flint. If the wargs return, the fire should help scare them off.”

Arne and Epatus set to the task. When Aedrich returned, no longer grumbling at the giant, they had enough wood to set up perimeter fires around the dell. Epatus had said this would help, “Though she may have led them here. Not much to be done about it now, and being backed against a sharp rise will prevent us from being surrounded.” A small boon in an otherwise wretched night.

The caravan had been initially attacked at sundown. Morning wasn’t far off. Epatus said he’d take watch and let the others rest. He’d wake them at first light or last breath. *An encouraging sentiment*, Arne thought.

Hilde was dead when they awoke. The cold stiffened the rigour and her wounds were frosted over. Fortunately, her eyes were closed.

“Died in her sleep. A blessing where few can be found,” Vassily said to Arne. “I am sorry. She was a good woman and a better warrior.”

“*Bellum a’beaux pael ca. Ebura s’hôte Salle d’Valabor dahn*,” Epatus said reverently. He spotted Arne’s questioning look and simply added, “A eulogy for one worthy.” Arne nodded.

The sun was swiftly chasing the night away. Its light revealed a world coated in winter. The dense forest clustered with leafless limbs and evergreens whose boughs were burdened with heavy snow. Within the dell they’d taken shelter was a large tree with sprawling roots, and in the crook of one of these roots, Aedrich rested.

As Aedrich roused himself, he revealed a large hollow within the root structure that was packed with snow. Presumably a comfortable place to rest for the night, but a bad omen nevertheless. Epatus’ eyes went wide. Panicked, he began kicking snow around and shoveling drifts with his immense arms.

“The big one’s finally lost it,” Aedrich said.

“Quiet boy!” Epatus hissed. He jumped and yanked his hand from the drift he was investigating. It was bleeding. A small, fresh cut graced his palm. He reached back in and pulled out a jagged white femur. Likely a deer, judging by the size. “The Hanged One take us.”

“What is it?” Arne asked.

“A bone,” Vassily replied, clearly horrified along with Epatus.

“So? Forests are full of bones.” Aedrich said.

“See that gap in the roots you were sleeping in? That’s not just a hollow. We’re in a den. The wargs use that for shelter,” Vassily replied. Arne noticed that the flames had all gone out. The grey morning was slowly brightening. Each passing moment revealed more evidence of a messy, barbaric settlement. Tufts of fur, broken bones, snapped tree limbs. In their rush and fatigue, they’d missed all the signs.

Creatures emerged from the obscuring trees. Arne got his first good look at the beasts they’d been fleeing all night. Lupine but... different. They stalked forward on all four paws but hunched like they were bent over. Grey, black, white, or brown fur covered their heads, shoulders, and ran down their backs, but thinned along the limbs and torso. Their bones jutted from skin pulled too tightly. Most had various lacerations and injuries that gaped bloodlessly. A brown-furred one’s jaw was askew and hung limply from its hinges. The grey one was missing an eye.

Eight wargs padded forward, hungry eyes fixed on the four mercenaries.

“The only way out is through.” Epatus said, readying his longsword. Which, to a giant, meant a six-and-a-half foot blade attached to a two-foot hilt.

“Aye,” Arne said, drawing his battleaxe and picking up his shield. Aedrich and Vassily both nodded, the former drawing his axe and dagger and the latter a simple shortsword, his crippled arm useless. Each shrugged furs and extra cloth from their shoulders.

Twenty feet away, the wargs stopped and the leader, a huge black-furred beast, slowly rose. Arne gasped as the creature stood, even hunched, at least a head taller than him. Wiry, veiny muscles shown through the thin layer of fur on its limbs. Its ribs pressed oppressively against its taut skin. The creature slavered, its tongue lolling from within its rancid maw, and barked. Or... spoke? It sounded angry and tortured. Hungry and desperate. Starving and glutinous.

“They won’t give up until we’re dead,” Epatus said, “Keep them at a distance if you can. If not, let them bite you, it’ll leave them vulnerable.”

“This rottin’ mammoth fucker’s crazy,” Aedrich shouted then broke from the line in a panicked sprint, skirting the edge of the rise and making for a gap in the hills.

“Damn it, boy!” Arne shouted and took off after him. The big warg yipped and three others took up the chase. The rest advanced on Epatus and Vassily.

Arne stumbled through the winter woods. The snow obscured the ground, a dangerous thing in a forest: every root and rut lay in wait to trip, twist, and tangle. This exact hazard proved deadly for Aedrich.

Just beyond his sight, Arne heard the sounds of growling and shouting. A moment later he came upon a gory scene beside a frozen creek. Aedrich lay on the ground, squirming and shouting as the three wargs ripped at his limbs and tore at his chest. Red stained the fresh-fallen snow. Two of the young man’s limbs were still.

Arne thought better of yelling and alerting the savage trio of his presence. Instead, he rushed forward wordlessly, and brought his axe down on the brown warg tearing at Aedrich’s leg. Completely distracted and utterly exposed, its spine severed under the blow. There was a short yelp and the beast went rigid, fangs still embedded in its prey’s leg.

The other two, one grey and another brown, took notice. Their slavering maws dripped with Aedrich’s blood. The snow steamed as it dripped from their jowls. Grey leapt across Aedrich’s body, but Arne redirected its flight with his shield, slamming the creature into a nearby tree. Brown lashed out with razor claws, catching

Arne’s exposed right side. It tore a gash in his clothes and fur. Arne felt the sting of sudden winter breeze and the burning of rent flesh.

Brown slashed again. Arne blocked with his shield. The beast yelped in pain as its knuckles and claws jammed against the solid steel boss. Arne seized the advantage and chopped with his axe but the beast swerved at the last moment and the weapon jammed into its shoulder. The beast cried out. Arne felt his axehead break through bone and tough lupine-human shoulder meat, but his strike had driven it too deep—it was stuck fast. *Damn*, Arne thought.

Grey was up and attacking. It slashed with long claws. Arne sparred with the beast for a moment before it roared, reeled back, and struck him with such a blow that the shield shattered and the mercenary was thrown from his feet.

Arne landed in the snow with a soft thud. The axe slipped from his grip. His shield arm ached. *Gods, I’m done for if this is broken.* He heard Grey stalk forward, upright on its hindlegs. It snarled. Bloody saliva sloughed from its maw as it panted. Arne closed his eyes. He heard the sounds of combat near their camp. The sounds of crunching and tearing where Aedrich lay. He thought back to his parents and growing up on the streets of Aughlow. Of past loves. Battles won and lost. *I could be done*, he accepted.

Grey howled in pain. Arne’s eyes shot open. It was on all fours, Aedrich’s dagger sunk into its back. Aedrich’s throwing arm fell in a bed of bloody snow, drained with his last effort.

Arne sprung to his feet, grabbed his battleaxe, and hacked Grey’s head from its shoulders. The body slumped, lifelessly, into the snowpack.

Brown snarled, spraying sanguinated spittle, and leapt at the recovered warrior. Arne was ready. He swung his axe, catching the beast by the jaw in midair. It yelped and fell to the ground. Arne stomped on its skull before the warg could recover.

Gore feathered the scene. Aedrich stared blankly at the skeletal canopy above. No breath puffed from his parted lips in the winter air. Arne closed the boy’s eyes.

“Go to whatever gods will take you, friend. I’ve Hell yet to live.” The clatter of fighting behind him brought the world back into focus. He stood and trudged into the melee.

Vassily was dead or dying as Arne arrived on the scene. A reddish-brown warg was feasting upon his fallen body. Epatus was dealing with the other three, having hewn a grey-furred warg in half, its top and bottom laying some twenty feet

behind him. In the throes of undeath, Arne could see its jaw still working as if chewing some invisible prey.

Taking advantage of their distraction, Arne slew the warg feasting upon his long-time companion—his friend. It yelped in surprise with each axe blow.

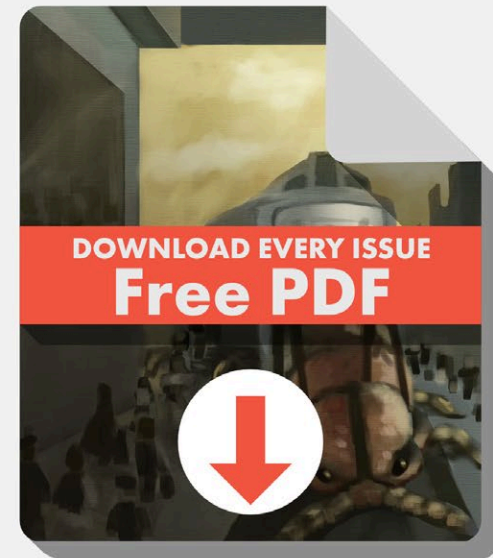
A deep, rumbling cry ripped his attention to the struggling giant. A silver warg had its jaws clamped around the giant’s hip, claws gripping his massive thigh. Epatus was desperately fighting off the other two, and was having difficulty maneuvering his great weapon with the large lupine body attached at his hip.



I left the Imali village after a month. They were just as curious about me as I was of them, and so we spoke for hours each day about our lives. Honestly, I forgot to write down most of our conversations. It was like catching up with an old friend, rather than interviewing an ancient people. I’m sure I will bemoan this oversight later.

Ever resourceful, the Imali gave me a small satchel filled with bright pink petals. They called it something I do not know how to write in our script, but back home I know it as coneflower. I wasn’t aware of its significance, but they insisted it would help keep me healthy and ward off any autumn illnesses. I’ve been eating some of it here and there to help occupy my time on my lonely walk home. The taste is...unremarkable. Still, Edith is always curious about these things. I will have to share with her my journey, as well as any coneflower petals that remain.

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On impulse, Arne shouted at his attackers. The great black beast turned its mangy and scarred head toward the sudden disturbance. Its yellow eyes locked with Arne’s as it broke from combat with the giant. It sprinted on all fours toward the mercenary. Terrified, the veteran warrior, who’d fought many battles and faced far worse odds, nearly pissed himself. Nevertheless, he squared up, prepared his attack, and chopped with all his considerable might...

... too early. The swing missed. Black rammed into him with an open maw. Starving yellow eyes wide in anticipation. Claws upon not quite human hands pierced the warrior’s sides. Its grip was iron. Its teeth were spears. Arne felt them sink into his throat. The breath went from him as blood filled the passage. He choked and sputtered. He flailed his arms, desperately trying to attack the beast.

Satisfied its quarry wouldn’t trouble him further, Black returned its attention to Epatus. Arne saw that the giant had detached Silver from his side by ramming his longsword through its torso and had cleaved multiple great gashes into the second warg, which now lay in the snow puffing its last rancid breaths into the chill morning.

Bleeding from various cuts and puncture wounds, Epatus held a readied stance, his grip high and his bright blue eyes alert. Through black hindlegs, Arne saw the giant’s stoney face: grim and focused, worn from a lifetime of combat.

Spots clouded Arne’s vision.

The white and red world faded to black.

The last thing he heard was the howl of the black warg.

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WORLD ANVIL CONTEST WINNERS

hosted by World Anvil

 CONTEST

The following sections were winning submission to World Anvil's "Alliance Challenge." We had a great time this year sharing some of the World Anvil community's work with you, and hope it has helped inspire your own worlds!

INTERNATIONAL DISCOGOLF ASSOCIATES FOUNDATION (IDGAF)

by Garrett S. Lewis

The International Discogolf Associates Foundation (IDGAF) is an organization dedicated to the facilitation and management of discogolf tournaments. Local and government-backed teams alike are allowed to participate. Many across the world tune in to watch their tournaments, making the IDGAF a multi-billion-dollar organization.

The IDGAF is run by a thirteen-member board, and a director. The director is chosen, simply, by surviving a hit to the head with a ceremonial disco golf club. In these instances, the club wraps itself around the director's head like a halo—clearly denoting their appointment as director.

The director and the board oversee management of the IDGAF's funds, contact governments and notable organizations to found teams, oversee marketing and broadcasting, and reserve venues for tournaments. The group has secured mul-

ti-billion-dollar sponsorships over the years, gaining funds from governments and corporations such as Malaysia, Agnew Sr.'s, and even solitary billionaires.

IDGAF procures venues for their games in order of significance—a local college game may only be played on a small local venue, while larger games such as the bi-bi-bi-yearly international tournament—which billions across the world tune in to enjoy—often have multi-million dollar arenas constructed for their arrivals. One such arena is the famous Dubai Discotower—which burned down five years ago in an unfortunate birthday cake incident.

Teams are organized into a bracket, first by proximity starting at the city level, then by county, state/province, country. Most teams never make it beyond the first tier, and those who are unable to graduate to the third—are never heard from again. Not because the IDGAF does anything to them, but simply because they are ashamed. At the higher end of the bracket, countries and corporations typically face off against one another—some even settle disputes via discogolf games. While local teams can technically make it to the international tournament—a series of accidents and mishaps typically takes them out of the running beforehand. A few have, in the past, reached the internationals—most famously the Houston Hounds, who's team was entirely composed of dogs.

Teams in the IDGAF typically have 3-26 players, depending on their style of play. Schools, corporations, churches, governments, and clandestine organizations alike set up their own teams who practice every Wednesday evening at 7:00 PM local time. This is a hard-set rule, any teams found practicing at different times are banned from the IDGAF. Each team has an IDGAF-appointed parent, who provides advice, support, and snacks.

The ACF's own team was only established five years ago, after a mysterious email ended up in Bin's inbox. The team—named the Undercover Agents and is composed of Bin Folks, director of the ACF, and a few close co-workers.

One of the most famous results of a discogolf game was the reunification of East and West Germany. A team from Russia faced off against a West German team, in a game that nearly ended in a tie before the West German team was able to get in a final goal.

The Berlin Wall was then beaten down with discogolf clubs.

Other notable teams are the Hoboken Honkers (who's players are all trained rodeo clowns), the United States Eagles (who's players include retired presidents and a genetically engineered super-discogolfer), the France Fleurs (whose players would all rather be doing something else), The Manila Folders (whose names and faces are all classified), the Tiélé Tigers (who play each game tied together), and the Amazon Amazonians (who are most certainly sentient trees out for revenge wearing human skin).

In truth, the IDGAF is run by a mad cult—who are trying to find the world’s best discogolfer. They believe that whoever wins the next international tournament is the prophesied reincarnation of the great hero who originally invented the sport. They believe that, once found, the reincarnated hero will lead them into the end of days—cleaving the world in two with a single swing of their legendary club.

To this end, they select and sacrifice some of the best players throughout the world—whisking them away in the chaos of celebration following their victories. No award awaits the cult, however, and they know this fully—honestly, none of them have any idea why they are trying so hard only to die in the end.¹

The club itself is made of gold, and is stained in large patches with what the cult believes is the hero’s blood—but is, in fact, simply spilled juice. The perpetrator for the juice-incident likely made up the bloodstain theory to get away scot-free.

THE FLOQ: COMBATIVE DEMOCRACY

by Jacob “icastbolt” Boldt

Life within The After can occasionally be chaotic, but nothing compares to the destructive violence which arose during the appearance of the *Sophonts*, the first spirits capable of intelligent organization. Among them were the Rogbo, colorful bird-like creatures whose wings more closely resembled that of a cloak.

Embattled tribes of Rogbo would frequently skirmish to secure territory and the vitally necessary essence of *æther*. In a period when both became increasingly scarce, tempers erupted into a calamitous event simply remembered as *The Shattering*. In the wake of this world-splintering carnage, the tattered remains of the tribes really only had two diverging courses of action; to put out the fires, or finish what they started. On the brink of true finality, a Rogbo named Chroma brokered a cease in the violence. Weaving together the frayed remnants of the tribes, Chroma bound the last of the Rogbo into one unified collective, the First Floq.

Like a wrapping of gauze around a seeping wound, The Floq has been the solution for the consistent bickering between the varied collection of independent Rogbo tribes. Called into action when an internal issue grows beyond the scope of a single clan, The Floq seeks resolution with as little bloodshed as possible.

¹ The ceremonial club used to appoint the IDGAF director had once, in fact, belonged to the legendary hero themselves. Cultists have handed it down for generations, ensuring that when the hero finally returns, they will have their trusty tool ready.

*All voices heard,
All intentions tested.
—The Mantra of The Floq*

Combative by nature, discussion and resolution of an issue is like suffering through a disharmonious symphony of chittering avians, where the loudest voice is often the one to be heard. Unlike a traditional democracy, the will to push an agenda is considered more important than the number of individuals interested in doing so.

When a matter escapes resolution by words alone, voices of The Floq will harmonize to call for a *Trial by Flume*. The act of combative democracy, where the intentions of those involved in debate transcend words and become action. Lines are drawn, sides are chosen, and judgement commences. Harsh words like fuel as the meeting erupts into a literal trial by fire, where the last one standing is declared the victor.

Overseen by a tribeless judge known as the *Vy’Framer*, this honored spirit serves as the impartial voice in defense of the interest for all Rogbo-kind. Acting as the quasi embodiment for the will of the entire Floq, the Vy’Framer is connected to the *Bræd*—a series of invisible threads that form the basis of the world’s magic system—of all tribe members. Due to this connection, those within the network can instinctually find their way to the place of judgment. A valuable trait, as most meetings seldom occur in the same place more than once.

Revered as an incredibly strong *Locus*—a spirit of the underworld who can manipulate the bræd—the Vy’Framer is capable of destructive action beyond the means of a single Rogbo. Having access to the æther stored within the entire networked Bræd of the tribes, the Vy’Framer enforces the sanctity of the trials and ensures the judgments are carried out accordingly.

The Floq will meet high above the plains of the surrounding landscape, nesting with those of the same tribe of similar ideology. As tribes arrive at the nexus of council they’ll often collect into separate camps upon large crags and pillars of stone, trademark attributes of the Zloylands.

Valuing personal liberties, Rogbo don’t often agree about the correct course of action. It’s not uncommon for tribes to splinter due to disagreements in leadership. This mentality tends to carry into the debates themselves as discussion quickly escalates into displays of who can yell the loudest, before exploding into eager calls for a Trial by Flume.

To those outside the culture of the Floq, the trial appears as a duel of flames. Gusts of fire trading from pillar to pillar, a horrific display of raw power. To the initiated, it’s a contest of conviction. A debate given physical form. Harsh, vile, and empty words traded for pure action and raw conviction. Believing the strongest will is directly correlated with the most justified course of action, as little as a sin-

gle individual may attempt to make their case in defiance of an entire host of tribes. Utterly eclipsed by opposition, solo success during a Trial by Flume will be difficult, but not impossible. Should this single Rogbo prove victorious, their intentions shall be deemed the best course of action and shall steer the fates of the collective Floq.

Normally initiated between two collections of tribes, opposing contenders will take position upon parallel towers within the regions of the Zloylands. When every member of the perspective tribes have taken their positions or cast their lot, the trial begins.

Accessing the energy stored within their tribe's Bræd, locus participating will draw æther to them. Like oversized candles, this excess of power becomes immediately apparent as the towers upon which they perch ignite in flames. Within seconds, quick bursts of this heat are traded from pillar to pillar. The stillness of the air broken with the shattering of rock and the war-cries of Rogbo.

The objective is simple, remove your opponent from their pillar. Managing to blast the opposing side from their perch, forcing them to flee, or incapacitating them entirely will net a victory for the last tribe member standing. By the act of winning their trial, any matters at hand will cede to the victorious party.

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While a large number of Rogbovarious tribes exist, the most frequently represented tribes in trials tend to hail from one of the following clans:

Chroma's Veiled: - The oldest of the Rogbo tribes, the children of the veil are attributed as the original founders of The Floq. The self-proclaimed cultural protectors of Rogbo-kind, the veiled often make every attempt to avoid and prevent the infringement of outside influences.

Conservative | Stewardly | Isolationist

Flame Eaters: - Among the scrappiest members of The Floq, while well meaning, the Flame Eaters never turn away from a fight. Which is unfortunate, as they're often getting themselves wrapped in confrontations with their direct approach to the truth.

Scrappy | Honorable | Wild

Carvlings: - Often considered the meekest of the Rogbo tribes, Carvlings are most interested in the preservation of information and the collection of trinkets.

The locus of their tribe have learned to hone their flames into refined points. Using this fire as a make-shift carving tool, they will etch runic text upon walls and tomes.

Clever | Diplomatic | Snobby



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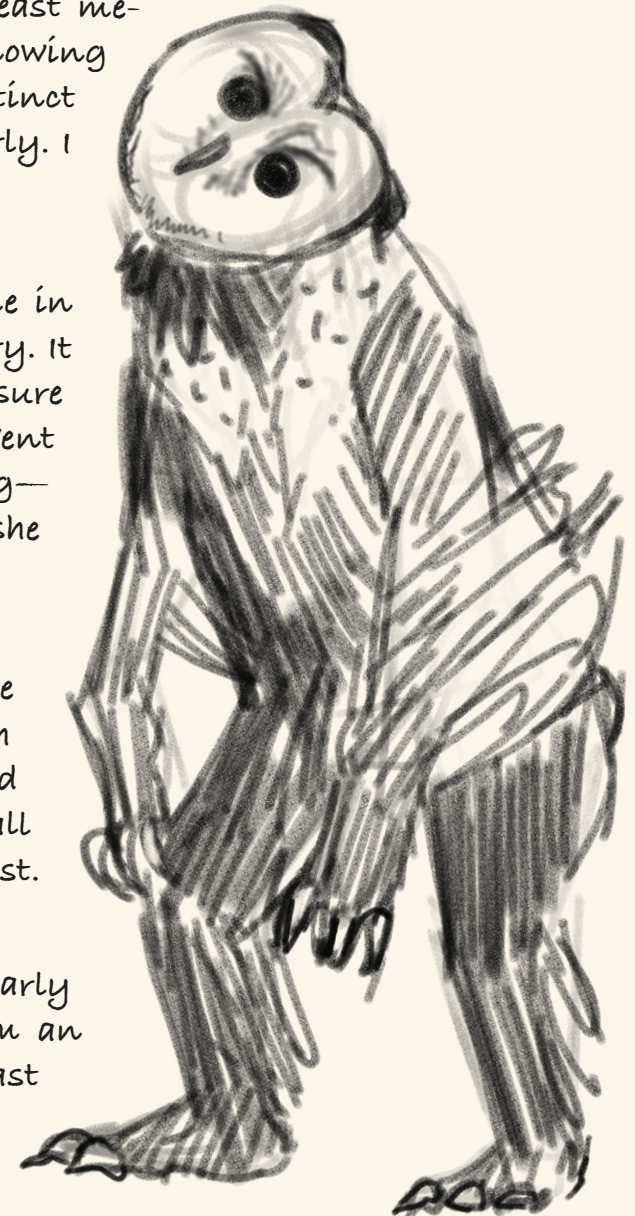
I woke up to the sounds of a heavy beast meandering through my camp. Despite knowing that I should have stood still, my instinct was to run, and I wasn't thinking clearly. I know that now.

The owlbear animal caught up with me in mere seconds, its yellow eyes full of fury. It struck at me a number of times. I am not sure how many blows I suffered. The whole event is hazy. I don't even remember running—but I know that I must have, otherwise she wouldn't have chased me like that.

I don't know how long we remained like that—the beast over me with its hot breath on my back—but it must have grown bored or simply lost interest. Luckily, that all happened not far from the edge of the forest.

Edith, who has stayed by my bedside nearly every moment, has already told me I'm an idiot for running from an owlbear at least a dozen times.

At night, no less.



 ANNA HANNON

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 Alumnus Illuminus, Adjunct Professor of Gateways, 3423 WestNorth Street, Dunny-on-the-Spire.

How can we create new time structures such as names for years, or months? And how would these affect the world?

—*thecrazybgirl* | Brenda

When you say new time structures, I'm going to assume you're referring to clocks and calendars, rather than altering one of the fundamental building blocks of reality as we know it. I could give you some advice on the latter, but thanks to my involvement in the VERY REDACTED incident I am forbidden by the REDACTED Convention to discuss such things. But I am free to discuss clocks and calendars...for the time being. A word of warning before we delve into this exciting subject. If you are writing for an audience, a simple calendar is best, especially if the passage of time is relevant to whatever story you are telling. Having to keep track of a complicated calendar will frustrate all but the most worldbuilding-obsessed readers.

When working out how time will be measured in your world, the first thing to take into account are the natural cycles. What easily observable phenomena occur with repeated regularity in your world? On planets with an observable night sky, the paths of celestial bodies will be the most reliable and visible. Assuming your world orbits a star, the path of the Sun and Moon(s)(if any) will dictate the daily routines of most life on the planet. Don't forget to take into account the passage of the seasons as well. Depending on the

local climate, a calendar could track four seasons (Summer, Fall, Winter, Spring), two seasons (Dry Season, Rainy Season) or some other combination thus far unthought of. To begin making your calendar, determine how long it takes your world to orbit its star and what other celestial cycles might be visible from the surface.

Once you know the natural cycles, you can delve into the artificial. How a society decides a year's length can be largely arbitrary. Agricultural societies typically base their calendar year on the cycles of the sun, since they need to closely keep track of planting and harvest times. Nomadic peoples or hunter-gatherers could focus on the cycles of the moon or stars.

When you know how long a year is, you can then work out how it might be further broken down into months, weeks, and days. If a culture considers a certain number sacred, they might make use of that number heavily. For example, if the number six is sacred, the months, weeks, and days may all be divisible by six. So a year with 366 days could have twelve months with six weeks of five days or five weeks of six days. You mathematical types might notice that this doesn't add up, but we'll get to that later. Take note, no matter what rational or narrative structure people want to put on time, they will have to bend to the natural cycles. The Jacobins of Revolutionary France, for example, were fanatical devotees of the number ten. When they remade the calendar, however, even they were

forced to admit that a year broken into twelve months and four seasons could not be changed.

With your divisions sorted out, now you can name them. This is a great opportunity for quiet, background worldbuilding. Months and days of the week are not named by accident. These names will show off what your culture thinks is important and worth remembering. Months may be named after gods or great heroes from the past. They could be named after the natural phenomena that occur during said months, or for animals associated with them. An extremely clinical society could simply call them 'first month' or 'second day'. Consider this carefully if you decide to go so deep. Don't concern yourself with hours, minutes or seconds unless you're the kind of maniac the REDACTED Convention was written for. Before the adoption of precise timepieces, divisions of the day relied on the cycles of the sun. Morning, noon, afternoon and night were all people needed.

Now you have a standard year length, as well as months, weeks, and days sorted. This is the core of a calendar. It is now time to tack on some special days. Holidays both religious and secular will depend on the history of your world and that's not what we're talking about here. What we can talk about are the New Years, the Solstices, and the Equinoxes. The points where the days and nights are the longest, shortest, or exactly the same are natural places to put a new year celebration. New Years Day will always be a cause for celebration and reflection, so make sure you know where it is on your calendar. An interesting feature the Gregorian Calendar lacks is Intercalary Days, days that fall outside of the normal calendar. Take our Sacred Six example above. Twelve thirty-day months adds up to 360 days, not 366. Those extra six days could be scattered around the calendar between the months as special religious holidays, or crammed together at the end of the year for a spectacular New Year's celebration.

There you have it. A full calendar year, what else could possibly be left? If you want to go above and beyond, have your world use multiple calendars at the same time! There could be an agricultural calendar that follows a solar year, a civic calendar that follows the lunar year, and a ritual calendar that follows the course of another celestial body like a planet or star. Or to make it even more complicated, the greater calendar could keep track of multi-year cycles. The Chinese Zodiac follows a sixty-year cycle, with each year in that cycle having a specific name. The possibilities aren't endless, but there is plenty to keep you busy for a good long time.

How do you avoid making your world a "Mary Sue"?

—*hazzyoo*

I applaud you. Rather than ask how to make a world, you're asking how to do it well. To begin, we must define what exactly a Mary Sue is. The Interdimensional Commonality Cataloguing Endeavor defines a *Mary Sue* as an unrealistically flawless character. Originally it specifically referred to female characters in fan-fiction, but has grown to include characters in original media. A male version of this could be referred to as a *Marty Stu* (if you prefer visual similarity) or a *Gary Stu* (if you prefer verbal similarity). At first glance, this term for an individual character may seem to have little to do with worldbuilding. But there is much we can learn from it.

The key word to pay attention to is 'flawless.' Many worldbuilders can be driven by an impulse to make a world *better* than their own. To banish the ills that plague humanity and create a perfect place. This powerful and admittedly noble impulse must be resisted. First off, Utopias are boring. If you're creating this world for an audience, then a world with no conflict doesn't make for riveting reading. Although this can be alleviated by putting your perfect society into conflict with others, à la *Star Trek*. Even with

that taken into account, you must be aware that your idea of a perfect society will not match up with everyone else's. Science fiction writers have a habit of writing about a future where humanity has embraced rationality and religion is a thing of the past. To the billions of religious people whose faith is central to their identity, this can come off as insulting or disturbing.

To avoid a problematic utopia and/or boring setting, try not to think about your world in terms of good and evil, or even positive or negative. Consider what your culture values, what it celebrates, and what its people need to do to survive. Contemplate aspects first before you think of outcomes. For example, is this society individualistic or communal? The former values the will of each individual person, while the latter values the needs of the community. An individualistic society may well be a dynamic one, where someone with brains, luck, and tenacity can rise to the highest echelons. People can be who they want to be and damn what everyone else thinks. This is quite a rosy picture, but this culture might not be so kind towards those who don't shine. There may be little support for those less blessed, with blame for their situation placed on their own shoulders. On the other side, a communal society could be excellent at taking care of everyone within. Decisions might be made by wise elders with the needs of all taken into account before a choice is made. Long term thinking is the rule and peaceful stability the goal. But this could

also be an oppressive society, with your lot in life determined by your birth and thinking differently harshly punished. Neither of these is inherently good or evil. Both have positives and negatives. Follow this process to make a world that is far from being unrealistically flawless.

What can cultures domesticate?

—*GiftOfGabby*

Bacteria, protozoans, fungi, plants, animals: if it's a form of life, human cultures can, have, and probably will domesticate it.

...I think that was a perfectly thorough answer, but my editors are insisting I go into more detail.

Domestication itself is the altering of an organism's properties to suit the needs of a human or other moderately intelligent creature. It is an immensely long process. When done accidentally it can take thousands of years. When done on purpose with a thorough knowledge of the nature of breeding and ancestry it can take hundreds. With modern genetic engineering the work of generations can be done in a few years. This is contrasted with taming, which is taking an animal from the wild and training it to serve a purpose. While this alters a single animal's behavior, it does not alter its genetics and it does neither to the species as a whole.

The first forms of life to be domesticated were plants. Familiar crops like wheat, millet, rice, corn, and potatoes became the foundations that mighty civilizations were built on. What sets these early domesticated plants apart is that they were easy to store. All of them could be put into cool, dry places and last for years if necessary. They might not be the most nutritious or filling, but they would last. Once this base was established the attention of farmers and gardeners could be turned elsewhere. Spices, fruits, and ornamental plants were all domesticated, bringing their taste onto the table and beauty into gardens.

After plants, humans turned their genius towards other members of the animal kingdom. It should be noted that the only animals successfully domesticated are social ones. Solitary animals, like moose or bears, have proven resistant to such influence. Domestication takes advantage of herd and pack instincts, placing a dominant human at the head of the natural hierarchy.

Over the millennia, people domesticated animals for three different reasons. The first and most basic was for food. Cows, goats, chickens and pigs were all taken from their environment and brought into the human sphere. Those with gentle temperaments and valuable properties were allowed to breed, passing those genes down to their offspring. A fully domesticated animal has been altered so much they now rely on humans for survival, although there is some gray area to this, as feral pigs do very well for themselves. After food came the need for beasts of burden. Dogs were likely the first animal to be domesticated, as their ears, noses, and jaws were much more powerful than those of humans. Horses were valued for their speed and became the foundation of many peoples who lived on wide-open plains. Finally, we have products, an animal domesticated for what it can produce. Wool is a good example, but also shows there is significant overlap with this category and food. A better example of an animal domesticated solely for its product is the silkworm.

While this covers your question quite thoroughly, I feel compelled to continue. We are world-builders after all, and examining the minutiae of history for inspiration is what we do. While taming and domestication are two processes abundant with potential, let us consider the possibilities of partnership and symbiosis. Symbiosis is when two organisms rely on each other to survive. The bacteria in your intestines are a prime example of this. They require you to eat to survive and you need them in order to break down the food you eat. The possibilities of symbiosis in worldbuilding, especially with humans and other beings, are ripe for exploration. But what I find even more interesting is partnership. In a partnership two intelligent species work together to achieve a common goal.

To find an example of this, we must go to the Land of Death itself, *Australia*. In the later 18th and early 19th century on the southeast coast was a whaling station at Twofold Bay, where orcas would herd baleen whales towards land from the open sea. Then they would slap their tails on the water near the beach to summon the whalers. Led to the whale by the Orca, the whalers would kill it with their harpoon and leave it overnight so the Orca could eat the tongue and lips. When they were finished, the whalers would bring in the rest of the carcass to be processed. This piece of history can be used as a framework for worldbuilding such partnerships in your own creation. First is the need for communication between the two species. Second is a task that each requires the other for. Third, and most importantly, is the partners living in vastly different environments. In Twofold Bay, sea and land separated the humans and the orcas, but it could be any kind of exotic environment. Domestication is an ancient and fascinating process that could have all kinds of applications in your world.

Where do medicines come from in your world? Who makes them, and how are they distributed or abused?

What or who is your most divine being in your universe? What is their role in the mythology?

What are some of the oldest grudges in your setting, and what's preventing them from ending?

100+ Prompts!

#worldbuilding-wednesday

Join our Discord for more weekly prompts!

WORLDBUILDING

MAGAZINE

MEET THE STAFF: EMORY GLASS

curated by ACGrad

What is your role for the magazine, what do you enjoy outside the magazine, and what do you hope to do going forward?

Oh man, that’s a big question. Well, I am the freshly minted Senior Meta Director for the magazine, but before that I have been (and will continue to be) a writer and community member. I am the one who writes *Thirty-Three Tales of War*, which is a flash fiction serial delving into the personal lives of thirty-three individuals during a major conflict in my setting, for the magazine.



Outside the magazine, I write dark fantasy stories in the same setting (which I’ve officially dubbed “The Chroma Books” and “the Chromaverse” respectively). As far as future goals go, I’d like to figure out whether I want to deal with traditional publishing and all that entails or if indie publishing is really the right thing for me. Besides all that, I actually don’t do very much now that I’m thinking about it. I like tea, languages, and lurking around various parts of the internet, I guess.

That’s already a ton! What kind of worlds do you build?

Well, I am intensely perfectionistic and like to pour all my focus into one thing to make it

really, *really* good, so I maintain one world with an extensive depth of lore that has been called “near technical” before. Perhaps contrary to what those who know me would think, I don’t consider my world (or stories) to be purely “Grimdark;” I personally prefer the term “Neutraldark” but that will probably take eons to catch on as a sub-genre if it ever does! I say this because I *do* try to maintain some balance between the “light,” “dark,” “grim,” and “noble” aspects of my setting—however, it definitely falls on the darker end of the spectrum more often than not.

Some people go “top down,” while others write the details out first with a “bottom up” method; some make large world maps first and some create characters first. How do you go about building your world?

Well, when I first started, I began where I imagined most others would, which was with why this setting exists at all. I have a whole personal “Big Bang” going on, except the universe is sentient and lonely (that is not a joke, that was the actual premise) and so taught itself to create life. Then came cosmology, the creation of the “Orb” (my Earth analogue), and an intense amount of other things down to very minor details such as why this culture uses this specific embroidery pattern on its clothing. I would not say this was a strictly top-down direction, though, since I did at some point skip around the different “levels” of detail.

I think that, distilled into its simplest form, my process is one of ceaselessly asking “Why?” —“Why is the Void lonely? Why did creating this deity or that deity not solve things? Why are there five different colours of blood? Why aren’t there

humans? Why are there three moons? Why why why why why...” I find that this keeps me focused and ensures that I can still have elements that are “Rule of Cool” while maintaining the integrity of the setting by challenging me to justify each element’s existence. The second question I ask nowadays is “How is this going to screw with lore I already have?” which I have so far been able to successfully mitigate.

So ... maybe a philosophical approach?

Do you have any advice for other fiction writers about worldbuilding?

I seem to have a somewhat unusual stance on this topic. I don’t think I’ve been quite as emphatic in the past as I should be that I personally take a holistic approach to storytelling: the writing, lore, and artwork are all equally important to me and are all, in my opinion, equally important to the experience of the Chromaverse. In other words, they are all significant parts of the story I want to tell.

However, I know that many writers world-build according to story need, which is also a perfectly valid methodology. My advice to other writers is to do the things that will help you meet your definition of success. Do you need a four-hundred page tome of lore and information before you can sit down to write? Absolutely not. I didn’t even have that. I also personally cannot imagine trying to write something that I haven’t done *any* preparatory work for, but if you tell stronger stories and make better creations when you’re working on the fly, take that approach. It all comes down to the kind of story you want to tell. Once you figure that out, all you really need is the discipline, self-confidence, and motivation to push forward (I know, I know, easier said than done).

Follow Emory Glass on [Twitter](#) or learn more about her works on her [website](#).

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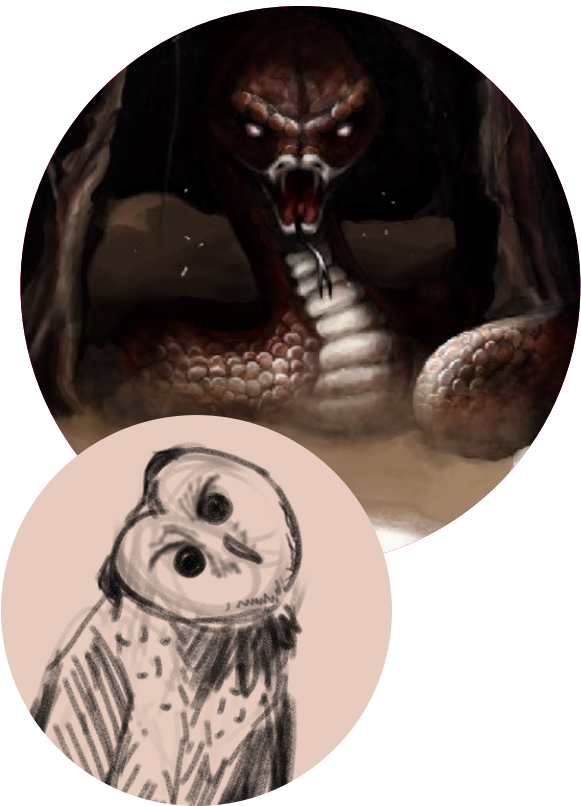
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