experiment sandbox

resource: experimental design 4 the life sciences 4e

@cjlortie

single-factor randomization

simple experiments have merit

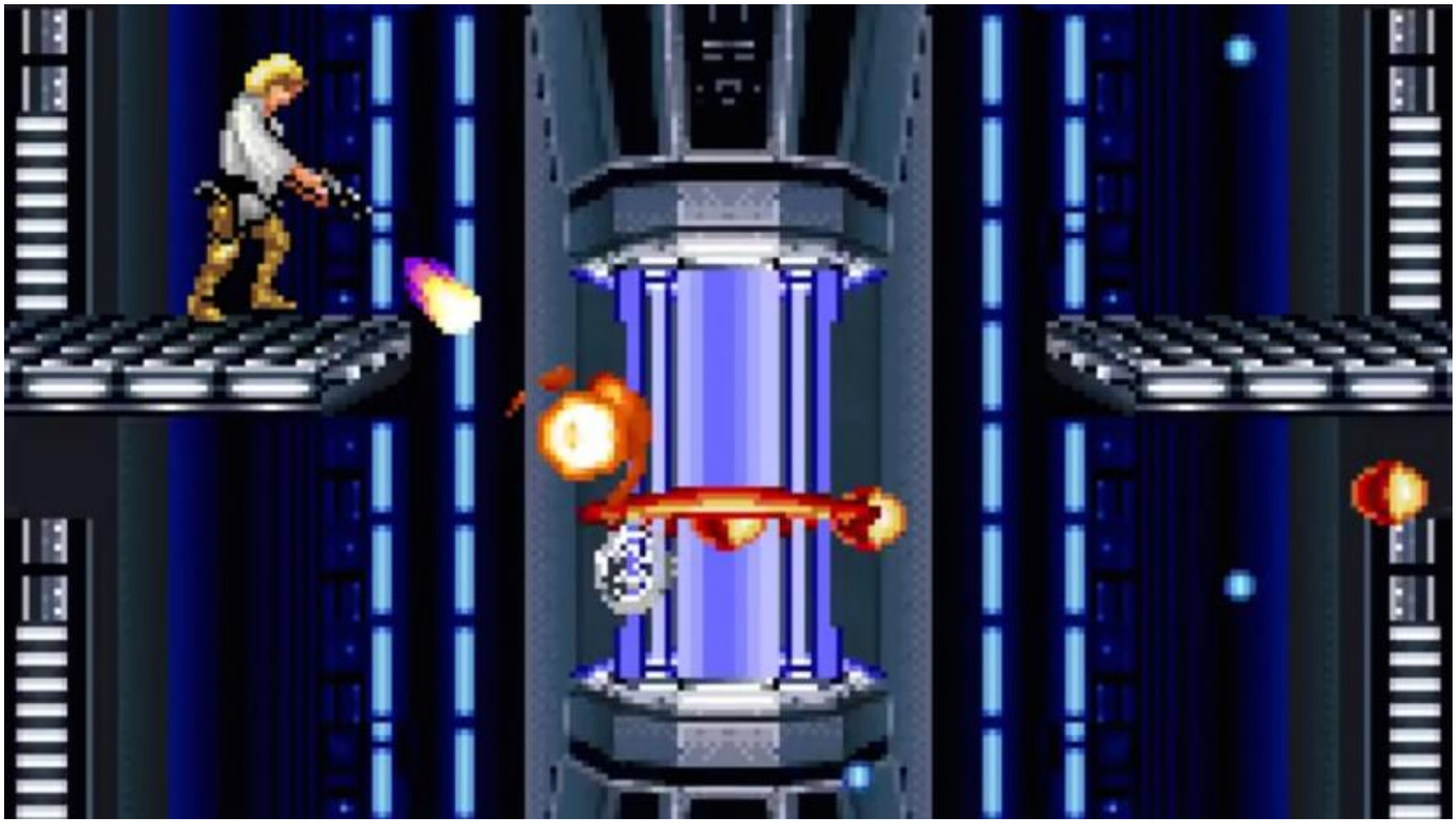
STAR WARS COSTUMING COMLINKS

BUILDING A COSTUME FOR YOUR

BODY & BUDGET

n-factor experiment or n-way is n > 1 factors

know the difference between factors and levels



factor is a key variable that relates to or predicts/describes a response variable

levels are the unique steps or categories within a categorical variable identified as a factor

being mindful of number of factors AND levels engenders better design thinking in experiments

choosing how many levels to examine within a factor is a critical design decision

randomization of subjects to experimental groups is a useful design strategy

likelihood of bias is reduced through randomization

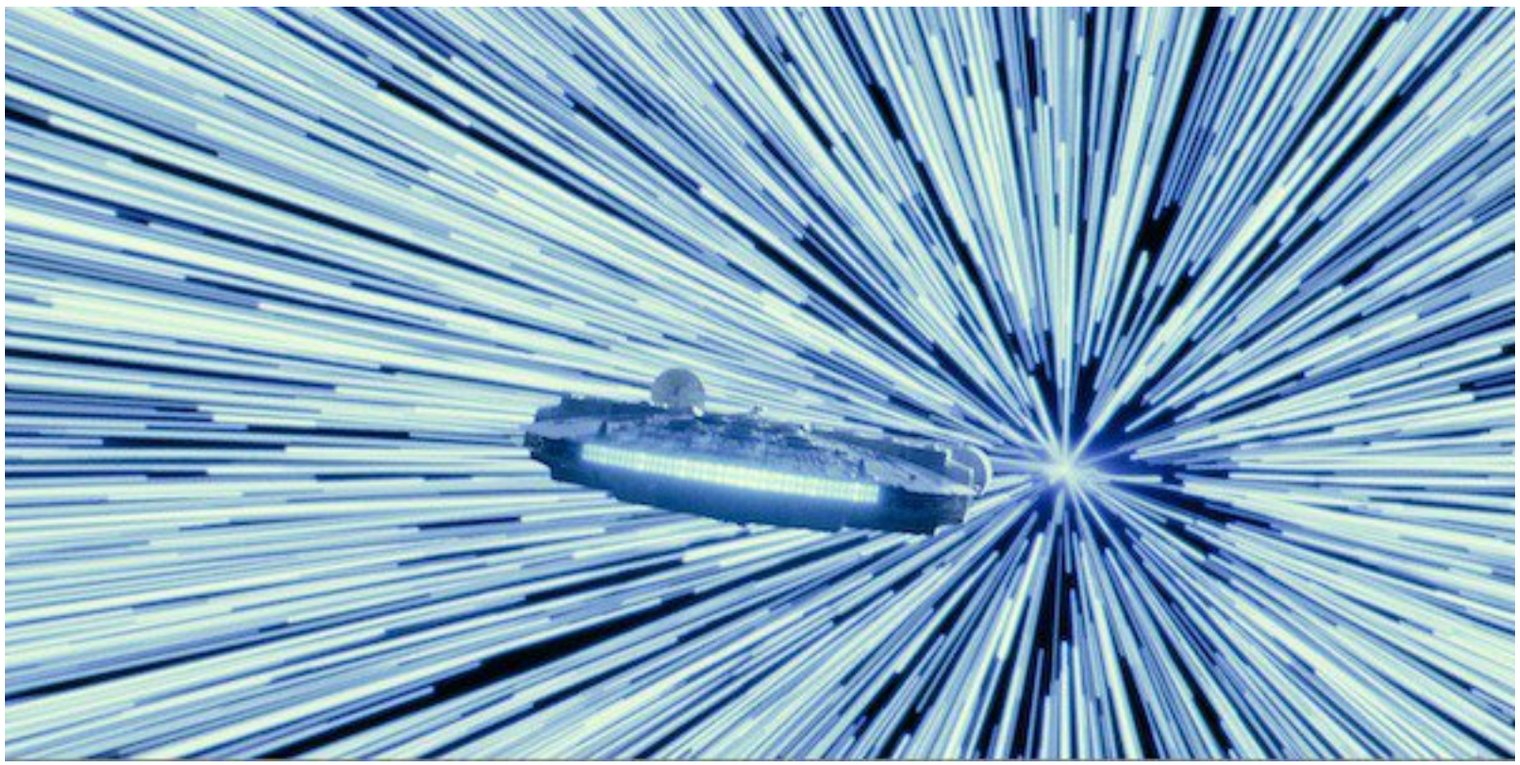
randomization not a perfect process

design thinkers

a. random resample as needed to ensure equitable variation (ie reduce bias)
b. randomize at higher levels (blocks, tables, plots, patches)

haphazard is NOT random

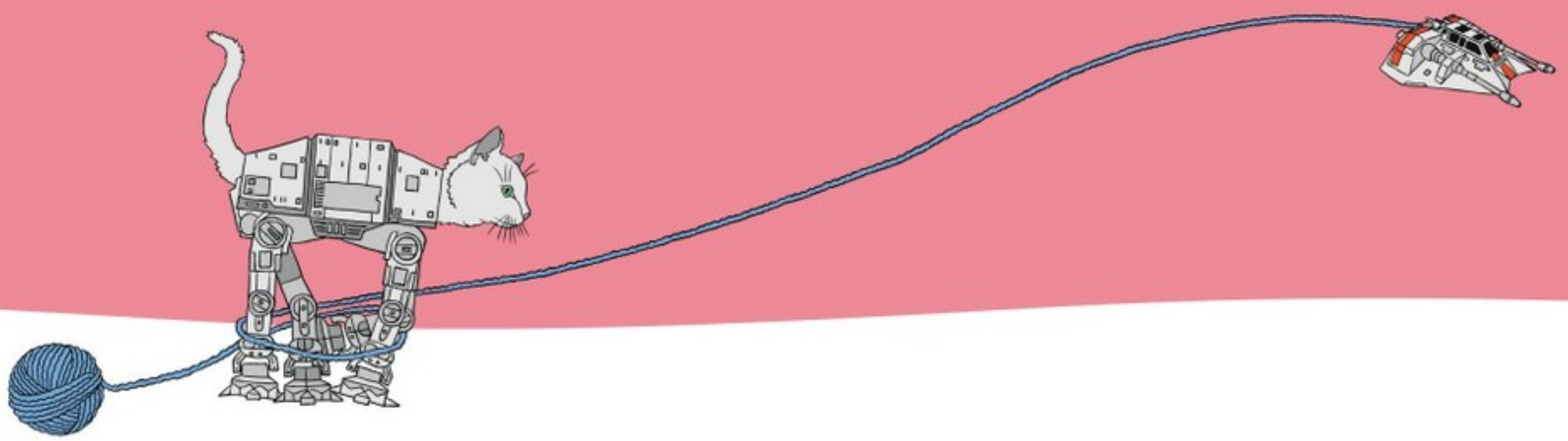
randomize for space and time



seek balance (versus unbalanced designs)
although not always critical

design **principle**

larger experiment with many levels
of same factor more powerful



do the maths on extent of replication needed
for every level of each factor
(even in a single, factor simple experiment)

many small experiments
with different
methods
obfuscates
truth

John P. A. Ioannidis 2005