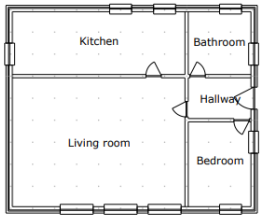
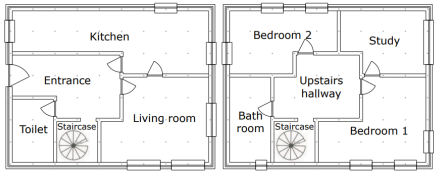
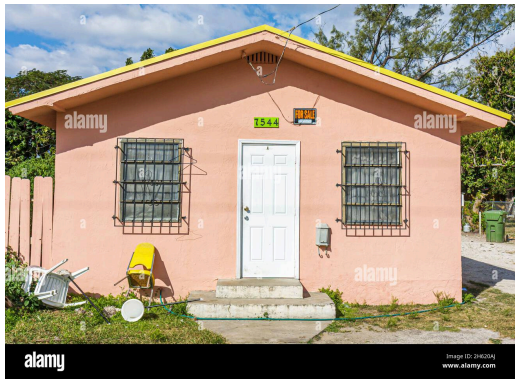
Efficiency

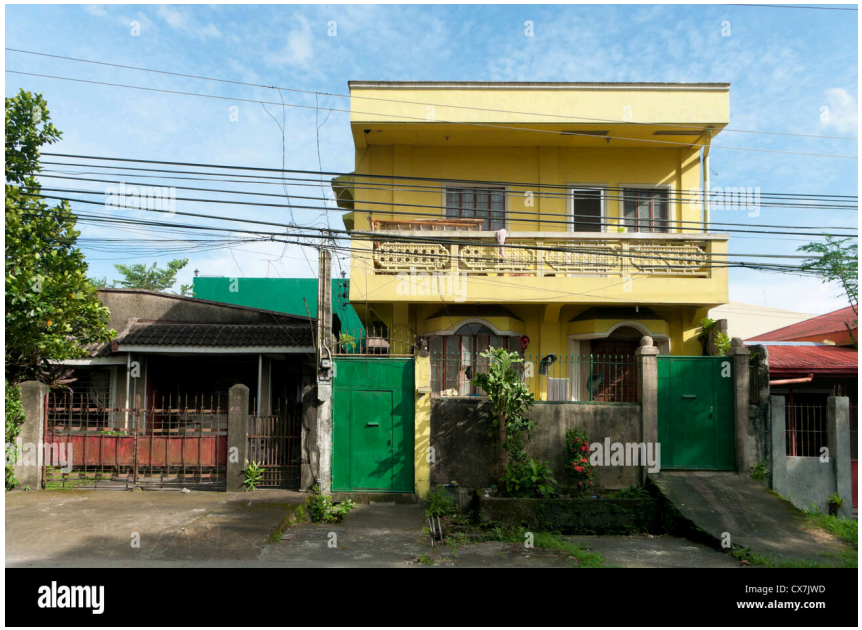
Data Storing			
Procedural Modelling Techniques	**Beams**	**Walls**	
Voronoi Fracture	2.45 seconds	1.76 seconds	
Material Fracture	5.26 seconds	4.74 seconds	
Caching Time (per 100 Frames)			
Procedural Modelling Techniques	**Beams**	**Walls**	**Whole House**
Voronoi Fracture	3.95 seconds	5.14 seconds	49.21 seconds
Material Fracture	4.33 seconds	6.58 seconds	49.18 seconds

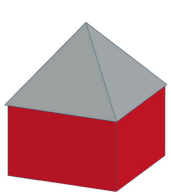
Characteristics

STRUCTURE	*Fig. 8.* House visualization and layout exercises In this exercise, it was observed that all three groups desire for a second floor in the future for extended families. Therefore, the group members left an empty space on the ground floor so that a future stairway can be constructed. In Filipino culture, families form a strong bond and it is common to have an extended family. All of these suggestions were documented and analyzed by the community architects as a guide for the final floor plan of the new houses. The recommendations are as follows: a) No interior walls (open space concept); b) Front and rear spaces for services (laundry); c) Simple one story construction; d) Allocate stairway for future expansion at the second floor; e) Place the entrance of the toilet inside; f) Place the kitchen outside with roof; g) Allocate toilet size of 1x1.5 meters; and h) Toilet door must not align the main door. Based on these feedbacks and suggestions from the family members, the community architects proceeded with the finalization of the schematic designs.	
Walls are concrete		

Concrete beam		
1 to 2 floor	 Figure 4: Example of a relatively simple floor plan including four rooms and a hallway. 	

		 alamy Image ID: CX7JWD www.alamy.com

		
Gable roof	 	

Windows		 

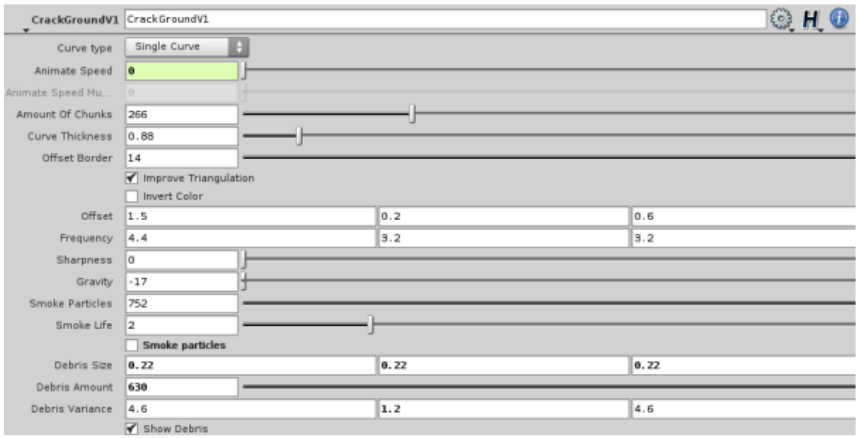
Wood Door		

Living Room	The living room is spacious and well-lit by the sun, furnished with fine wooden furniture (Patzer, 2018). Reference: Patzer, H. (2018). Unpacking the balikbayan box. Long-distance care through feeding and food consumption in the Philippines. Studia Socjologiczne, 231(4), 131-148. ——---------- Common items in Philippine living rooms include settees, coffee tables, dining tables and chairs, small tables for televisions, and shoe racks (Saruwono, Zulkiflin, & Mohammad, 2012). Reference: Saruwono, M., Zulkiflin, N. F., & Mohammad, N. M. N. (2012). Living in living rooms: furniture arrangement in apartment-type family housing. Procedia-Social and Behavioral Sciences, 50, 909-919.	
Wash/Rest/Comfort Room	Toilets, urinals, wash basins, showers, hand dryers, and tissue dispensers are common items in washrooms (Tsaih & Tedja, 2017)	

	Reference: Tsaih, L. S., & Tedja, Y. W. (2017). Soundscape of washroom equipment and its application. The Journal of the Acoustical Society of America, 141(5), 3476-3476. —----------	
Bed Room		
Kitchen		
How to Make the ‘Collapse Debris’	Elkins, E. B. (2020). Simulating destruction effects in SideFX Houdini.	Creating collapse debris in Houdini for a destruction sequence involves a technical process that can be summarized in a step-by-step procedure, focusing on particle simulation, geometry assignment, and realistic physics. Here's a synthesized explanation of the process: 1. Preparation of Debris Source Create Source Particles: Utilize the 'Debris Source' node to generate source particles along the fractures created in the previous fracturing process. This node allows for the specification of the number of source particles and their active duration, which directly influences the quantity of debris. Collision Setup: Connect the source particles with previous collision objects (like the ground plane and other obstacles) to form a basic debris simulation. This step ensures that the debris interacts realistically with the environment. 2. Particle Simulation and Attributes

		Particle Physics: Default particle settings only include basic attributes like location and velocity. For more realistic debris, additional attributes are necessary. Adding Attributes: Use node-based and VEX coding to add attributes for randomness in size, geometry, and accurate rotation. This involves manipulating the particle's attributes to simulate physical behaviors accurately. 3. Orientation and Rotation Build Particle Orientation: Connect three POP Wrangle nodes to the particle solver, each with custom VEX code to: Set particle scale and measure distance from the source. Determine the velocity direction to assign as the particle's individual X-Axis. Calculate the other two axes and rotate the particle along its Z-Axis. This setup calculates each particle's rotation based on its velocity and origin point, adding to the realism of the debris. 4. Geometry Replacement Prepare Source Geometry: Collect low-resolution copies of the original fractured mesh or create new simple fractures that match the material of the fractured geometry. Center each piece at the world origin to avoid floating debris. Copying Geometry to Particles: Instead of the Copy-Stamp node, use the Copy-to-Point node within a For-Each Point Loop for efficiency. This method allows for random assignment of geometry pieces to particles based on a unique value generated for each point, selecting random pieces for each particle. 5. Finalization

		Caching and Texturing: Once the geometry is copied and the simulation is finalized, cache the simulation and apply textures for the final render. This step prepares the debris for rendering, ensuring that all visual details are accurately represented in the final output. This procedure emphasizes the importance of node-based workflows and VEX coding in Houdini for creating realistic debris simulations. By following these steps, effects artists can achieve detailed and physically accurate debris in their destruction sequences, with the flexibility to adjust the quantity and type of debris through creative decisions.
	Viswanathan, V. Creation of a Procedural Crack Generation Tool.	The primary aim of this master project is to create one or more small tools that allows the user to generate the cracks so that it could be animated as per the animator's requirement and to finally wrap this setup as a digital asset so that it could be easily used by the effects animator to produce a simulation… TOOL I – CrackGround OTL The user draws a curve to produce the cracking effect.Particle context has been extensively used to create this effect. This is really a straight forward tool that gives the end user to produce realistic cracks very easily. The GUI is straight forward enabling the user to achieve the effects efficiently The given below figure represents the UI of this tool and soon will be followed by the description of what each parameter does in this OTL:

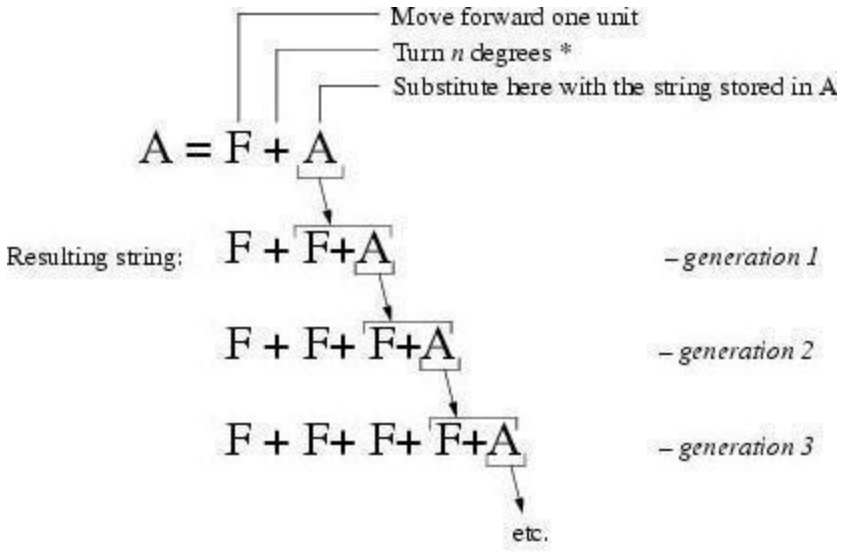


The thing we need from this:

- Debris size-The user can control the size of the debris.
- Debris Amount-The user can give birth the amount he wants to see.
- Debris Variance-This allows to vary the debris fall which would result in a realistic effect.
- Show Debris- Turns ON/OFF the debris.

Houses to make

1. Generate diff house using Lsystem
    - Helpful: https://youtu.be/WuNTFrDLABY?si=rcLIC8XdGqu9mKEI



** The value of* n *can be set via the L-system SOP's Value/Angle parameter.*

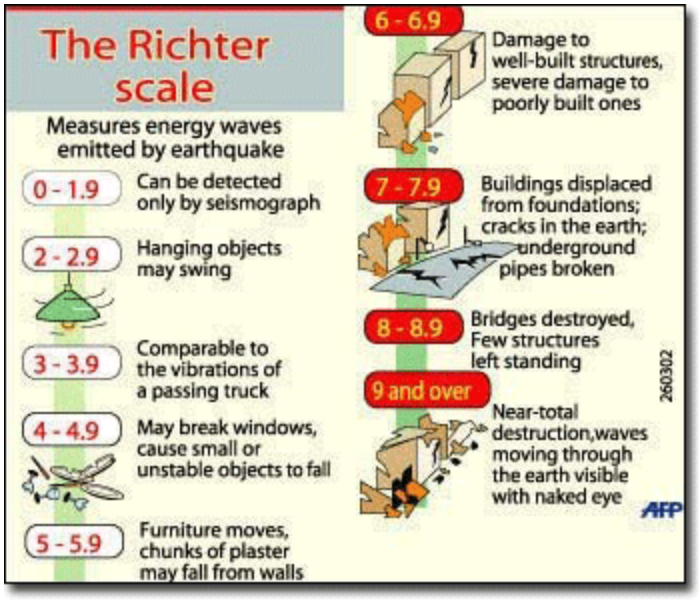
A=F+A:0.5

2. Adjustable floor plan
    - So far what I know is I can make a box with a 1x1 dimension no specific unit
    - The floor plan should adapt according to what the common structure
    - Helpful: https://youtu.be/uIe97023sDk?si=yBOhvQRMPMBFGJpJ
    a. Floor number
        - Can adjust to go from 1 floor to 2 floors

Earthquake Damage

3. Adjustable earthquake damage
    - Find the node for the damage

4. PHYSICSSSSSSSS

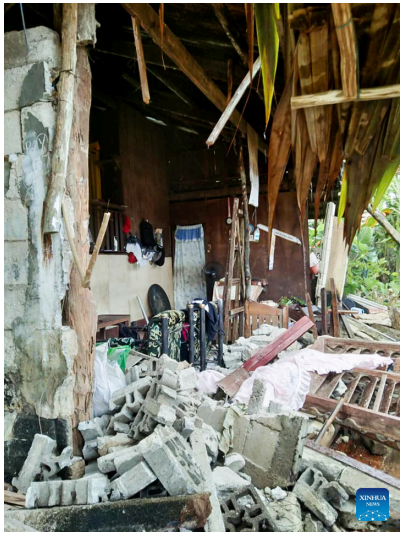

The Richter scale
Measures energy waves emitted by earthquake
0 - 1.9
Can be detected only by seismograph
2 - 2.9
Hanging objects may swing
3 - 3.9
Comparable to the vibrations of a passing truck
4 - 4.9
May break windows, cause small or unstable objects to fall
5 - 5.9
Furniture moves, chunks of plaster may fall from walls
6 - 6.9
Damage to well-built structures, severe damage to poorly built ones
7 - 7.9
Buildings displaced from foundations; cracks in the earth; underground pipes broken
8 - 8.9
Bridges destroyed, Few structures left standing
9 and over
Near-total destruction,waves moving through the earth visible with naked eye
260302
AFP

PHIVOLCS Earthquake Intensity Scale (PEIS)

INTENSITY SCALE	SHAKING	DESCRIPTION
1	Scarcely Perceptible	• Water in containers move slowly • Felt by some people
2	Slightly Felt	• Felt by people at rest • Water in containers move noticeably • Hanging objects swing slightly
3	Weak	• Felt by people indoors • Hanging objects swing moderately • Can cause dizziness or nausea in some people
4	Moderately Strong	• Felt by people indoors and outdoors • Hanging objects swing considerably • Objects start to rattle and wood starts to creak • Rumbling sounds can be heard
5	Strong	• Some sleeping people are awakened • Strong shaking and rocking felt indoors • Small, light, and unstable objects may fall and break
6	Very Strong	• Some people lose balance • Heavy objects and furniture move • Old or poorly-built structures may be damaged • Possible rock falls and rolling boulders may occur in hillsides
7	Destructive	• Heavy objects or furniture may topple or overturn • Old or poorly-built structures suffer considerable damage • Liquefaction, lateral spreading, and landslides are observed
8	Very Destructive	• People find it hard to stand even outdoors • Well-built buildings are considerably damaged • Considerable liquefaction and lateral spreading cause damage to property • Numerous landslides and rock falls occur in mountainous or hilly areas • Fissures and fault raptures may be observed
		• People are forcibly thrown to the ground • Most buildings are totally damaged

Article Information Scraping For Earthquake Damages in the Philippines

Magnitude	Occurrence Place and Time	Textual Description	Pictures	Reference
6.5	Tongonan, Leyte province July 7, 2017	Severly devastated walls and beams		https://www.arabnews.com/node/1127136/world
5.7		Collapsed wall		https://phongchongthientai.mard.gov.vn/en/Pages/strong-earthquake-hits-the-southern-philippines.aspx

7.4	Davao del Norte	Cracks on heavy buildings Broken Concrete walls	 	https://english.news.cn/20231203/130e0ab1e0ce4b7e878b6253fda9d72d/c.html

7.0	La Trinidad, Benguet July 27, 2022	trapped resident from under a collapsed structure after a strong earthquake