3D Time:
From Transportation to Physics
Part 5: Dynamics

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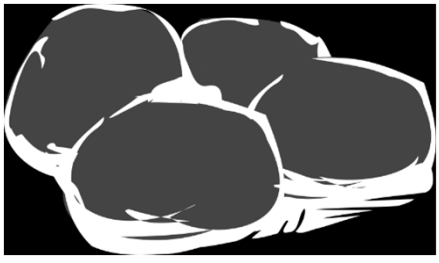
Mass and vass

- View substance two ways
  - massive, heavy
  - sparse, light
- Density · volume = mass
- Sparsity · (1/volume) = 1/mass
- Define *vass* = inverse of mass
  - larger values have less mass



2

Momentum

- Quantity of motion per time
- Momentum = mass x velocity, **p** = *m***v**
  - small, fast bird vs. large, slow bird
  - e.g., hummingbird vs. buzzard
- Vector: includes direction
- Units: (kg·m/s)

3

Fulmentum

- Latin for prop or support
- Quantity of motion per distance
- Fulmentum = vass x legerity, **q** = *n***u**
  - small, fast bird vs. large, slow bird
  - e.g., hummingbird vs. buzzard
  - lower numbers = more motion
- Vector: includes direction
- Units: (kg^{-1}·s/m)

4

Force and rush

- Cause the motion to change
- Force: change the motion in 3D space
  - pushing to increase the distance
  - related to acceleration
- Rush: change the motion in 3D time
  - pushing to reduce the time
  - related to expedience
  - direction is opposite to motion

5

Newton's first law with 3D space

- "Every body continues in a state of rest or uniform motion unless acted on by a force."
  - uniform motion: constant velocity
  - no change of direction or speed
  - force: haven't defined yet
- Laboratory situation
  - no friction or air resistance

6

Newton's first law with 3D time

- "Every body continues in a state of rest or uniform motion unless acted on by a rush."
  - uniform motion: constant legerity
  - no change of direction or pace
  - rush: haven't defined yet
- Laboratory situation
  - no friction or air resistance

7

Newton's second law with 3D space

- "The applied force on a body equals the mass of the body times its acceleration."
  - $\mathbf{F} = m\boldsymbol{a}$
- Definition of force
  - force is mass times acceleration
  - compare momentum, $\mathbf{p} = m\mathbf{v}$
- Vector: includes direction

8

Newton's second law with 3D time

- "The applied rush on a body equals the vass of the body times its expedience."
  - **H** = *n***b**
- Definition of rush
  - rush is vass x expedience
  - compare fulmentum, **q** = *n***u**
- Vector: includes direction
  - direction is opposite to motion

9

Newton's third law with 3D space

- "To every action, there is an equal and opposite reaction."
- Forces are mutual
- Equal but opposite forces cancel

10

Newton's third law with 3D time

- "To every action, there is an equal and opposite reaction."
- Rushes are mutual
- Equal but opposite rushes cancel

11

In conclusion

- Vass is inverse of mass
- Fulmentum is like momentum
- Rush is like force for 3D time
- Different way to look at motion

- What about gravity?
- See *Part 6: Orbits*

12