Emergent Transition

Physical Programing Elective

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Emergent Transition

Emergent behaviour that I am interested in is a Self Organizing sort, where each individual behaviour results in a sorting pattern behaviour. As a proposition to this kind of emergent behaviour (simulation), a self evolving sound elements are introduced.

Visual Simulation -

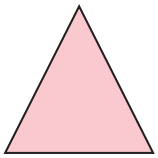
Each element has properties and behaviours that influences the emergent behaviour as a whole.

Properties

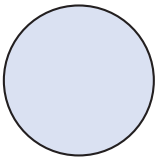
- Shapes:

each of the shape represents different group of instrumental sound

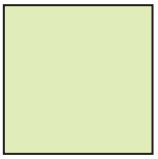
(eg.



- would represent brass horn instruments



- would represent rhythm instruments



- would represent keyboard instruments

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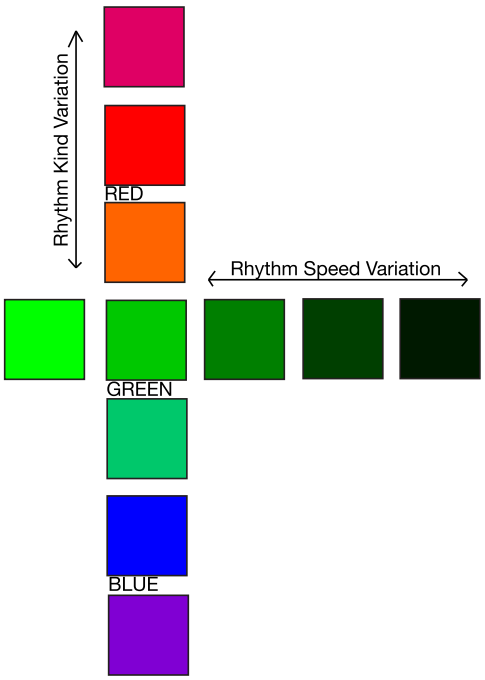
- Colours:

each of the colour within a shape represents the rhythmic quality of the instrumental sound. The type of the rhythm will be assigned to each RGB and depending on the deviation from the centre colour, the varying quality differs. The brightness of the colour would vary the speed of the rhythm.

(eg.



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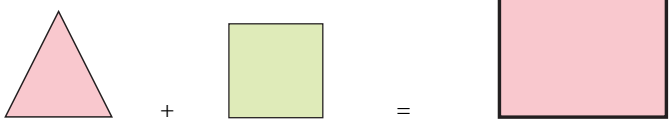
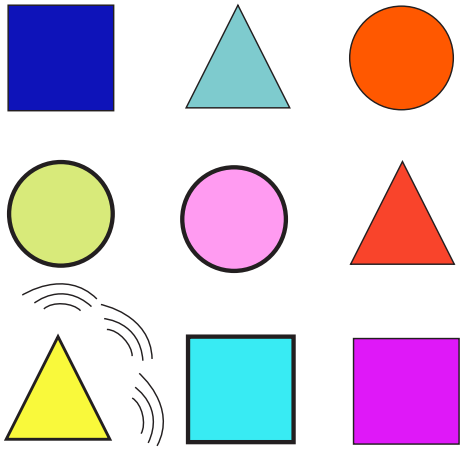
- Area: initially each of the shapes has a same area and as they merge into one another the area increases. The area represents the volume of the sound.

(eg. )

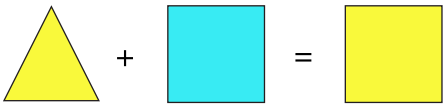
Behaviours

- Resonating (sending a signal): each element will resonate a sound around it when it is activated. The resonance will effect others around the element and these others will resonate a sound as well but with a halved strength (volume). A standard size shape can resonate upto one position in each direction. When merged double sized shape resonate the sound it will effect upto two position in each direction and the outer shapes that were effected can resonate upto one position since they received a times two strength signal and they are sending a times one signal.

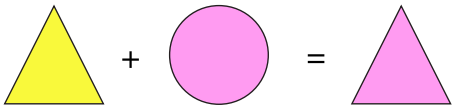
(eg.



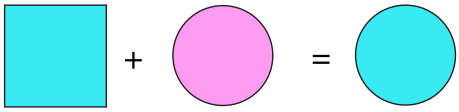
- Merging / Positioning: Each element will change its position as they merge with others. The order of merge will occur in clockwise fashion from the top (12 o'clock). The merge might stop or get interrupted when splitting occurs. Then the next element that need to merge start merge. There is an order of merge where certain shapes and colours have a dominance over others.



Square has a dominance over triangle but when merged it gets the colour of the triangle.



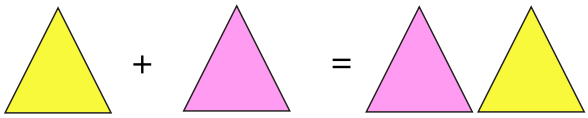
Triangle has a dominance over circle but when merged it gets the colour of the circle.



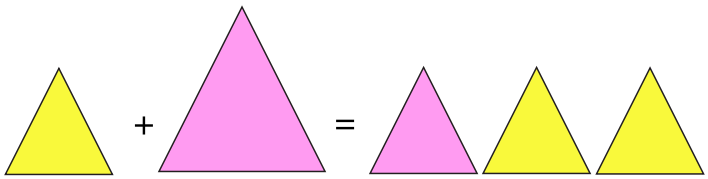
Circle has a dominance over square but when merged it gets the colour of the square.

(note. the resultant shapes will have twice as much as area then the previous since they are adding up)

-Splitting / Repositioning: although the shapes might merge when they effect each other, they might also split. When same shapes are about to merge, two scenarios can happen.



When two same shaped elements with same areas meet, they change their position and merge process stops.



When two same shaped elements with different areas meet, the shape with larger area splits itself into two (resulting in one standard size shape with the smaller shaped element colour). The spare element that was resulted here is situated in spare position anywhere in the field.

Physical Simulation -

Most of the properties, except the shape transition, can be implemented into physical simulation. In terms of behaviour of merging and repositioning, other alternative behaviours, such as pulling each other towards and changing colours, can be implemented to indicate the behaviours.