# Carving pumpkins

## General

The idea of “slice a shape into any other shape” was not applicable in my rolling game.

But it still works and it has potential, so let’s make a different game out of it. The most logical conclusion: a fighting game where you *literally* slice your opponents.

**Titles:** Carving Pumpkins and Dwarfing Dumplings

## Main mechanic

When slashing/attacking, you *literally (realistically)* *slice their shape*. They become the “biggest shape”, the other one is simply lost. Once the biggest shape is below a threshold, a player is considered completely dead.

## Objective

Multiple game modes

* **Dicey Slicey** => slice your opponents until they’re all gone
* **Collect ‘em All** => you can *collect* the slices of opponents; the first one to get X of them wins.
* **Bullseye** => targets appear across the map; hit one with your knife to get it, the first to get X wins
* **Frightening Feast** => players can eat dumplings, which will *grow* you, and then *appear inside of you*. When slicing a player, if you hit a dumpling, you get it. (You grow, they shrink.)
* **Dwarfing Dumplings =>** each player/team gets their own *huge* dumpling. Players themselves cannot be hit (and are rather small), but if your *dumpling* is completely sliced, you lose.
* **Ropeless Race =>** each player has a few objects attached to them with ropes. If another player slices through a rope, it comes loose, and you lose that “life”.
* **Capture the Flag** => one player from each team has a *flag* inside of them. However, this is hidden information. (The player who has the flag cannot throw knives, that’s how they know.) If you slice through that player, you capture the flag. The first to X captures wins.
  + This would require *teams*. I see no way to adapt it to single player or individual players. => This is fine.

Multiple player configurations (1-6 players max): Team-based, AI-bots

## Input

Arrow keys / Joystick = Move

Button = Slash

* Quick-press it to slice straight ahead. (The normal across your looking direction, with a small maximum range.)
* Long-press it to throw your knife.
  + This shoots a narrow rectangle, which functions as a bullet, and will keep flying until it reaches a non-player object.
  + There it gets stuck. Touch it to retrieve it again.

Aiming is different between keyboard and controller

* Keyboard has “turn left” and “turn right”. (Because just using arrow keys only allows 8 directions for aiming, which isn’t enough.)
* Controller just follows your joystick.
* In both cases, if you hold it long enough, it slows down. (To get even more precise, but also force you to release quite quickly.)

## Powerups

Powerups are shown as “packages”. You need to *slice them open* to see what’s inside. (You can also grab them the normal way, but then you don’t know what you get.)

As always, they are grouped by *category*, where each category follows the exact same color scheme.

### Shape

* **Grow**
* **Shrink**
* **Morph** => reset to a *different* shape (from predefined list)
* **Ghost (temporary)** => you are temporarily unslicable
* **Hungry (temporary)** => walking over pieces makes you *eat* them (to grow yourself)

### Knife/Slashing

* Lose knife
* Faster throw speed
* Slower throw speed
* Knife Repel
* **Repeater =>** Throw *all* your knifes at the same time. **=> TO DO**

### Moving

* Faster move
* Slower move
* Reversed controls (temporary)
* Ice (temporary)

### Collecting

* Magnet (temporary) => you *attract* stuff to yourself
* Duplicator (temporary) => any dumplings you eat/parts you collect are *duplicated*
* Clueless (temporary) => you can’t collect anything
* Auto Unwrap => automatically unwrap powerups when walking over them

### Misc

* **Switch teams!** (Randomly. Can’t really show all colors on such a thing.)
* **Vampire** =>
  + The game has light/dark. Vampires can’t enter the light?
  + A vampire can only slice you from *close range*, but does *more damage* if so. (As they “drink your blood”.)

## Arenas

* Ghost Town
  + Mostly open grass field, with a few bits of rubble and leftover stone walls
  + Switch between day and night?
    - At night, one player becomes a ghost.
    - And two big “ghost knives” appear.
  + Meant as a light training ground,so keep mostly open and free.
  + **Dead players** can control the Ghost Knives.
* Spooky Forest
  + Some trees deflect, others get your knife stuck.
  + Some trees can be *cut down* by throwing a knife (with considerable force?)
  + It has a layer “above” the players, so you’re actually walking underneath branches.
  + One tree in the center grows knives around it. After a while, it “explodes” and shoots those knives away.
* Graveyard
  + Tombstones to hide behind (which might move)
  + A light that constantly moves
* Dark Jungle
  + Small areas separated by thick patches of leaves.
  + These constantly regrow.
  + Must be some solid things inside as well, to prevent knives from slicing through *absolutely everything* at once.
  + Add **fireflies** for nice lighting.
  + **Dead players** become a firefly, which turns off their light once hit with a knife.
* Bogus Blackouts
  + Divided into rooms
  + Throw something against the light switch to completely turn off the lights. (This also happens randomly from time to time?
  + **Dead Players** can activate light switches, if *multiple* are on the same one.
* Cheese Factory
  + Lots of cheese blocks (or butter, or whatever) appearing everywhere. Maybe in crates or on conveyor belts.
  + Add those doors that swing open/closed?
* Haunted House
  + Lots of creepy things *doing things on its own*.
* Family Dinner

## Workflow for Each arena

**Step 1:** Draw it in Affinity Designer, keeping in mind separate layers/groups

**Step 2:** Designate zones for *collector UI* and *huge dumplings*

**Step 3:** Import to Godot. (Place correct sprites, in correct map layer, at correct position.)

**Step 4:** Create static bodies where needed. Put these in **Collision layer 1 and 3.**

**Step 5:** Add lights, canvas modulate, and light occluders where needed.

**Step 6:** Finetune, add custom logic, make some things stuckable or deflectable or sliceable.

## Collision Layers

1. All
2. Players. (Though collision exceptions are added manually, at the start, for all team members.)
3. Terrain
4. Powerups
5. Ghosts => used for dead players to interact in *some way* with the environment, and to keep them inside of bounds
6. Areas that want to check if a throwable enters them (even those without a body)

## Groups

* Players => actual, controlled player entities (includes bots)
* Parts => loose player parts; still have a rigid body and value, but can’t be controlled
* Deflectable => knifes get deflected by them
* Stuckable => knifes get stuck in them
* Sliceable => knifes slice through these
* Unpullable => can’t be moved by e.g. a magnet pulling on it
* Powerups
  + PowerupsRevealed
  + PowerupsUnrevealed
* KeepAlive => objects in this group will have their *biggest* body remain (as an active entity), used for Players (as they can be sliced) and the Huge Dumpling

## Throwables

### Knives

* **Knife =>** slices stuff, has an owner (which it loses when no velocity), no body
* **Boomerang** => after one hit, finds a (smooth) path back to owner
* **Curve** => simply curves a lot (a bit random, not sure if too great)

### Dumplings

* **Dumpling** => deflects knives, in-air and when on your body
* **Poisoned Dumpling** => when hit by someone, the attacker is poisoned: they lose one throwable and get their controls inverted.
* **Double Dumpling** => worth two points (in modes where dumplings are collected), makes you bigger
* **Downgrade Dumpling** => worth *minus points* (in modes where dumplings are collected), makes you smaller.
* **Timebomb Dumpling** => will automatically throw itself after X seconds

**Remark:** the effects of dumplings are also, by default, “on hit”. Because dumplings are friendly and grabbed by anyone. So a hit just means they grab the dumpling and get the effect.

### Misc

* **A Melee Weapon.** Something that only works close range, but is *very effective* there. Probably an “area” effect that hits everything within a certain radius, no matter how you aim.
* **Thor’s Hammer** => when hits body, slices you 1-3 times in random ways => when you hold the throw button, all hammers come flying back to you?
* **Bat** => chases the nearest player, simply shrinks you?
* **Spider** => pushes *players* aside, as they don’t want to come near the spider or touch it, but it does move incredibly slowly. (Or it copies your movement after being thrown??)
* **Borderline** => there’s a knife that draws a line behind itself. That line will persist for X seconds. Anyone that crosses it is sliced?
* **Grappling Hook:** A knife that works as a grappling hook: throw it, whenever it does something, *you* are attracted to its current position.

They can have these properties:

* Owner: *Auto, Friendly, Hostile*.
  + Auto = default behavior. Starts with an owner. Once stuck or standstill, it loses its owner.
  + Friendly = has no owner; anyone grabs it when nearby, can’t hurt players
  + Hostile = has no owner; nobody can grab it, everyone is hurt
* Body: *False, True*
  + If false, no *actual* CollisionShape is created, and everything goes via RayCasts. Needed for objects that *slice* things.
  + If true, a KinematicBody and CollisionShape are added and used for movement instead

# TO Do

**Take some devlog images, early on.**

**Essential:**

* Improve bots (to at least be acceptable)
* Remove any “to do” or “debugging” from project => create deliverables => upload => publish.

**Modes:**

* “Frightening Feast”/”Dwarfing Dumplings”: should there be a way for dumplings to spawn more consistently?
  + Feast: And is the current limit too high?
  + Dumplings: when you die, you respawn at your home base? (After some delay?) This would make sense in the game and also solve the “what if players die?” question. Because players are smaller to begin with, this should happen reasonably quickly.

**Better bots**

* When it collides with something in the group “Sliceable”, try throwing a knife against it to break. (This helps with navigation. There are many sliceable objects that open/close paths. But it’s hard to update that navigation on the fly, so this is how we solve it.)
* Instead of only finding the “closest” of something, find them all, calculate distance, then sort based on that.
  + Applicable to knives, collectibles, and players/targets to attack
  + The first one that has a valid path, is chosen.
* Failsafes
  + Create a generail fail-safe against flipflopping. (Check vector over X subsequent frames. If the average “dot product” between them is too low, we’re flip-flopping, so go to the “unstuck”-phase again.)
* Niceties:
  + Give personality.
  + If no knives, *and* no knives for grabs, flee from others?
  + Add the general niceties.

**Future Game Modes:**

* “Ropeless Race”:
  + Figure out how to attach ropes to players.
  + At start, attach ropes, then attach something valuable at the other end.
  + When body is sliced from group “Ropes” => reconnect resulting bodies to the old PinJoints, remove this item from player. (Use collector for that.)
* “Capture the Flag”

**Future Arenas:**

* **IDEA:** FURY => auto-throws knives once in a while (some central, decorated element, make it predictable/visible)

**Future To-Do:**

* Sound effects/particles:
  + Window Crash
  + Vine Slash
  + Player/Throwable Teleport
  + Light Switch
* Dark Jungle: use those elements (with whirlpool signs) for *teleporting knives*?
* Spooky Forest:
  + Some better shadows/gradients, for better depth perception *and* clearer movement?
  + What’s the point of sliceable trunks now? It’s just visual flair now, no actual gameplay functionality.
* Background music doesn’t loop perfectly? Though it should? How did that happen?
* Player awards extend beyond their boundaries. How to solve?
* Add good feedback for the throw timer. (Maybe that hourglass from its icon, which slowly fills/grows bigger?)
* Dumplings aren’t always caught (immediately) by other players? Something about not being sure about orientation (as it’s round, not rectangular)? Or the collision shape is wrong and occludes some of the raycasts?
* Add some minor sliceable elements to graveyard and ghost town. (Like a few barrels somewhere, or fruit.)
* Make collectors look better. Also allow placing them in *any* map layer. (Sometimes they should overlay, sometimes they should be ground.)
* All extra rules are untested …
* When possible, permanently show the effects of a powerup (in a unique, clear way, like a “magnet” shape or particle effect for the magnet)
* **Auto-**throwing: automatically use quick-slash when something is near
* Extra buttons in menus:
  + Controller button for *removing* bots
  + Controller button for *exiting* (completely)
  + Button for *changing bot teams* (if they ever learn about teams.
* Menus: Create Human/Bot version for all player colors, pick correct one.
* Mobile version as well?
* **IDEA:** Different *ground terrains*. As long as you’re on that terrain, you are influenced by its special effect (whatever it is).
  + Icy movement, sticky movement, keep growing/shrinking?
  + Curver => curves any throwables through it. (Might be more intuitive to make it a “magnet” or “hurricane” or something.
* **IDEA:** A way to really *separate* a map between players, locking them into a certain zone
  + **AMAZING (but weird) IDEA:** There’s an actual *minimap* of the arena available somewhere. Slicing it will *actually* divide the arena into those portions.
  + **Maybe something for a different game. =>** would be cool though, maybe for a pirate game about slicing the actual map, or a puzzle game.

**Things that are probably already fixed:**

* Make dumplings *also* deflect knives in the air. (That’s the whole reason I gave them a *body*.) => I think they already do this by default! (Their body is never actually reset, which makes all their functionality possible.)
* On old playtest, there was an issue with owner not being reset on knives standing still. I think it had to do with max capacity, and I fixed that clear bug, but not sure if that solved all issues.
* On old playtest, some losers (or winners?) didn’t get a award handed to them at the end. Is that fixed?