
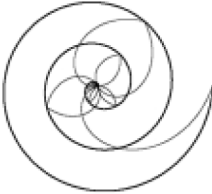
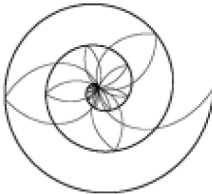
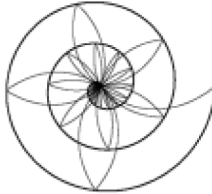
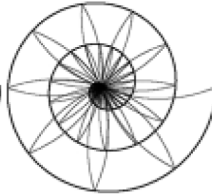
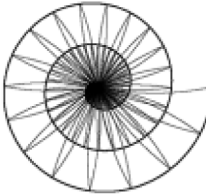
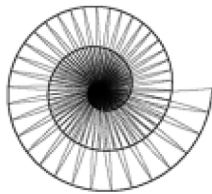
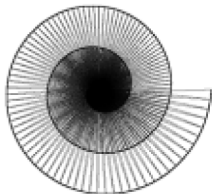
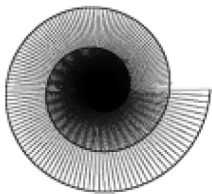
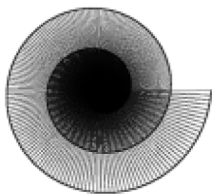
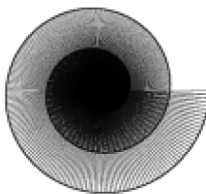


Table 1. Case 2: the test of 2-RL wheelbase-based motion (transformation under different wheelbase speed).

The Trajectory of $P_2$				
Structure	Manipulate Parameters			
	Motion Relation: $P_1 \rightarrow P_0$	Angular Increment: 0.005	X-Radius: 200	
	Motion Type: #orbital	Ceiling-limitation: 0	Y-Radius: 200	
	Initial Angle: 0	Floor-limitation: 0	Radius X-variation: 0.001	
		Incremental Variation: 0	Radius Y-variation: 0.001	
	Motion Relation: $P_2 \rightarrow P_1$	Sequences of Targets: ( $\rightarrow P_1 \rightarrow P_0$ )		Kinematic Speed: 0.005~1 (dynamic)
	Motion Type: #wheelbase			Kinematics Mode: Normal-loop
(P <sub>2</sub> ) Kinematic Speed (dynamic)				
0.005	0.01	0.02	0.04	0.08
				
0.16	0.4	0.6	0.8	1
				

( $\rightarrow P_0 \rightarrow P_2 \rightarrow P_1$ ). When the sequence arrangement is different from the original structure, the wheelbase trajectory will enter the stage of repeating the position of previous trajectories with less number of computing. Therefore, the trajectory appears to be simpler in terms of abstractive levels. Both Normal-loop and Reverse-loop will develop similar transformation of trajectory.

### 3.3 Static/dynamic subjective motion in the sequence of targets

If the sequence of targets of Wheelbase-based motion includes static motion system of different spatial positions along with dynamic subjective system, the trajectory it produces can be diverse and interesting. For example, if a static object is placed alone outside most of the wheelbase-based motion, whenever the wheelbase moves towards this static object, sharp corner-places are likely to appear. The manipulation of the other dynamic objects' motion parameters will make the trajectory developed by the wheelbase running back and forth between the static and dynamic objects look like many spirals tangling and intersecting with one another. As it is seen in Case 4 (seen as Table 2), the transformation of wheelbase trajectory is generated from the test of 3-RL, which integrates orbital motion and polygonal motion. Since  $P_0$  is a static system on the left side of pattern and all sequence of targets starts from  $P_0$ , the trajectories

forming around it are sharp. On the other hand, the orbital motion of  $P_2$  has its target ( $P_1$ ) on the right side of pattern. Therefore, it can be concluded from the transformation of trajectory that the relationship between the wheelbase speed and the orbital speed of object has an impact on the development of trajectory.

Analyzing the orbital motion of  $P_2$ , generally speaking, it is discovered that when the kinematic speed (0.1) is slower than the orbital speed, the trajectory appears to be constructed by many spirals to present a rhythm and a gradual change. However, if the wheelbase speed is increased to be (0.2), this phenomenon tends to slowly fade away. Up until the speed is increased to be (0.3), faster than the orbital speed, with the curvature of trajectory decreases, the rhythm exists no longer. On the other hand, though  $P_2$  (0.24) is lower than  $P_3$  (0.3), their relative difference will not be able to affect the curvature of trajectory. When analyzed the structure formed in the center of the pattern, it is noticed that the wheelbase trajectory from the right to the left turns from big into small. This may be the result of the orbital motion  $P_2$  demonstrating its dynamic radius variation. Moreover, the relationship between the slight variation of radius of  $P_2$  and its orbital angle will definitely affect the appearance and structure of the central trajectory. When the slight variation of radius has a higher variation