

RISE OF THE ANTS

Background Guide

TABLE OF CONTENTS

Equity Disclaimer	3
Letter from the Director	5
Introductions	6
Definitions	7
Context	8
State of Affairs	11
Who Makes up the Colony	13
Goals	17
Property	18
Bibliography	21

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AIDAN THOMPSON (HE/HIM)
DEPUTY SECRETARY-GENERAL

LETTER FROM THE DIRECTOR

Hello Delegate!

My name is Gillian, I have a background in biology, and I actually don't really like bugs! Something about the legs gives me the heebie jeebies. That being said, they're incredibly impressive little things, and I'd love to see what we can use them to accomplish!

I tried to stick to the facts, but please don't reference this background guide if ever you decide to go into myrmecology! I did take some liberties with my numbers and values, as well as my interpretation of ant behaviours - I hope the ants would agree with the changes. This committee emphasises teamwork above all else. Working together, you will have an inhuman capacity for expansion (literally). Divided, each individual is nothing more than, well, an ant.

Using the power of teamwork - and the kind of creativity inherent to human teenagers - do your best to crack the puzzle of how best to take over a dwelling occupied by beings hundreds of times your size. You're gonna be working on a scale which almost doesn't make sense as we are now, so try to reimagine how something conventional for a human might be used unconventionally when you're the size of an ant.

Good luck, have fun, and don't die! At least, not too often. :)

GILLIAN JAHNKE (SHE/HER)
DIRECTOR, AD HOC

INTRODUCTION

Right now, humans are the dominant species on Earth due to raw brain power. What would happen if another species, sharing our drive for expansion, could meet that advantage head-on? What would happen if they outnumbered us? What if their own biological advantages, paired with human intellect, could tip the scales?

There are over 12,000 known species of ant, with some estimates placing the total number of ant species closer to 22,000.

Our best calculations put the global ant population at 20,000,000,000,000,000 individuals (as derived from a 2022 ant census).

That's a lot of bugs. We want to see what a group of them, equipped with an ambitious goal and human stratagems, can accomplish.

DEFINITIONS

Whats Makes Up a Successful Colony

We will be referencing the black carpenter ant (*Camponotus Pennsylvanicus*) throughout this guide and committee, unless otherwise specified. These ants, native to much of North America, form colonies of up to 3000 individuals to a nest tunnelled out of damp wood.

A single nest consists of multiple categories of ant, delineated by their size and physiology. All black carpenter ants, regardless of caste, are dark brown or black in colour; they all also have the standard 3-segment body, with 6 legs, a set of mandibles, and two segmented antennae.

Black carpenter ants are a well-known household pest. Their woodworking skills make them right at home in the framework between walls and under floors, and their ongoing presence can even threaten a home's structural integrity! They're known to steal food from the pantry, and even raid pet food dishes to satisfy their protein requirements.

CONTEXT

How do Ants Live?

Carpenter ant colonies can consist of up to 3000 individuals. They possess one reigning queen, who may live for over two decades, laying thousands of eggs and producing thousands of workers. After two to four years, once the colony is approaching critical mass, male ants and nascent queens alike will grow wings and “swarm”, venturing out from the nest in large groups to mate and establish new, satellite colonies. After mating, the male ants will pass away, and the nascent female queens will shed their wings and produce the first generation of workers for their new nest. This first generation of larvae produced will be fed by the queen’s saliva and will therefore not reach the same size as later generations.

These queens will no longer be welcome in the original colony, but the workers from the satellite colonies may mingle with those of the original colony, and vice versa!

Carpenter ants create their nests by digging long “gallery” tunnels in damp, soft wood. This creates the best environment for growing baby ants, preventing them from drying out before they develop their near-impenetrable exoskeletons. This is nothing more than a preference, however, as carpenter ants can dig through wood of any sort, and a vast assortment of other materials with their powerful jaws. These galleries, when dug through standing trees or man-made dwellings, can threaten the integrity of the foundational structure. This makes them a well-documented household pest.

Unlike termites, carpenter ants don’t actually eat the wood they dig through! As such, with the construction and expansion of their galleries, a sawdust-like powder will be deposited outside the nest. This also means that the ants must secure a food source outside of the nest.

Carpenter ants are known to venture up to 98 metres from their nests, foraging for

resources to bring back. Navigation is accomplished with the help of pheromone trails, allowing individual ants to mark the path to a food source for other ants to follow. As the ants are omnivorous, food may be anything from sugar and meat, to honeydew and stolen pet food.

Thanks to the versatility of their diets, carpenter ants have plenty of options to choose from when securing their two most important nutrient groups: proteins and sugars. Protein is essential for the production of eggs and growth of larvae, and thus is most valuable to young colonies working to grow a healthy queen and worker base. Mature ants live off a diet of sugars (though surplus sugars, fed to larvae, have been seen to increase larval growth and maturation rate).⁹ The pursuit of sugars is part of what draws carpenter ants into human dwellings, as our pantries provide a ready source in large supply.

Carpenter ants are also active at all hours of the day; there will always be ants on a mission, both in daylight and in the dark. Workers pack a powerful (and potentially painful) bite, which may be boosted by the injection of formic acid into the target. Queen ants are also equipped with this defence, but are less likely to have to use it, located as they are in the heart of the colony.

Ants are a commonly-recognized pest animal in human dwellings. As such, there are a variety of methods recognized as effective pest control, including (but not limited to):

- Removal of infested material; this destroys ant infrastructure, and can even remove ants from the colony entirely!
- Insecticide; this is a spray, targeting the full nest by poisoning the galleries.
- Trapped food; this involves loading bait food with various pesticides, targeting the queen directly.
- Physical traps; this targets foraging individuals, preventing them from returning to the nest and aiming to whittle down the nest's numbers while also keeping them out of a protected area.
- Sealing of nests; this is a method of physically filling in a nest's galleries, to destroy progress and make it harder for them to build in a certain direction.

Ants are also a favoured snack for many a common wildlife species, including (but not limited to), birds, wasps, and even other ants.

Black carpenter ants are a particularly resilient species, but should still exercise caution while growing their nest and feeding their ever-expanding ranks. You can never be too careful.



STATE OF AFFAIRS

Present Issues, Topics of Discussion

This committee is a mid-sized nest of carpenter ants, dwelling in the back deck of a suburban family in southern Ontario, Canada. It's summertime, the family just left for vacation, and the nest has seemed sort of small lately; the close quarters have the ants feeling ambitious.

The stillness of the empty human home (combined with the tantalising scent of food leaking from inside) is the final push the nest needed to decide to move in. Despite being a monarchy, strength comes from numbers, and all nest-wide decisions are made by popular vote. No voice is too small!

The ants' goal is to make the human house into an ant's paradise. Secure food sources (the nest needs both protein and sugar to thrive!), build galleries, scout the territory, and hide from possible threats to the budding empire.

The nest has starting knowledge of:

- The external perimeter of the house
- The home's occupants (human or otherwise)
- The positioning of possible incursion points

Otherwise, all information must be obtained as the colony explores!

The Family

The house is usually occupied by a family of four, known to the ants as Mom, Dad, Medium, and Small. They have a pet Budgie, who Medium has been teaching how to speak; Budgie has been known to show off his skills, making observations about his environment using his

extensive vocabulary. The family is on vacation for an indefinite length of time (ants don't do human scheduling- how are they supposed to know how long a vacation lasts?), and the family's neighbour, Big, comes over once a day to release Budgie for a few hours for some much-needed exercise.

Other Threats

There's a large nest of wasps by the back door. They live above the deck, and, if it weren't for the wood the ants nest within, would have eaten the ants long ago. Any exposed ants outside the back half of the home have a chance of being hunted. Additionally, the family has had some prior trouble with wasps making their way into the house- might they have taken some measures to stop small-scale invaders?

WHO MAKES UP THE COLONY

Worker ants make up the vast majority of a nest's population. They can each lift up to 50x their own weight, and pack a powerful defensive bite! They may even inject formic acid into the target, backing the pinch with some chemical reinforcement.

A carpenter ant's nest of workers can be sorted into three categories, defined by the size of the worker.

Minor Workers

- These delegates are responsible for a group of up to 10 other minor workers; ants with a size of <0.8 cm, mass of 1-5 mg.
- These ants can each lift a maximum of 250 mg (one quarter of a gram, equivalent to the weight of approx. one post-it note, or one dried kernel of corn).
- They can collaboratively lift a maximum of 2,750 mg (2.75 grams, equivalent to a little more than a Canadian penny).
- These minor workers can fit through any gap 1 mm (radially) or larger. (around a closed door, through a warped door screen, between shifted floorboards, into a folded cardboard box).
- Minor workers are too lightweight to be caught by sticky traps.

Intermediate Workers

- These delegates are responsible for a group of up to 10 other intermediate workers; ants with a size between 0.8 and 1.3 cm, and a mass between 6 and 11 mg.
- These ants can each lift a maximum of 550 mg (0.55 grams, equivalent to the approximate weight of a raisin, or a 4x4 lego brick).

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- They can collaboratively lift a maximum of 6,050 mg (6.05 grams, equivalent to approximately the weight of a loonie)
 - Intermediate workers can fit through any gap larger than 3mm (radially). They strike a good balance between strength and subtlety.

Major Workers

- These delegates are responsible for a group of up to 10 other major workers; worker ants with a size of >1.3 cm, and a mass of >12 mg.
- These ants can each lift a maximum of 850 mg (0.85 grams, equivalent to the approximate weight of a stick of gum, or a metal paper clip)
- They can collaboratively lift 9,350 mg (9.35 grams, equivalent to one plastic ballpoint pen, two Canadian quarters)
- These major workers can fit through any gap 6mm (radially) or larger. (a cracked door, a dug tunnel)

Each “Worker” delegate may direct a group of 10 (non-delegate) ants of the same caste as themselves. The Queen and the Swarmers may make requests of their peers, but are only in direct control of themselves.

Queen (represented by the backroom)

- The Queen decides which new ants she produces, supplementing lost troops with new ants of any worker size. She is also responsible for raising the princess ants until they are old enough to become swarmers!
- Any delegate whose ant is lost in the line of duty will have to be reborn at the position of their Queen. If a queen is lost, all galleries under her domain are lost as well, and ants within them will default to the closest nest to their last stated location.

Swarmers

- Swarmers are of the same size as an intermediate worker, and are able to fly until a new nest is established. A minimum of two swarmer’s must agree to give up their wings to create the new nest. Use their impressive manoeuvrability wisely!

- Each Swarmer is equivalent to a lone intermediate worker (no 10-ant entourage) until two food sources (a sugar and a protein) are established. At this point, they develop their wings.
- Once the nest has a secure source of food (being sure to have access to both a sugar and a protein!), you may elect to split into multiple satellite nests to better divide and conquer.

As well as the biological divisions between ants of the nest, your hill, in an unprecedented move, elected to further sort yourselves by elective profession. Based on the needs of the colony, ants of all castes have the potential to study and develop into the following professions: Soldier, Engineer, and Scout.

Soldiers

These ants specialise in strategy and combat. They are responsible for the safety of the nest, and work tirelessly to defend against threats to the colony's expansion. These skills will come in handy as the nest expands into new - and potentially hazardous - territories. Any offensive or defensive battle requires the involvement of at least one Soldier to pass.

Engineers

These ants specialise in the growth of the nest. They are responsible for the construction of the galleries within which the colony resides, and have perfected the science of constructing as large a tunnel system as possible within a structure without outwardly threatening its integrity. Large constructions are better enacted with multiple Engineers, to ensure quality even on a massive scale. Any new construction or dig requires the involvement of at least one Engineer to pass.

Scouts

These ants specialise in exploration. They are responsible for learning what lies in store beyond the reaches of the tunnels, and work to help locate valuable resources for the colony. All ants may range within the immediate vicinity of the safety of the tunnels, but only Scouts have the training and skill to range further in pursuit of new horizons. Any

venture beyond the immediate vicinity of the nest requires the involvement of at least one Scout to pass.

Any motion concerning the fate of the entire nest must earn a majority in vote. Any motion to major action must be endorsed by at least two ants equipped with the skillset required to enact it. For example, a major new tunnel system must be endorsed by at least two engineers, a major offensive against a potential threat must be endorsed by at least two soldiers, etc.

GOALS

What are the Ants Trying to Accomplish?

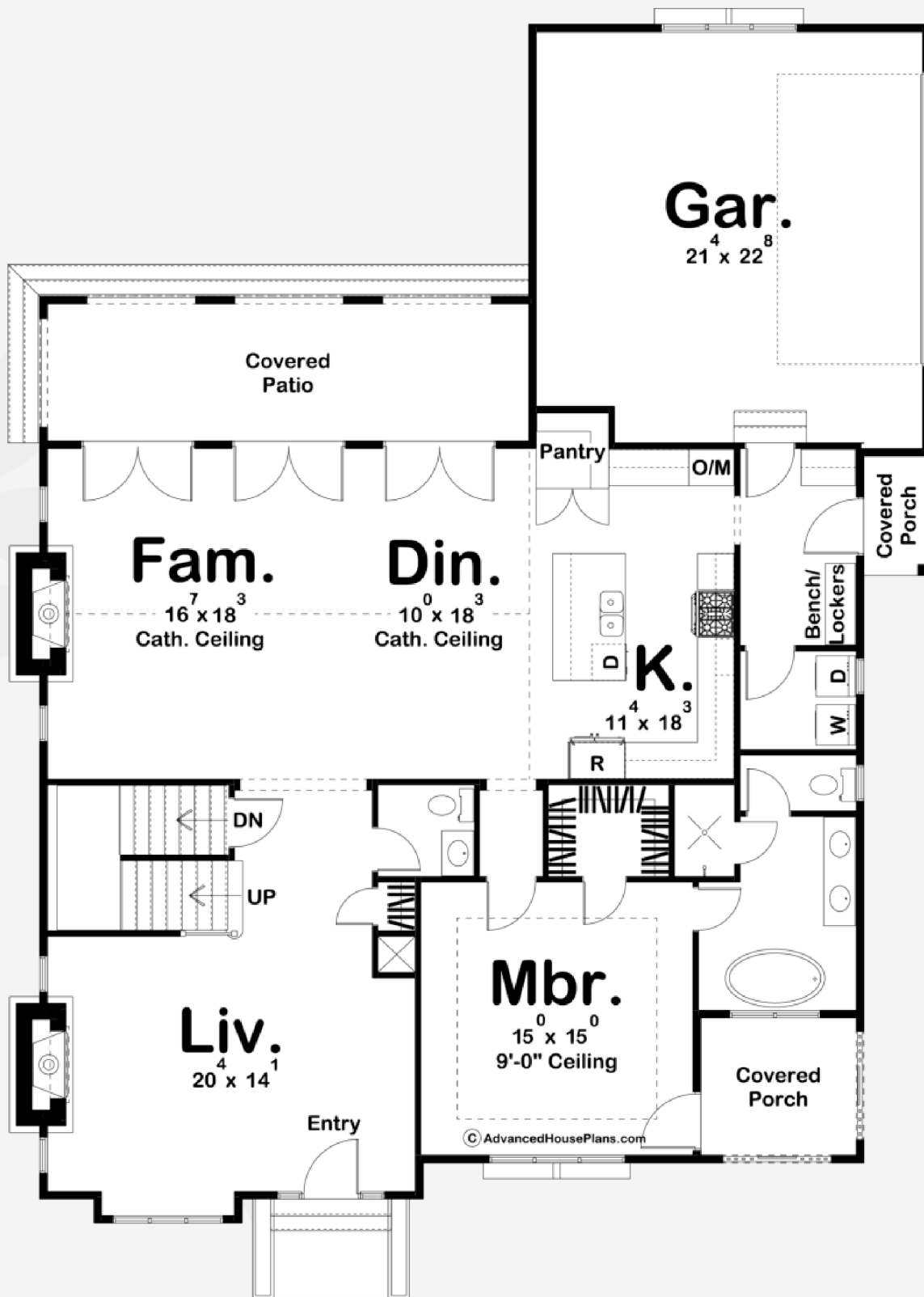
- Expand the colony.
- Secure a source of sugars.
- Secure a source of proteins.
- Establish satellite colonies.
- Secure resources for satellites.
- Maintain uninterrupted control of territory (ex., no overlap with competing species or predators, and clear pathways between all trafficked areas).

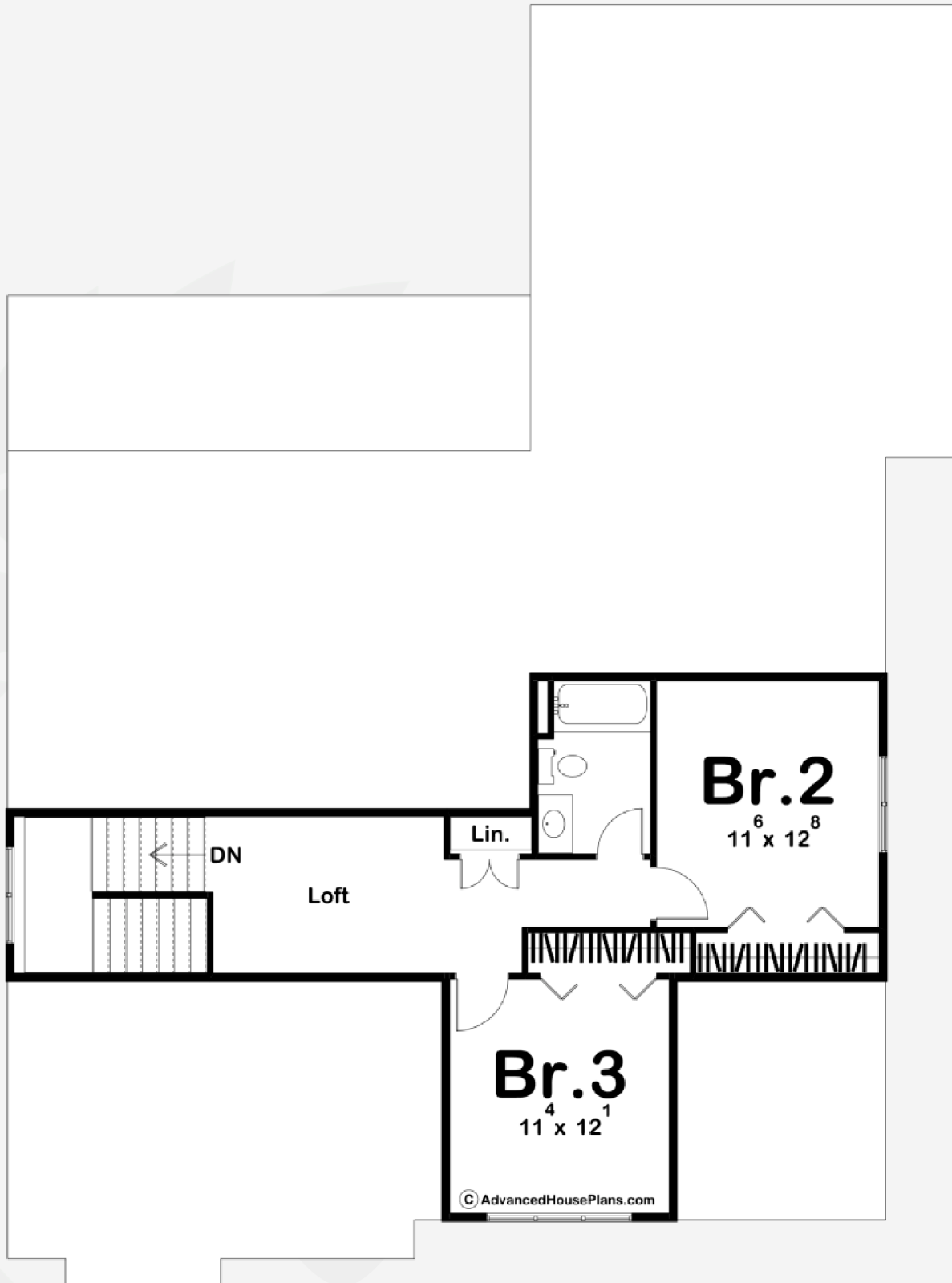
Problems

- The best territory for expansion is a human house.
- The ants must avoid detection by humans, or risk extermination.
- They also must avoid detection by wasp nest by back door, or risk predation.
- Ants must avoid detection by pet budgie, or risk predation/calling the attention of humans.
- Swarming (to form satellite colonies) can only happen when the main colony has an uninterrupted food source.

PROPERTY







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