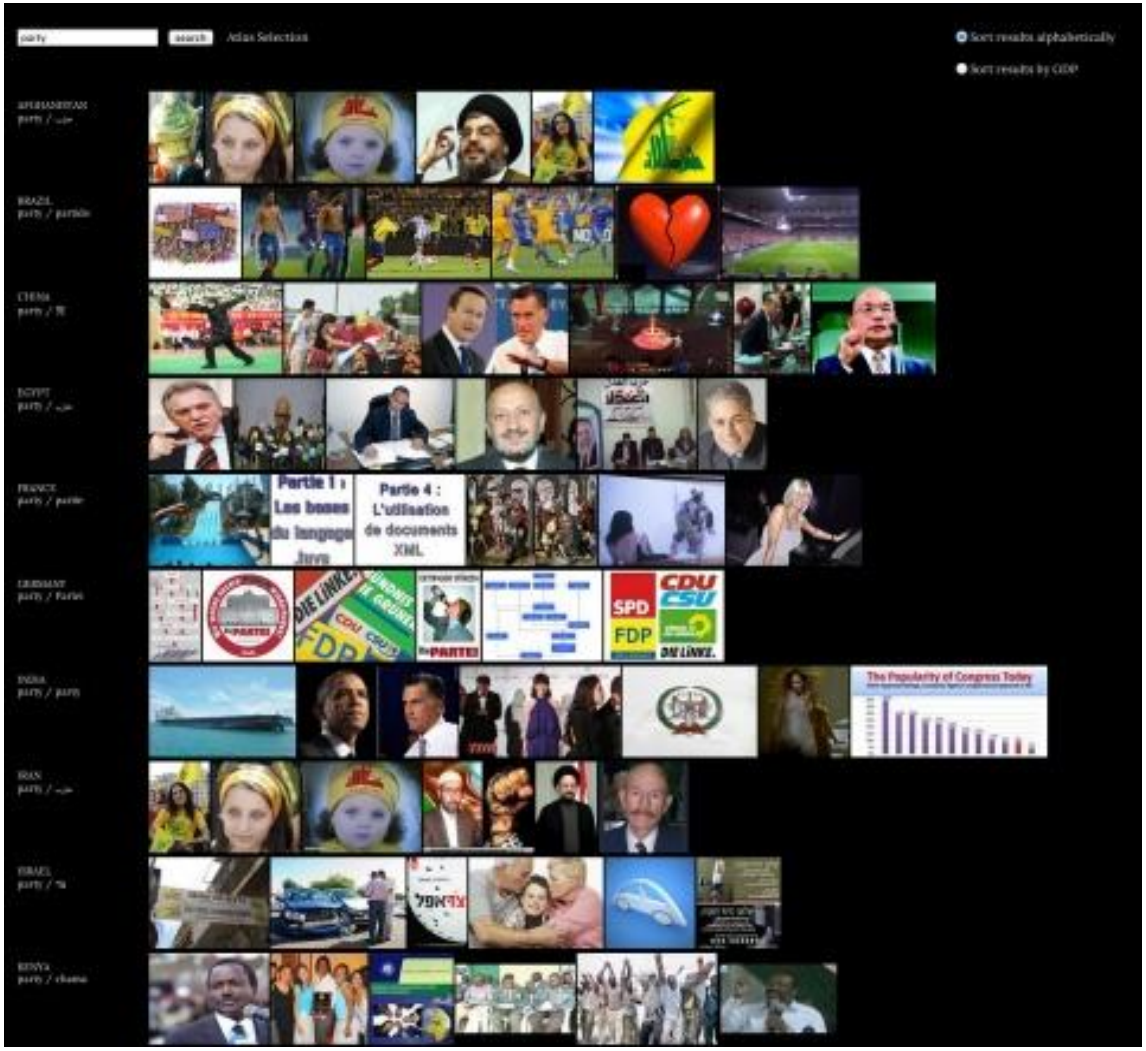
Algorithmes Créatifs

Natural-Artificial environments for interactions
Vector Fields and Graphs

Abelardo G. Fournier
http://abelardogfournier.org
@croopier

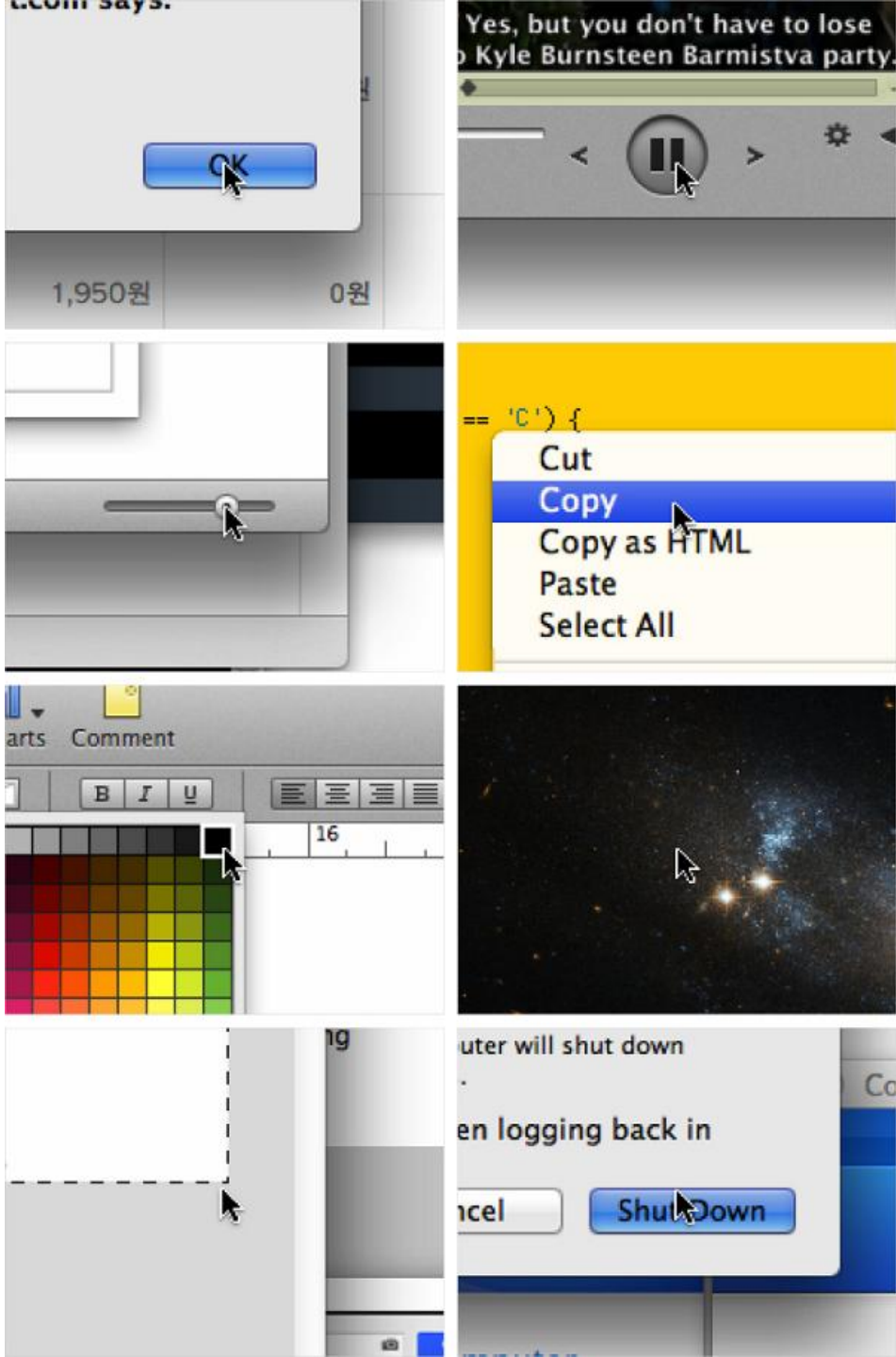
Image Atlas
Taryn Simon & Aaron Swartz



Sebastian Schmieg

Search by Image (2011)

Shinseungback Kimyonghun

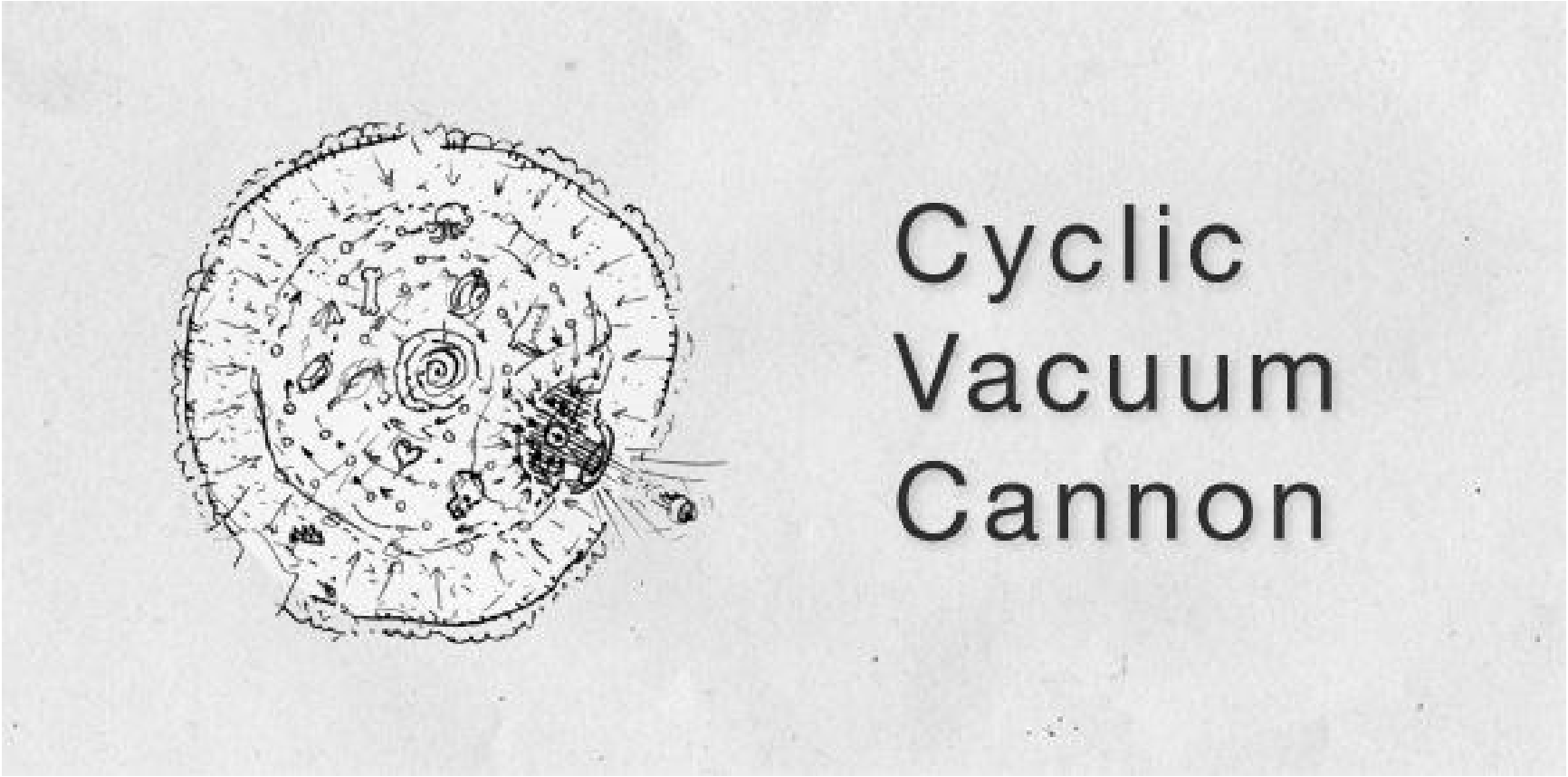


Click (2013)

Shinseungback Kimyonghun

Cloud Face (2012)

James Paterson - Presstube.com

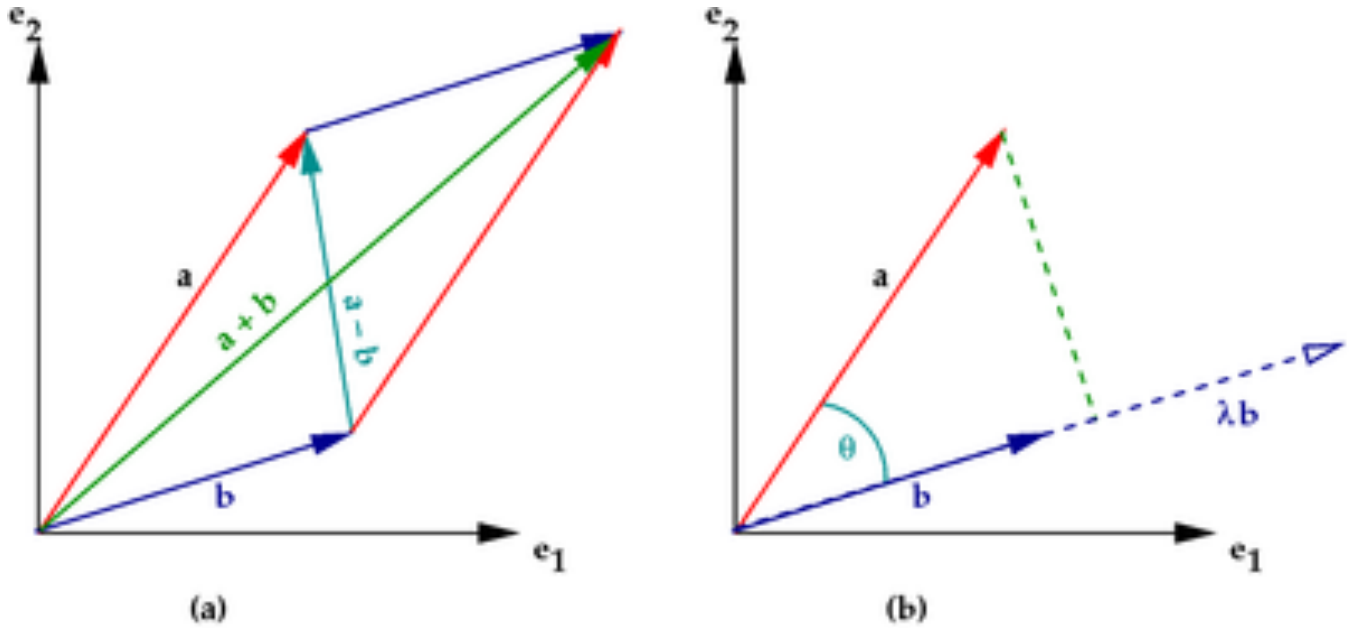


Other projects

Design I/O - Terrarium

Toshio Iwai - Electroplankton

PVectors



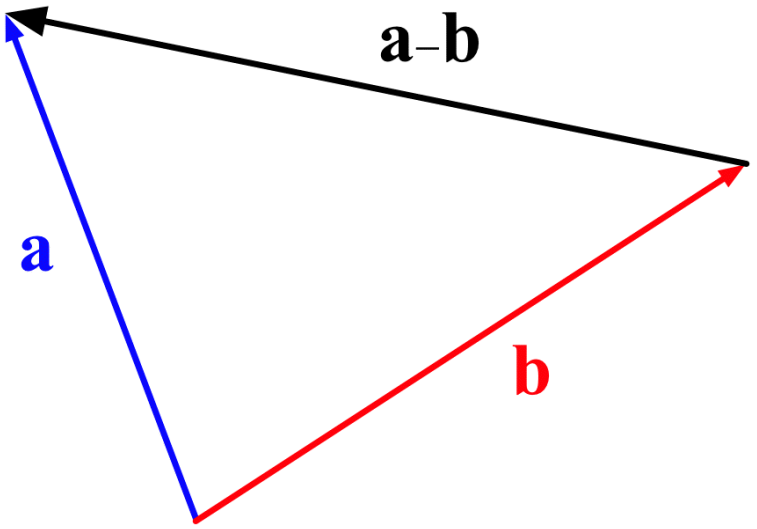
Very useful operations!

heading(), mag(), dist(), setMag(), lerp() ...

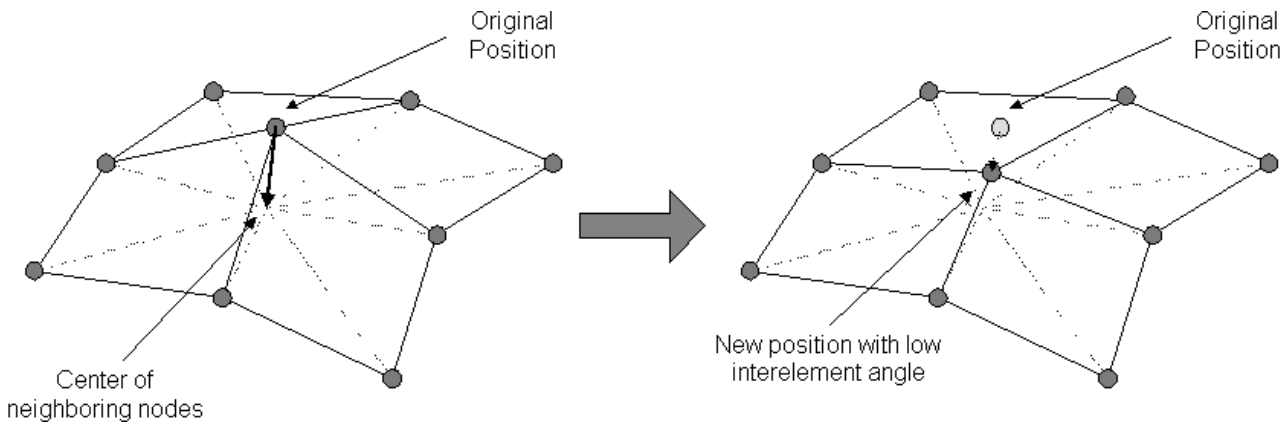
PVector syntax

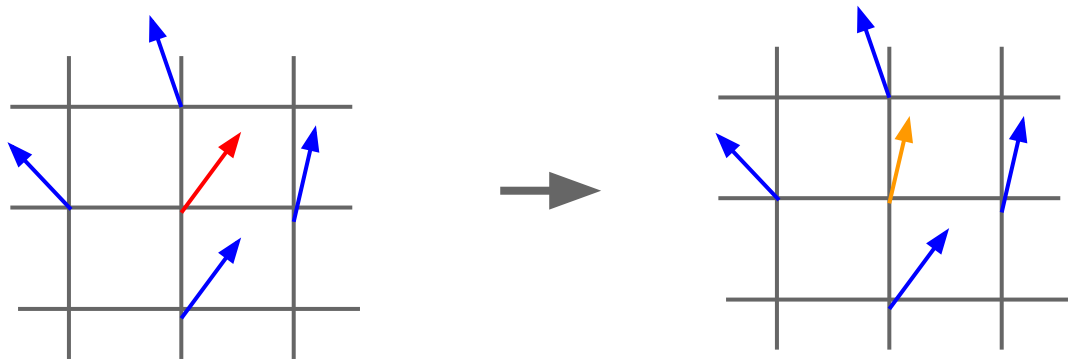
Easing algorithm between positions B and A

```
PVector next = a.get(); // we grab a copy
next.sub(b); // that's the vector-distance
float dist = next.mag();
// easing:
next.setMag(dist * 0.25);
// finally, next position will be:
next.add(b);
```

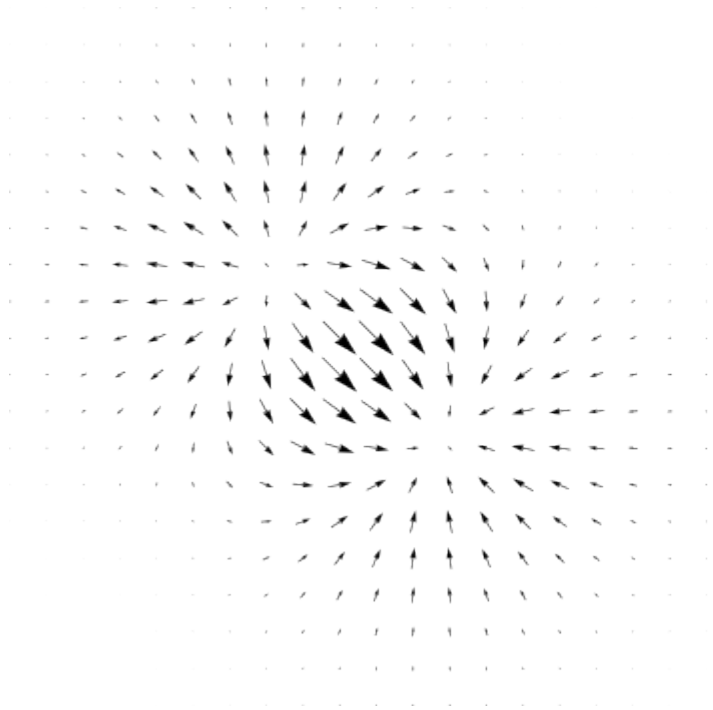


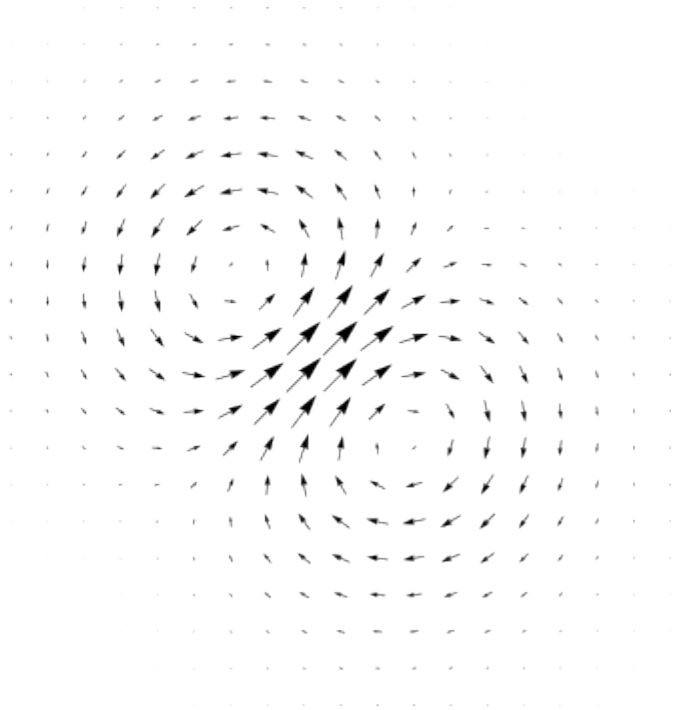
Smoothing


Original
Position
Center of
neighboring nodes
Original
Position
New position with low
interelement angle

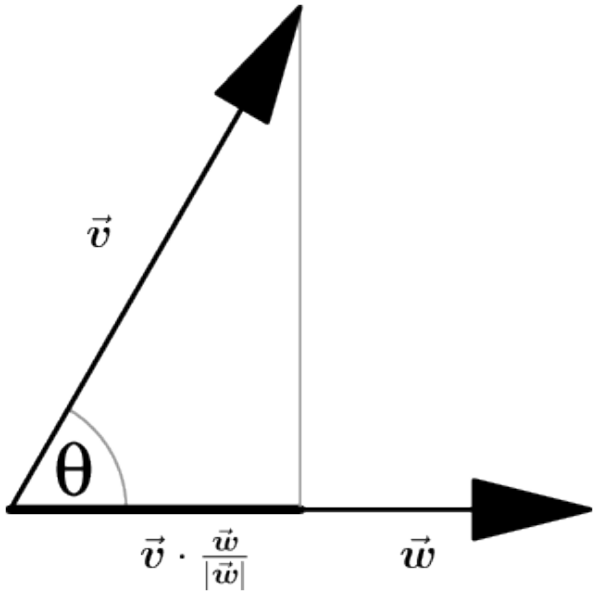


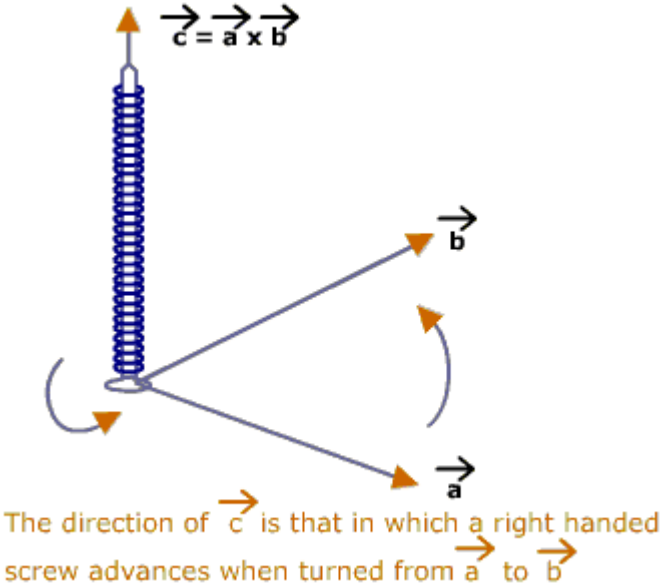
Divergence and Rotational



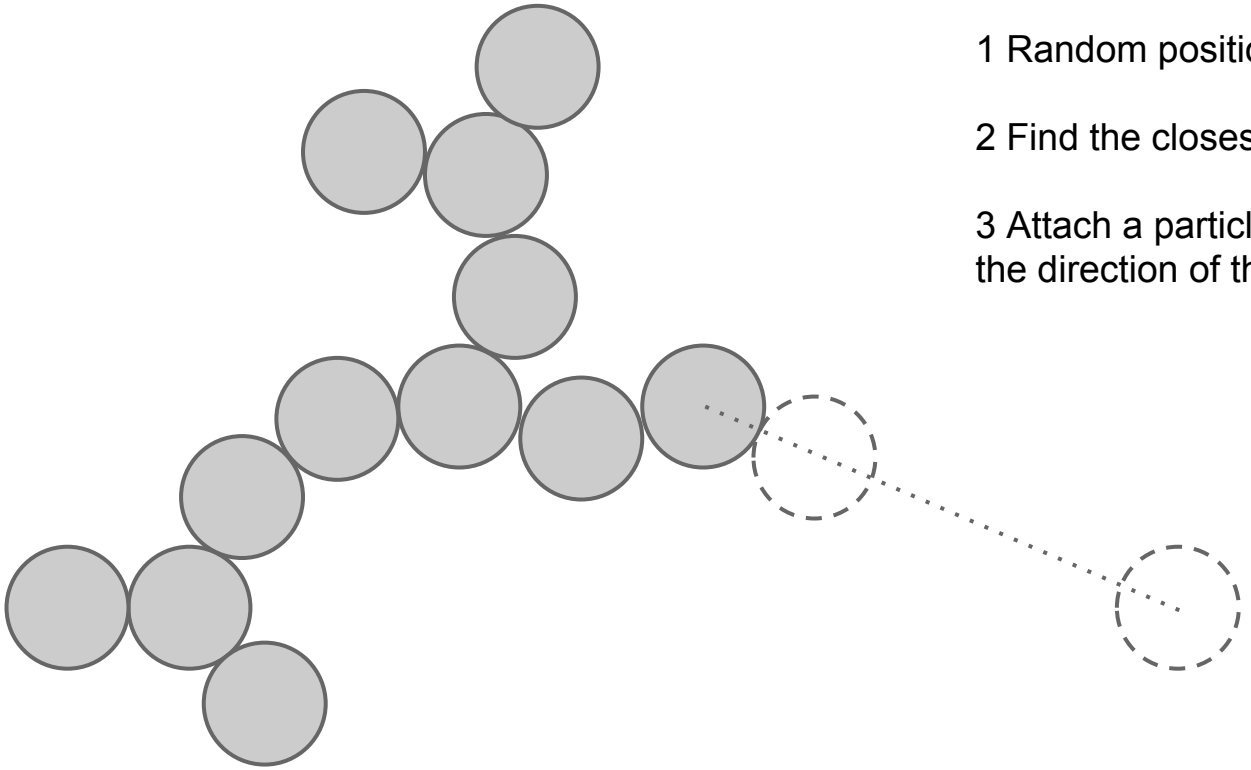


Dot and Cross Product





DLA algorithm



1 Random position

2 Find the closest particle

3 Attach a particle to the closest in the direction of the initial position

Physics (traer)

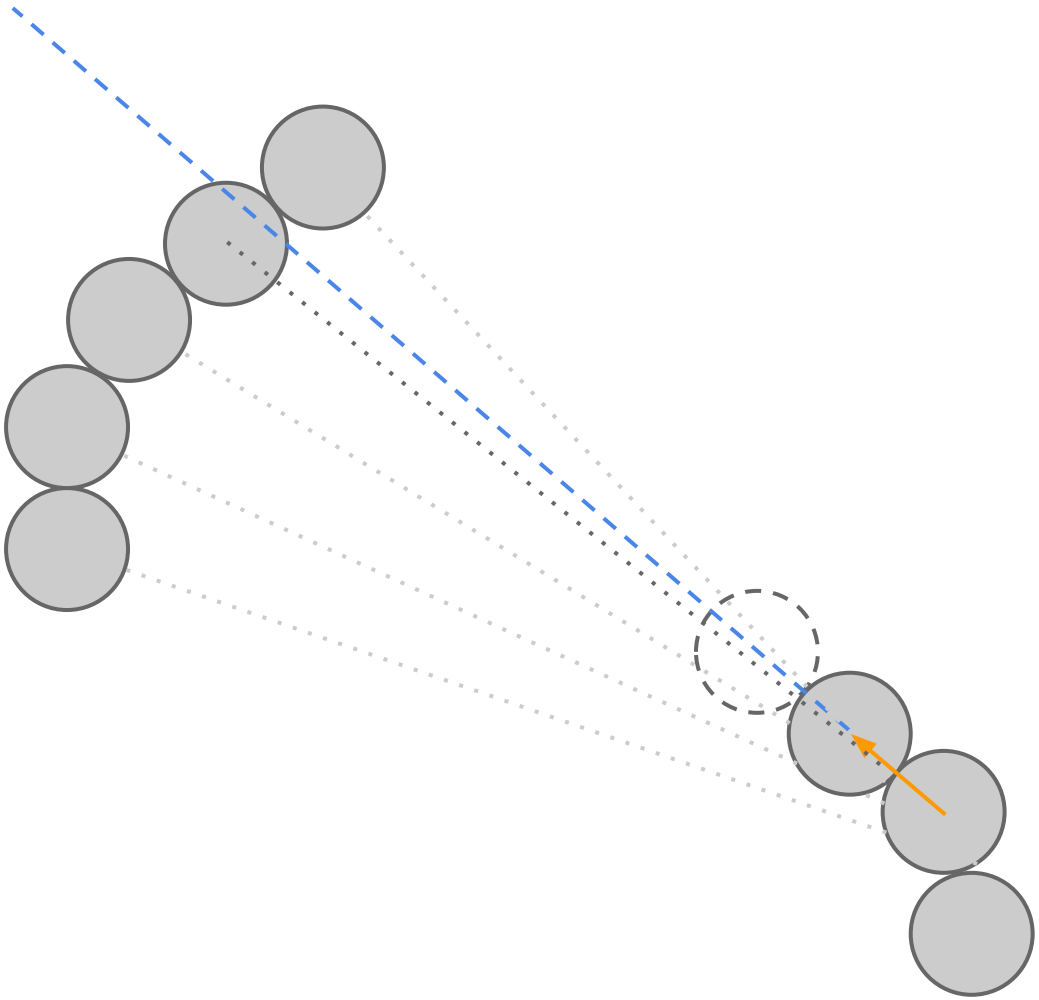
http://murderandcreate.com/physics/

```
ParticleSystem physics;
physics = new ParticleSystem( gravity, friction );
physics.tick();

Particle p = physics.makeParticle();
p.position().set( x, y, z );
p.position().x()     //.y()  // .z()

physics.makeAttraction( p1, p2, -repulsion, min distance );
physics.makeSpring( p1, p2, strength, damping, rest length );
```

grow()



Path Finder Algorithms

http://robotacid.com/PBeta/AILibrary/Pathfinder/ (A*, BFS and Dijkstra)

```
import ai.pathfinder.*;
Pathfinder sys = new Pathfinder();

Node node = new Node(x, y);
sys.nodes.add( node );
boolean node.walkable
node.connectBoth(node2);

ArrayList <Node> path =
        path = sys.bfs(n1, n2);
Node next = path.get(path.size()-2);
```