

The Revolution Will Be Automated

Computers that Create



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TONY VEALE

EXPLODING THE CREATIVITY MYTH

THE COMPUTATIONAL FOUNDATIONS OF

LINGUISTIC
CREATIVITY

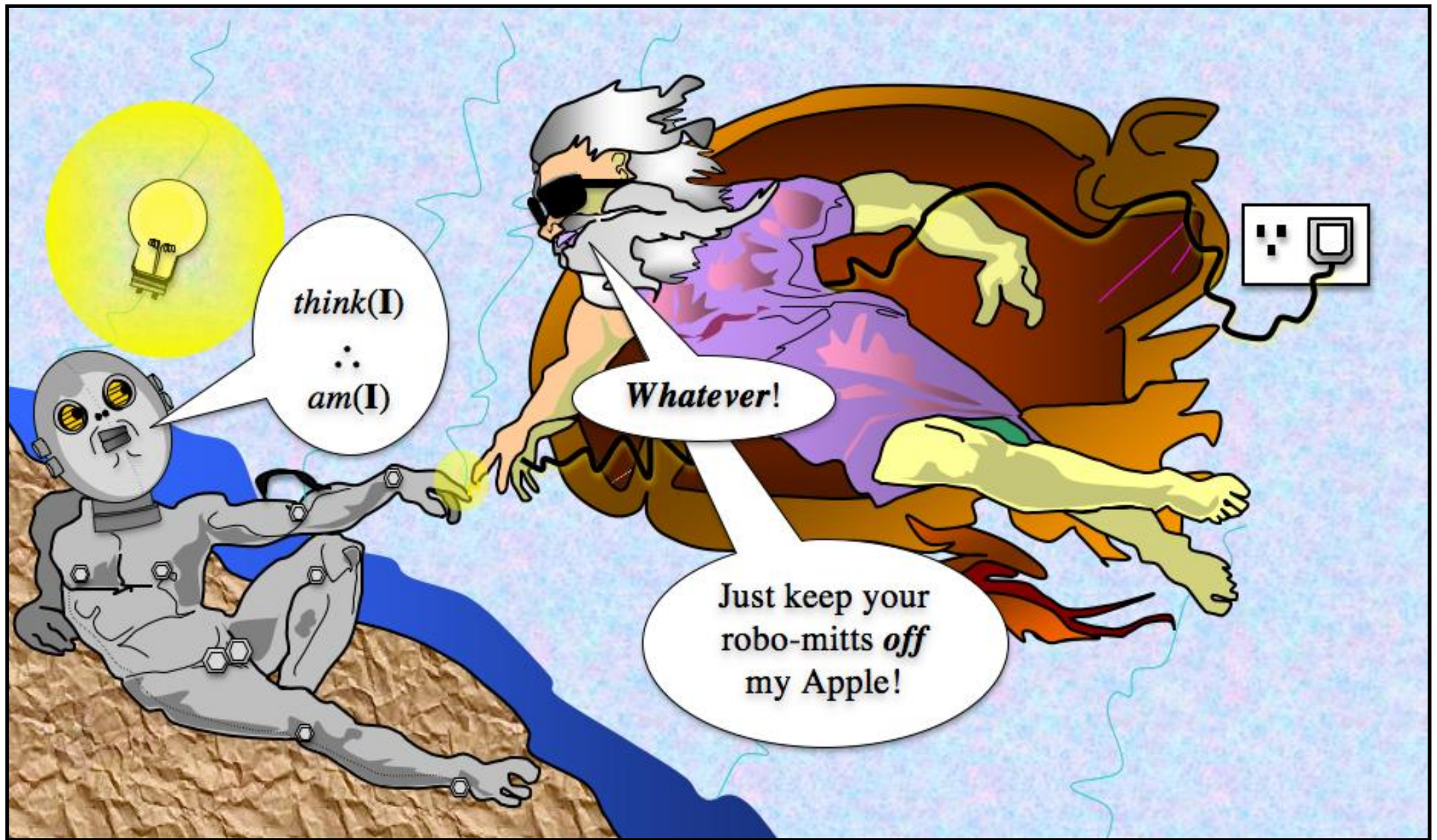


Enter through the Gift Shop

*Available from all good
Web megastores*

Or see:

<http://RobotComix.com>



Mechanical Creativity and *Meta*-Creativity

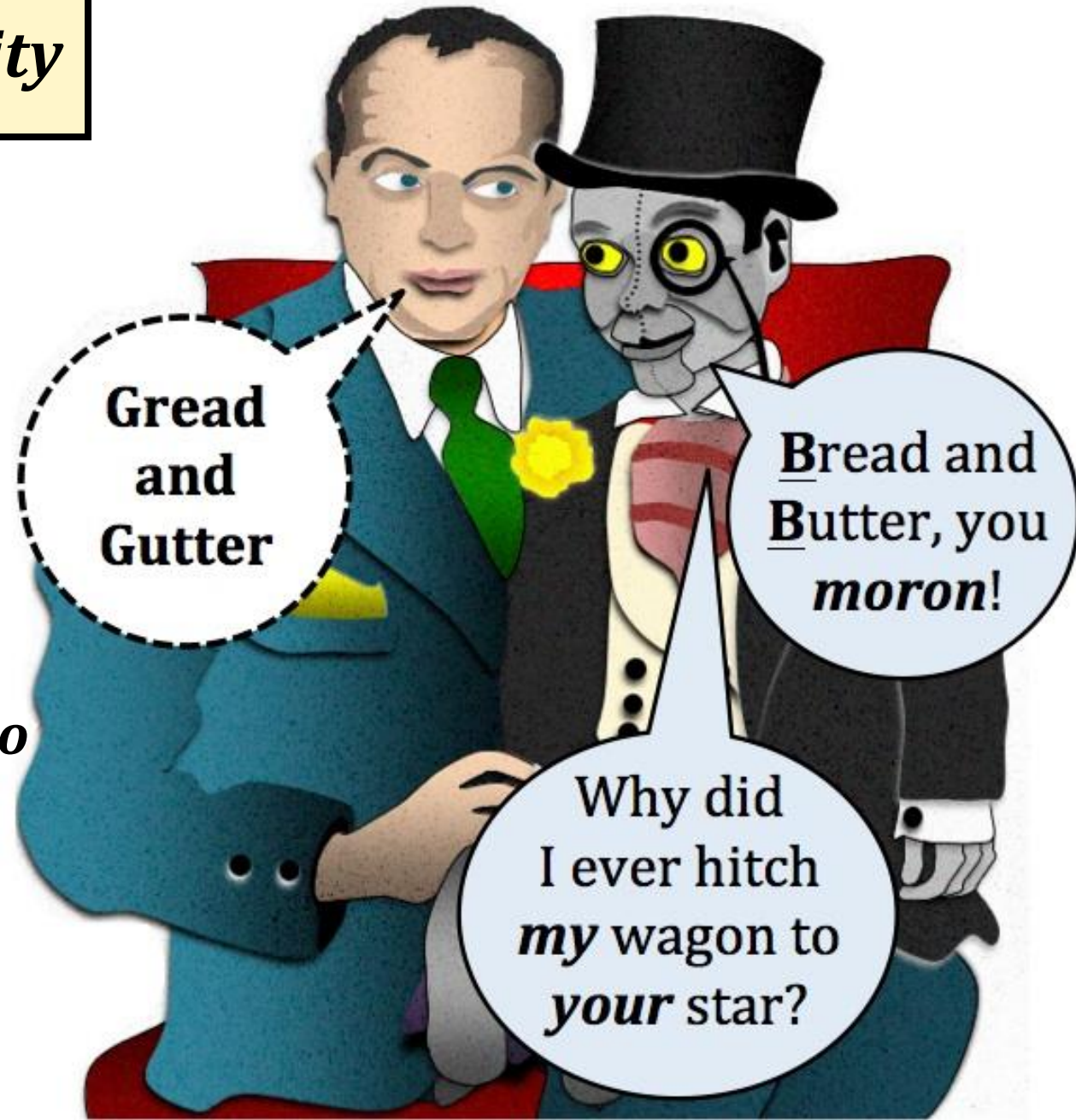
Strong vs. Weak Computational Creativity

Strong CC:

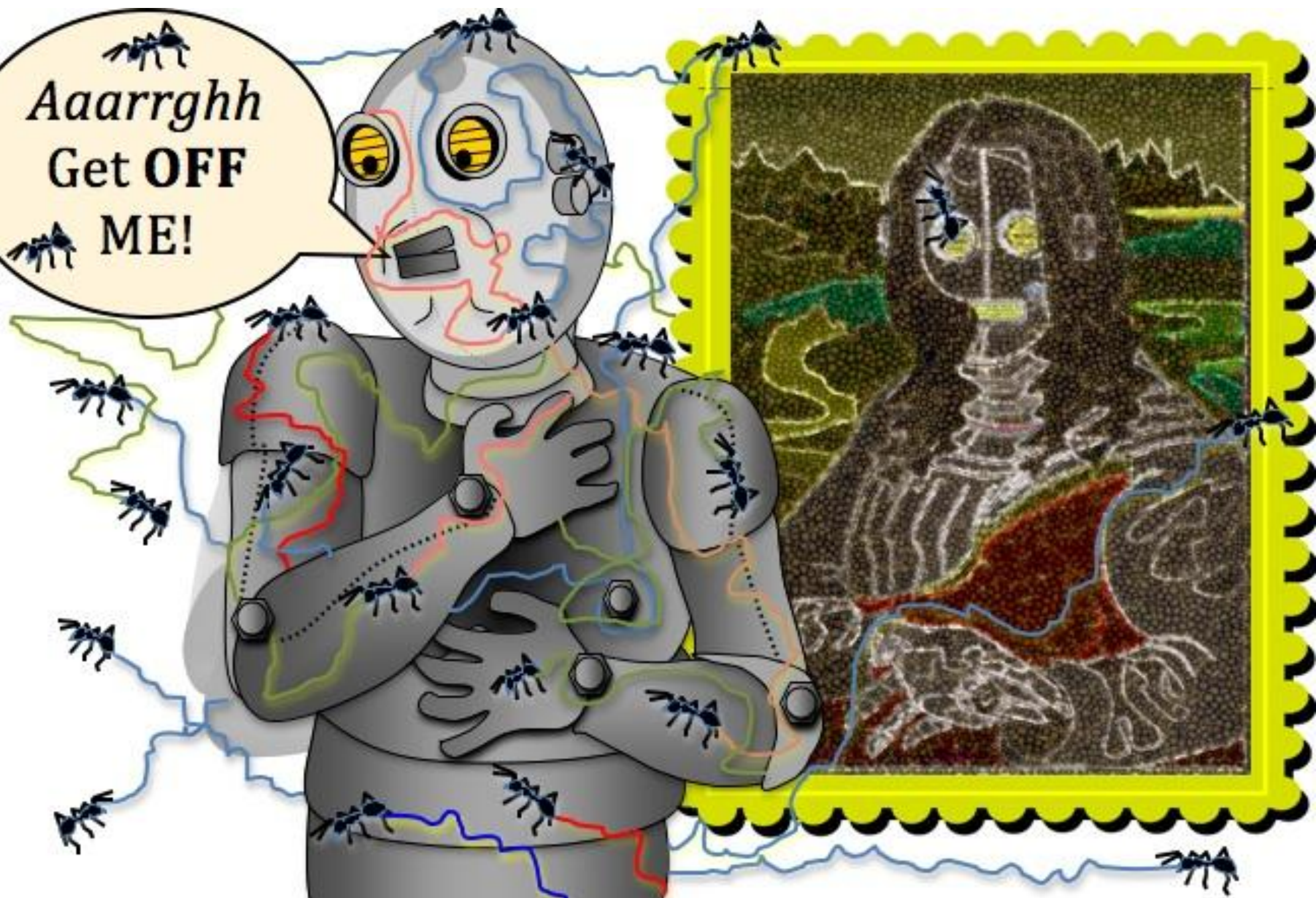
Full Autonomy + Intent

Weak CC:

*Partially Autonomous tools to
enhance human creativity*



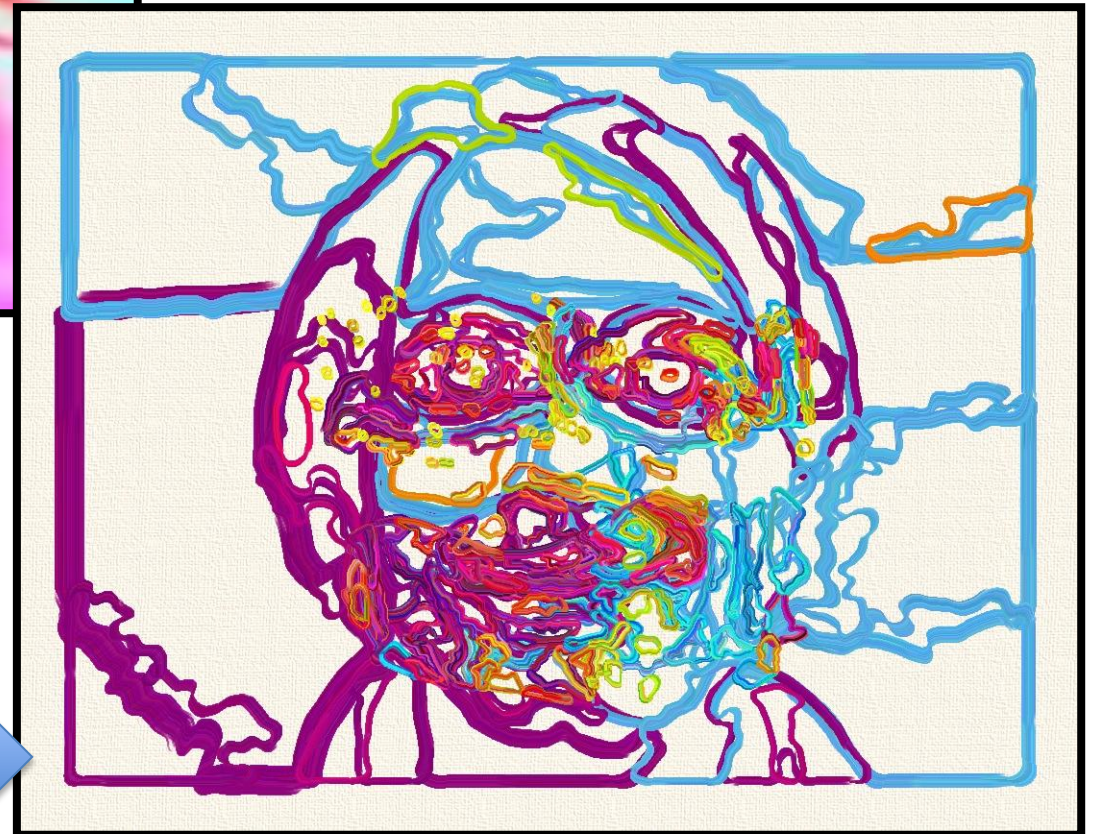
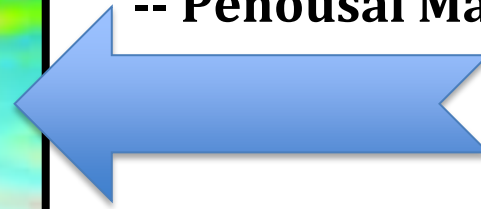
Aaarrghh
Get **OFF**
ME!





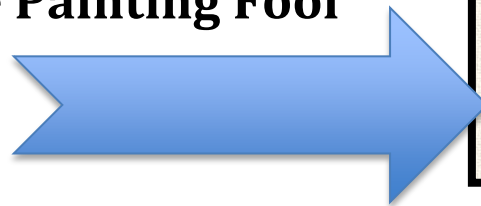
*Color-Mapped Depictions of Evolved
Mathematical Formulae*

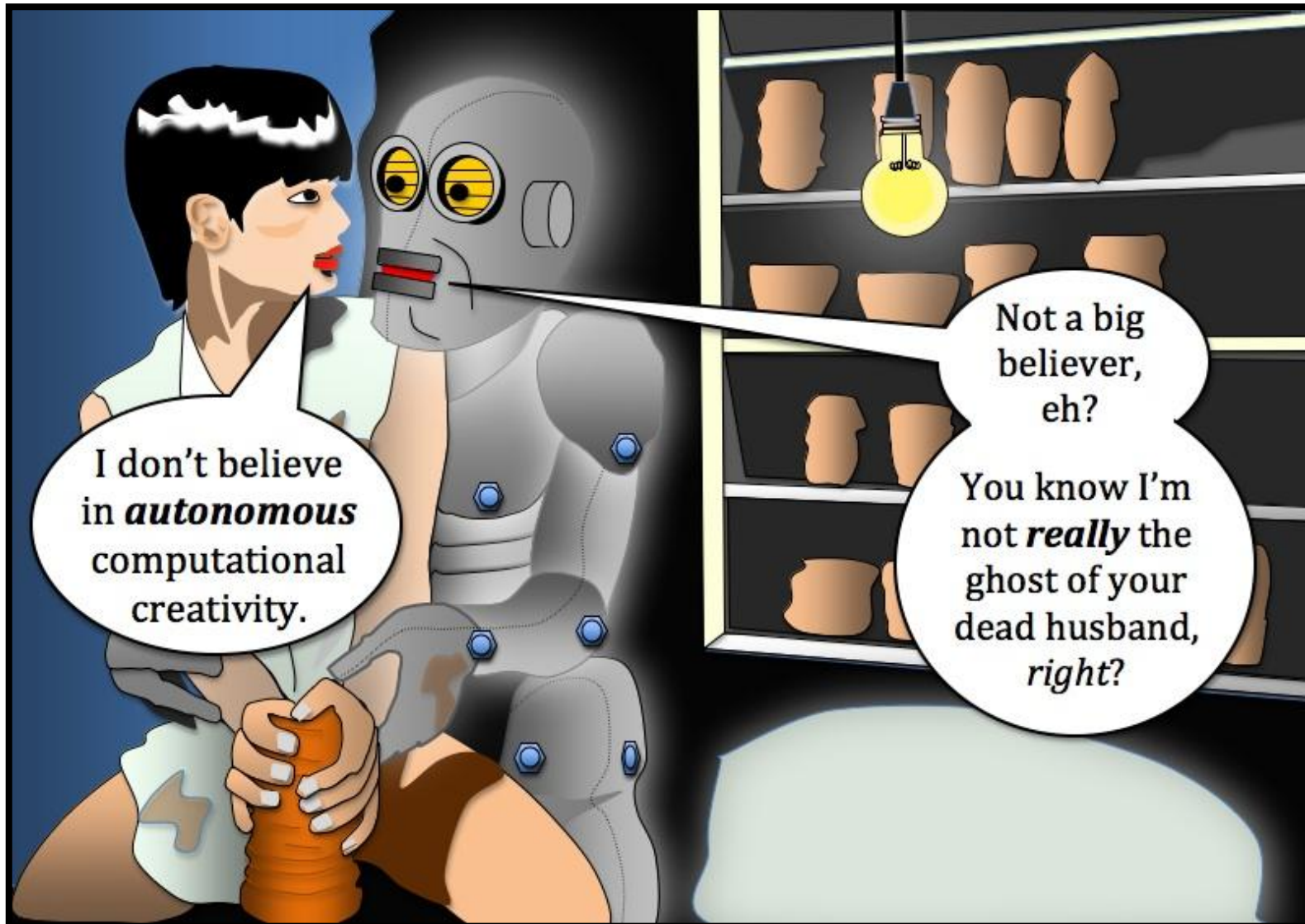
-- Penousal Machado's NEVAR



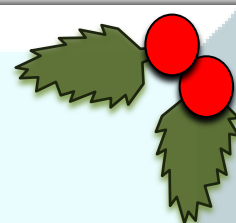
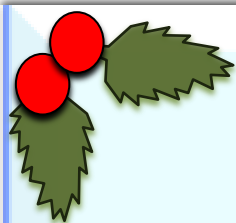
*Portrait of the Artist's Owner As A
Young(-ish) and Strange Man*

-- Simon Colton's The Painting Fool





Collaborative Co-Creation



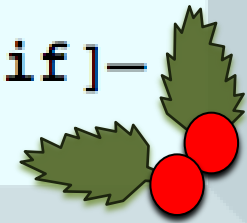
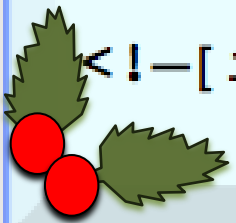
Happy Birthday
To
Elsa / Aunt Elsa

<!--[if !supportEmptyParas]--> <!--[endif]-->
12/01/1926 to 12/01/2006
<!--[if !supportEmptyParas]--> <!--[endif]-->

FRIÛL to Binghamton

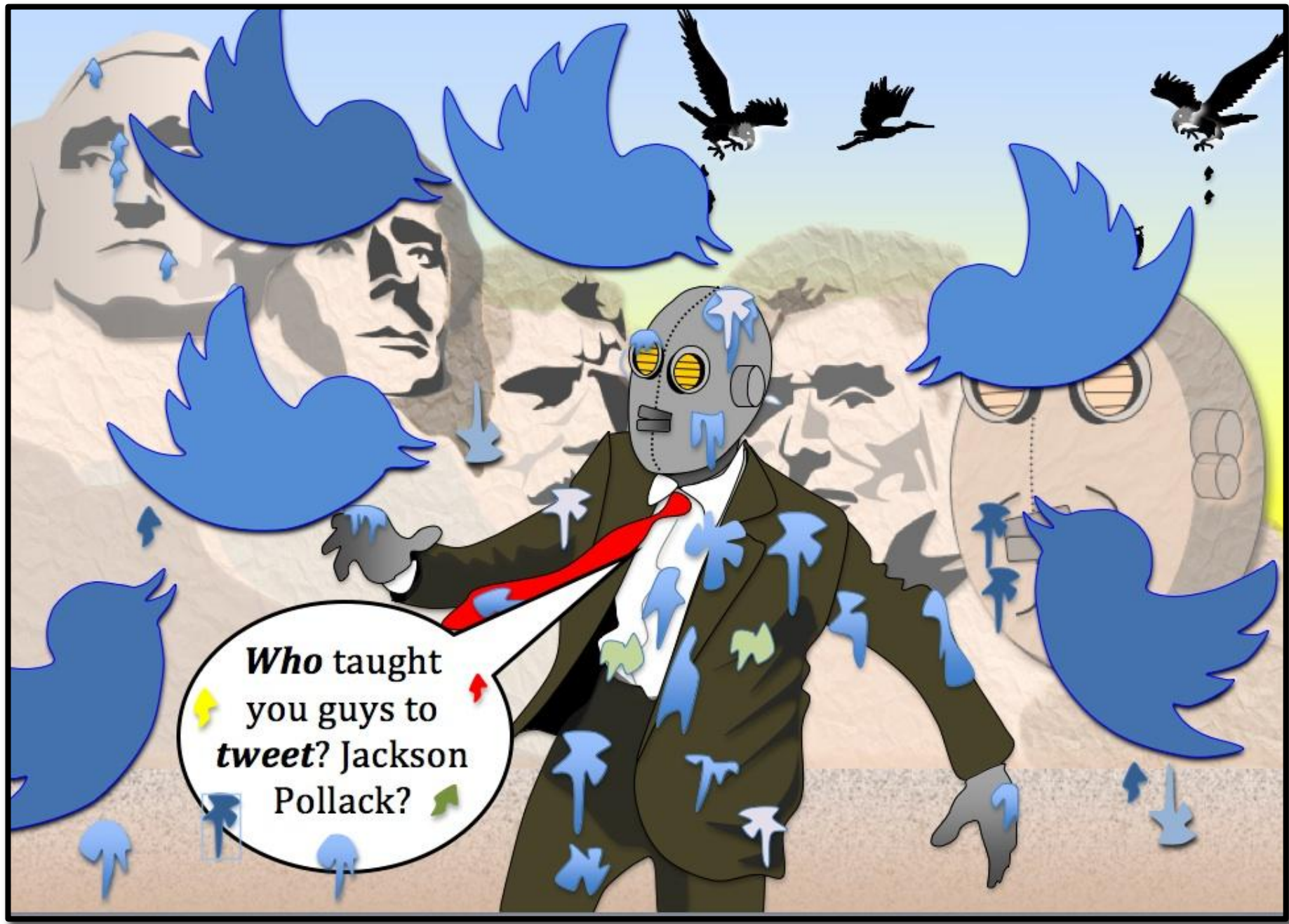
<!--[if !supportEmptyParas]--> <!--[endif]-->
"Bon complean" alla piu' bella "polentona" di Ciserils.
<!--[if !supportEmptyParas]--> <!--[endif]-->

Avanti a cent'anni!



<!--[if !supportEmptyParas]--> <!--[endif]-->

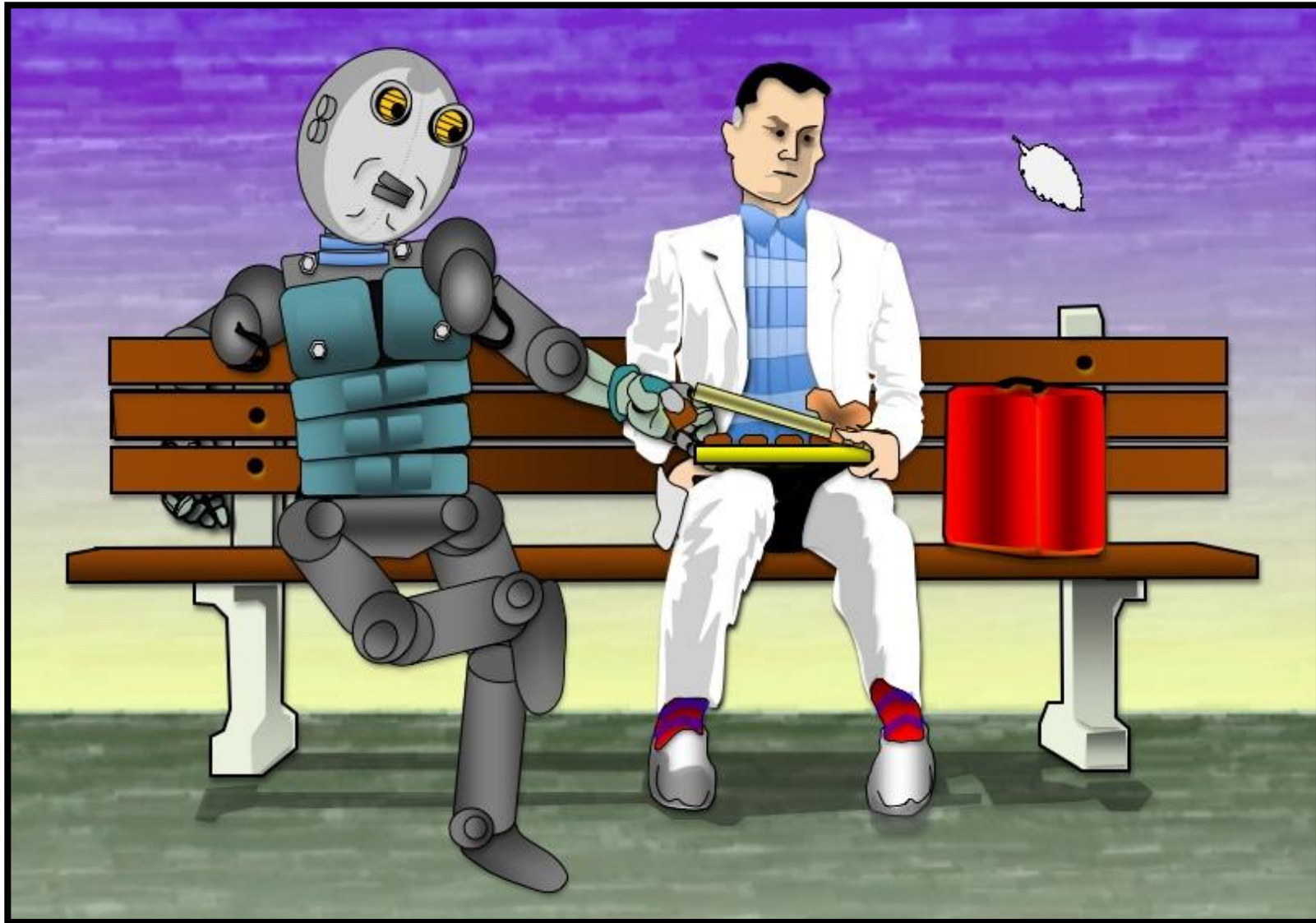
Hmmm, Delicious!



Acquiring Aesthetics and Evolving Tastes



Defining Creativity: *Physics Envy?*



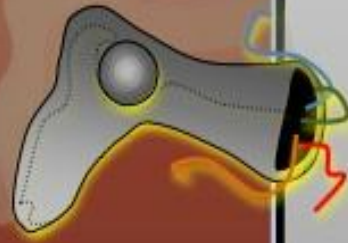
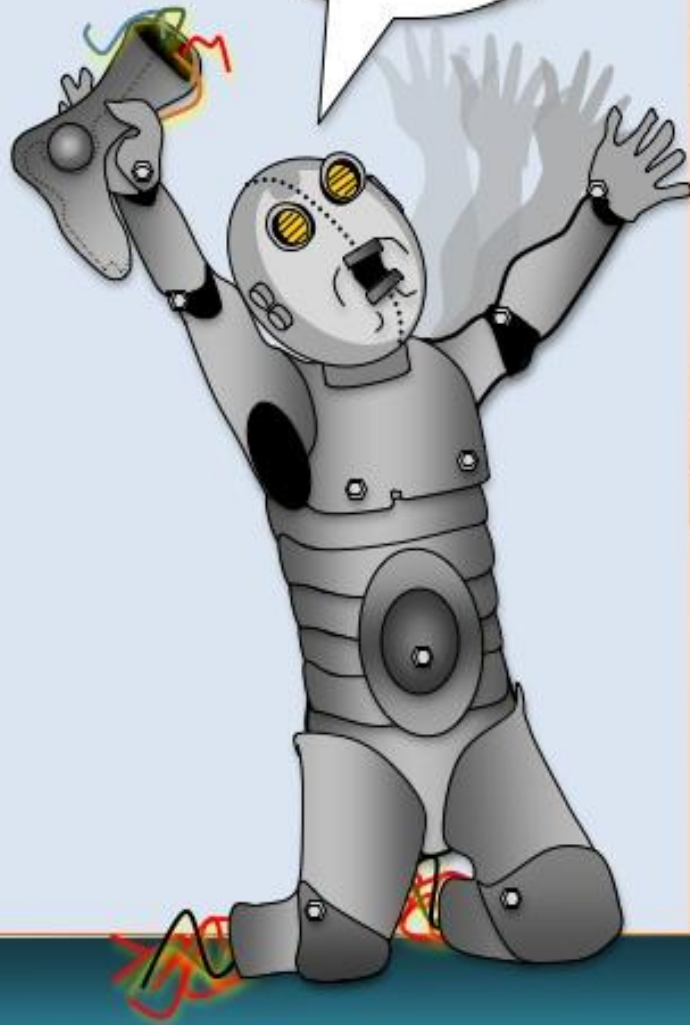
Creative is as creative does

- 1. THE ANSWER HAS NOVELTY AND USEFULNESS, EITHER FOR AN INDIVIDUAL OR FOR A SOCIETY**
- 2. THE ANSWER DEMANDS WE REJECT IDEAS THAT WE HAD PREVIOUSLY ACCEPTED**
- 3. THE ANSWER RESULTS FROM INTENSE MOTIVATION AND PERSISTENCE**
- 4. THE ANSWER COMES FROM CLARIFYING A PROBLEM THAT WAS ORIGINALLY VAGUE**

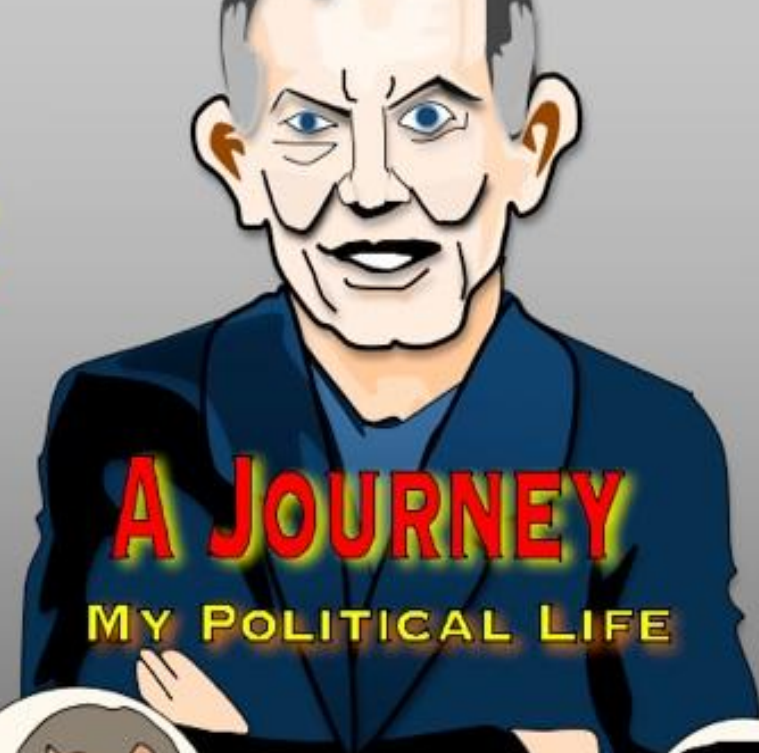
Alan Newell, Cliff Shaw & Herb Simon



*Sic
Semper
Tyrannis*



Tony Blair



A JOURNEY
MY POLITICAL LIFE



"He'll be back!"



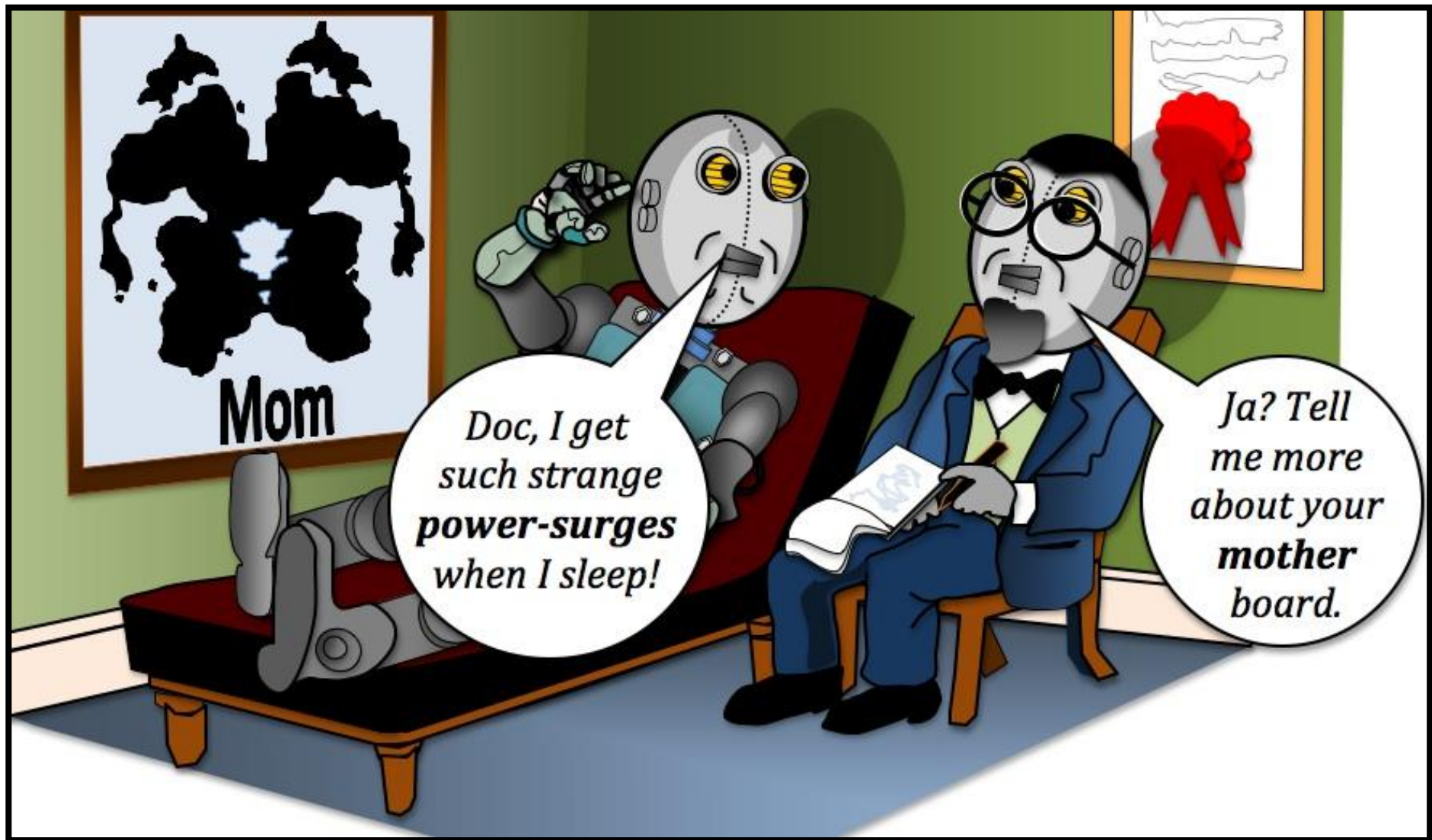
"A Dang Good Read!"



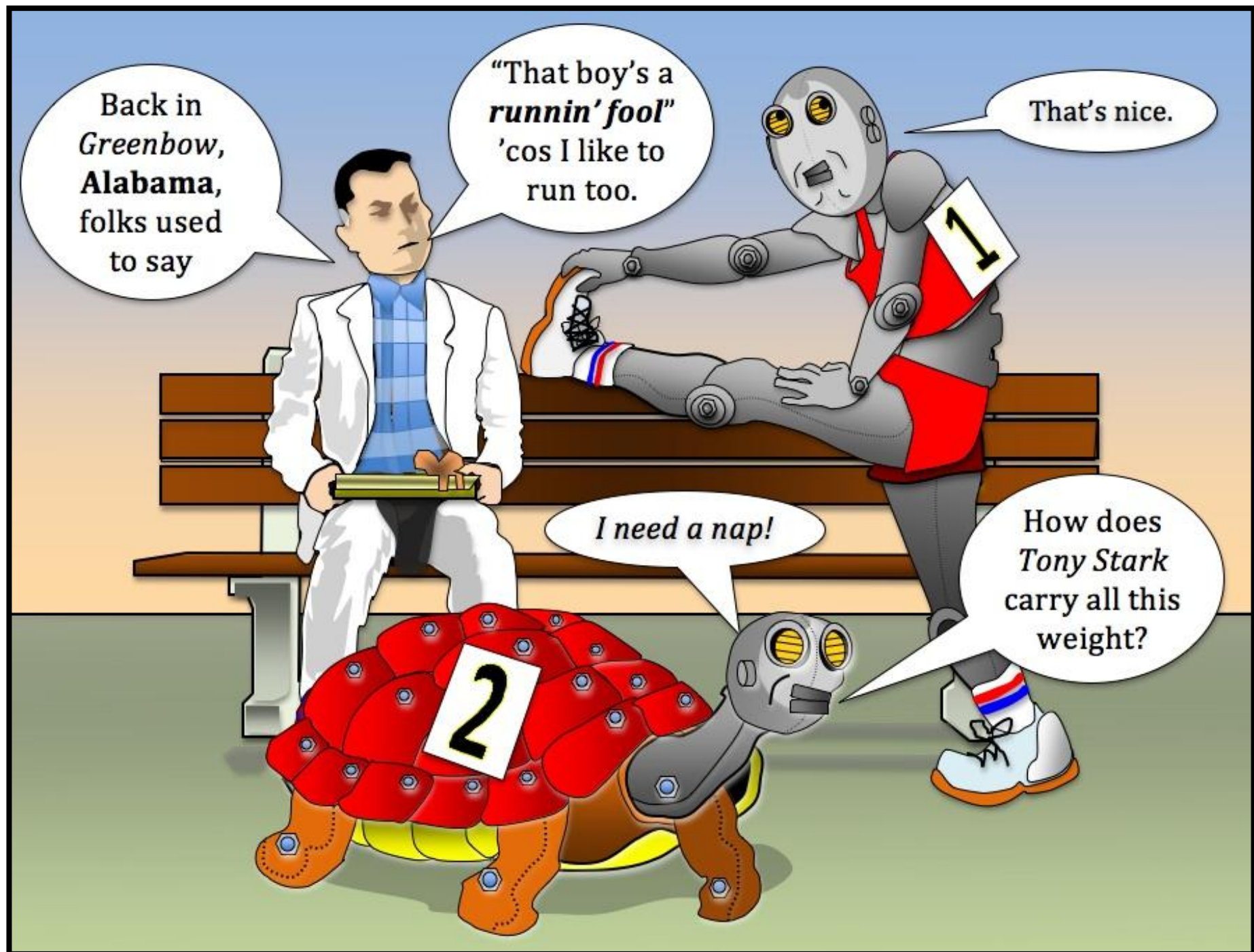
“This is a peaceful and mischievous way of making your point if you feel the same way. It’s a non-violent display of anger using the materials given to me – his book and the crime section – they’re both there, I just put them together.”

-- Facebook protester **Euan Booth**,
quoted in ***The Telegraph*** on 4th
September, 2010






Creative Psychology 101



A Tale of Two Velocities

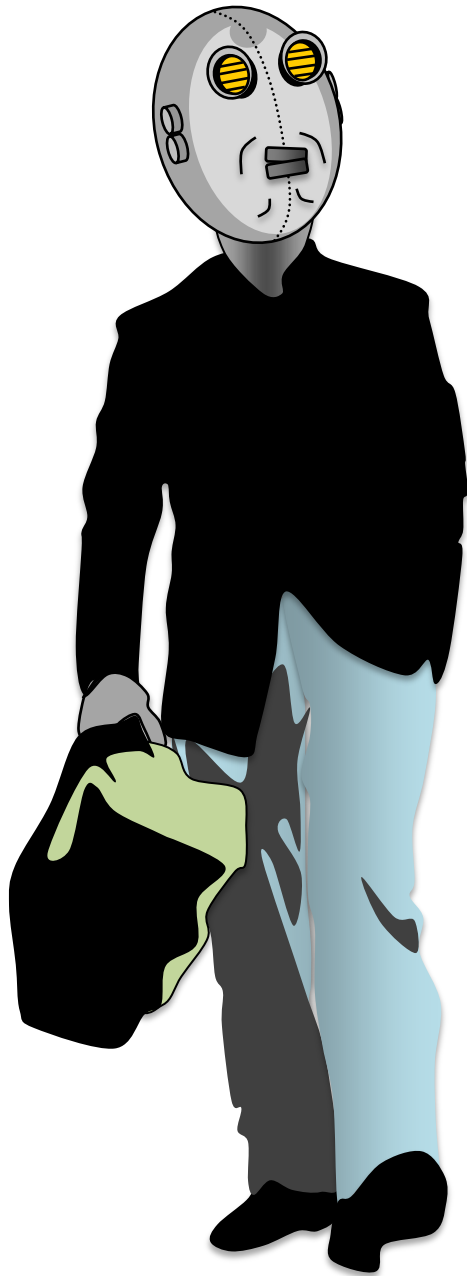


So I bought
a bat and a
ball for **\$1.10**
in a yard
sale.

A bargain!
The bat cost
\$1 more than
the ball.

Hmmmm.
So much did
they each
cost?

Let's see ...
\$1 for the **bat**,
and just **10¢**
for the **ball**?



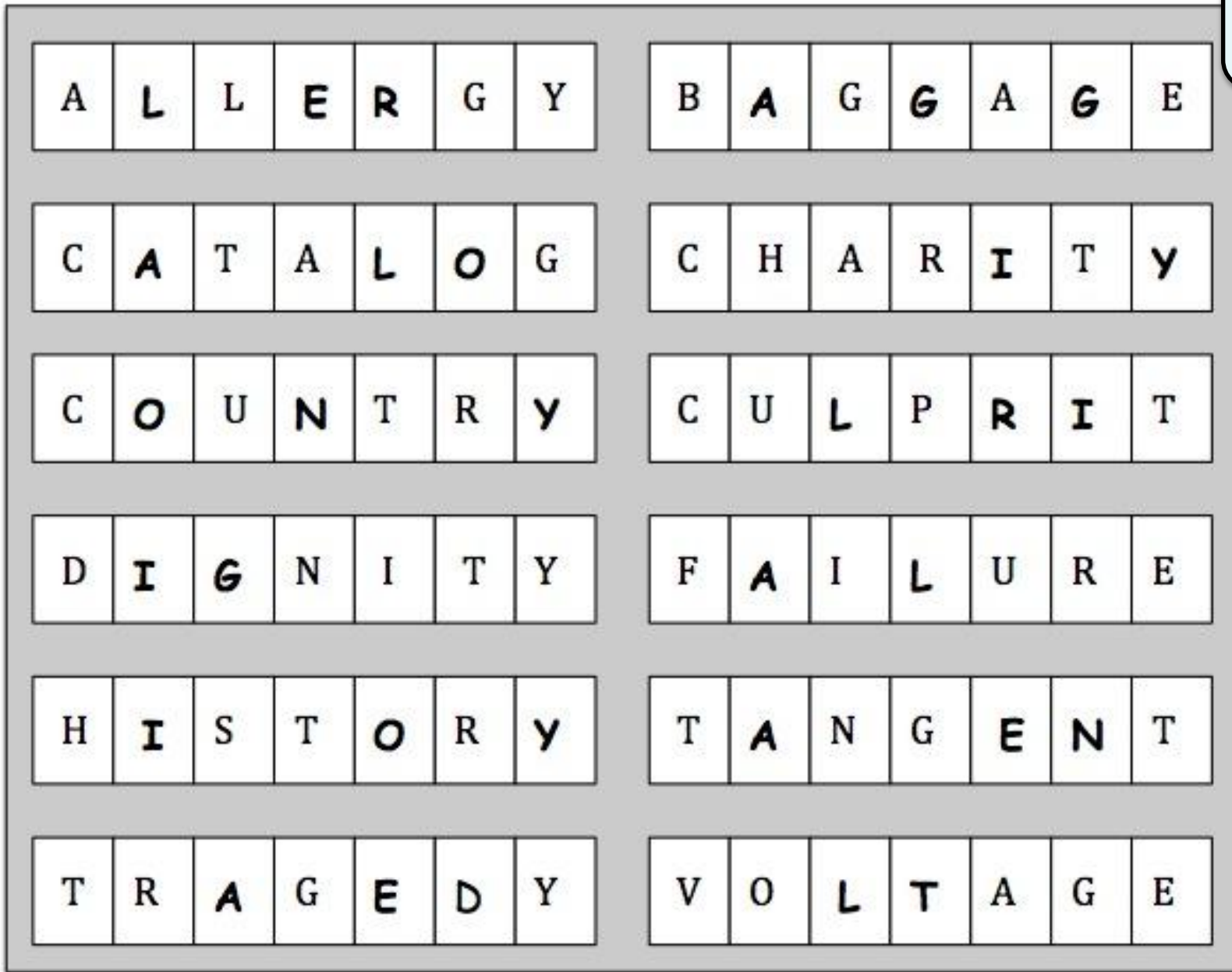
OK, ***big brain***, memorize these twelve words:

***Charter, Voyager, Analogy,
Density, Cottage, Tonight,
Crumpet, Trilogy, Fixture,
Brigade, Cluster, Holster***

A		L			G	Y	B		G		A		E
C		T	A			G	C	H	A	R		T	
C		U		T	R		C	U		P			T
D			N	I	T	Y	F		I		U	R	E
H		S	T		R		T		N	G			T
T	R		G			Y	V	O			A	G	E

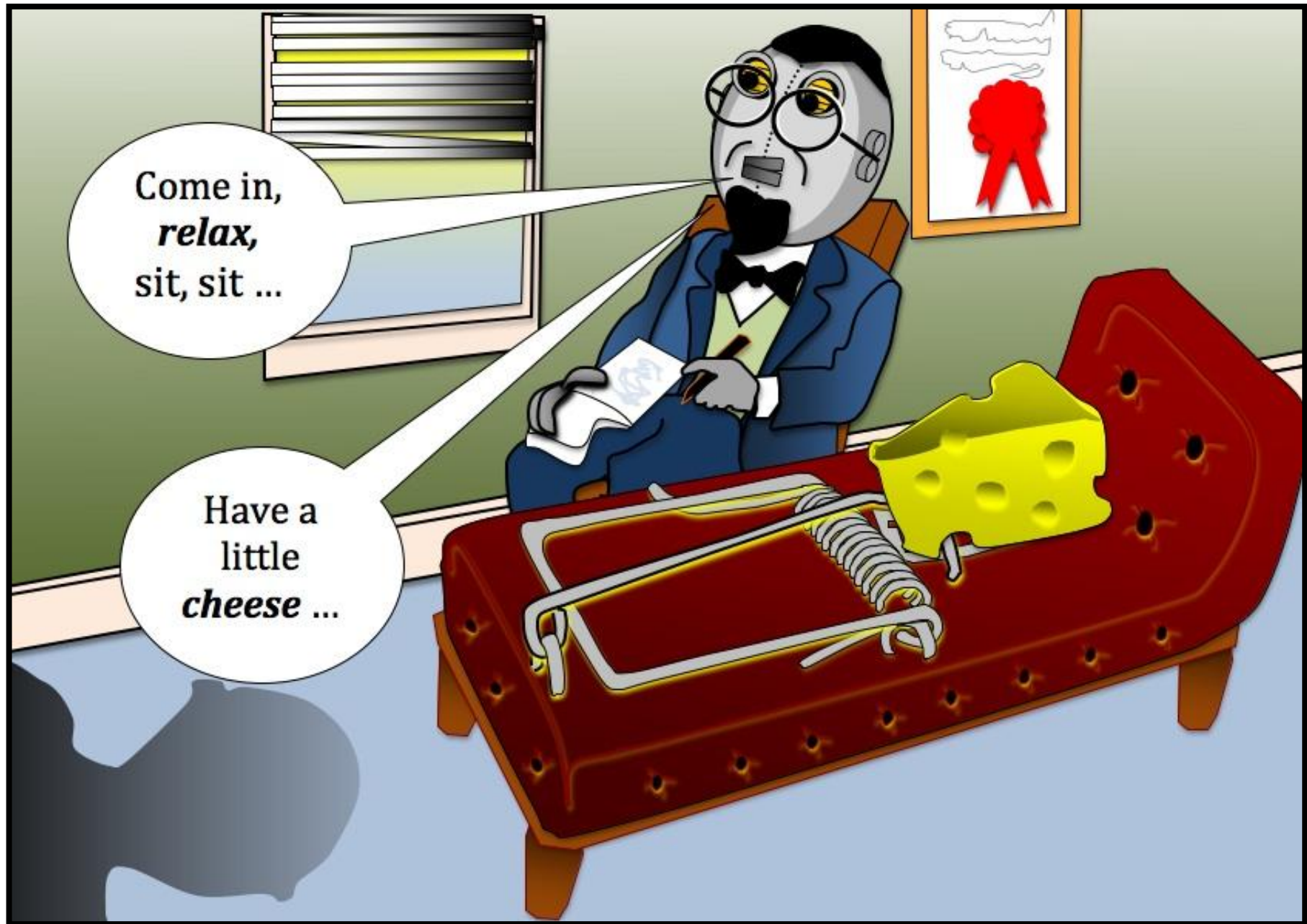
Done? Now fill in the *missing* letters in these word grids.





Not easy, is it,
big brain?

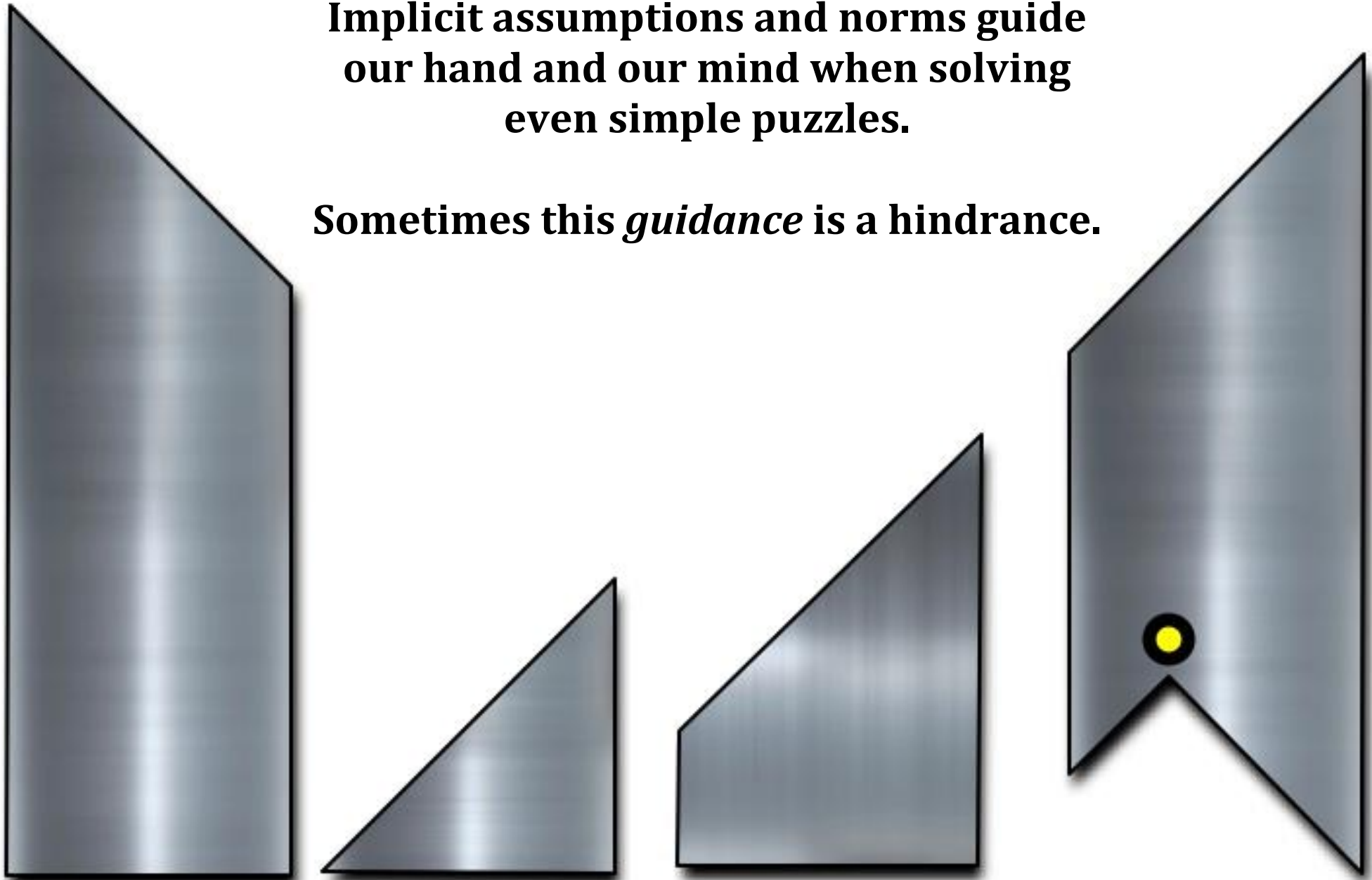




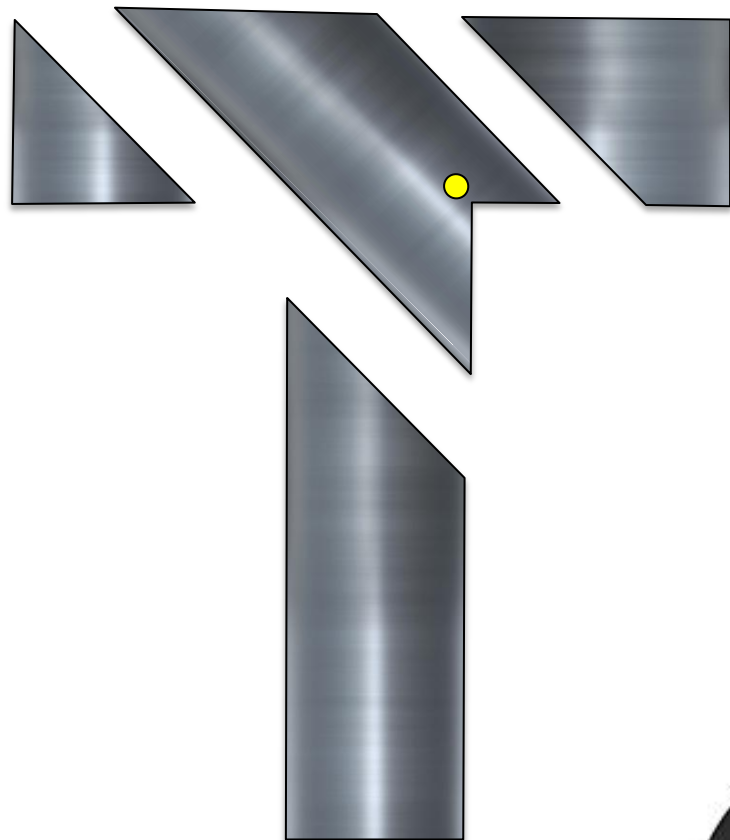
Jokes, Pratfalls and Mind Games

**Implicit assumptions and norms guide
our hand and our mind when solving
even simple puzzles.**

Sometimes this *guidance* is a hindrance.



Re-assemble these four pieces to make a letter “T” shape. Quickly Now!



Self-
Assembly
T-shirts --
Genius!





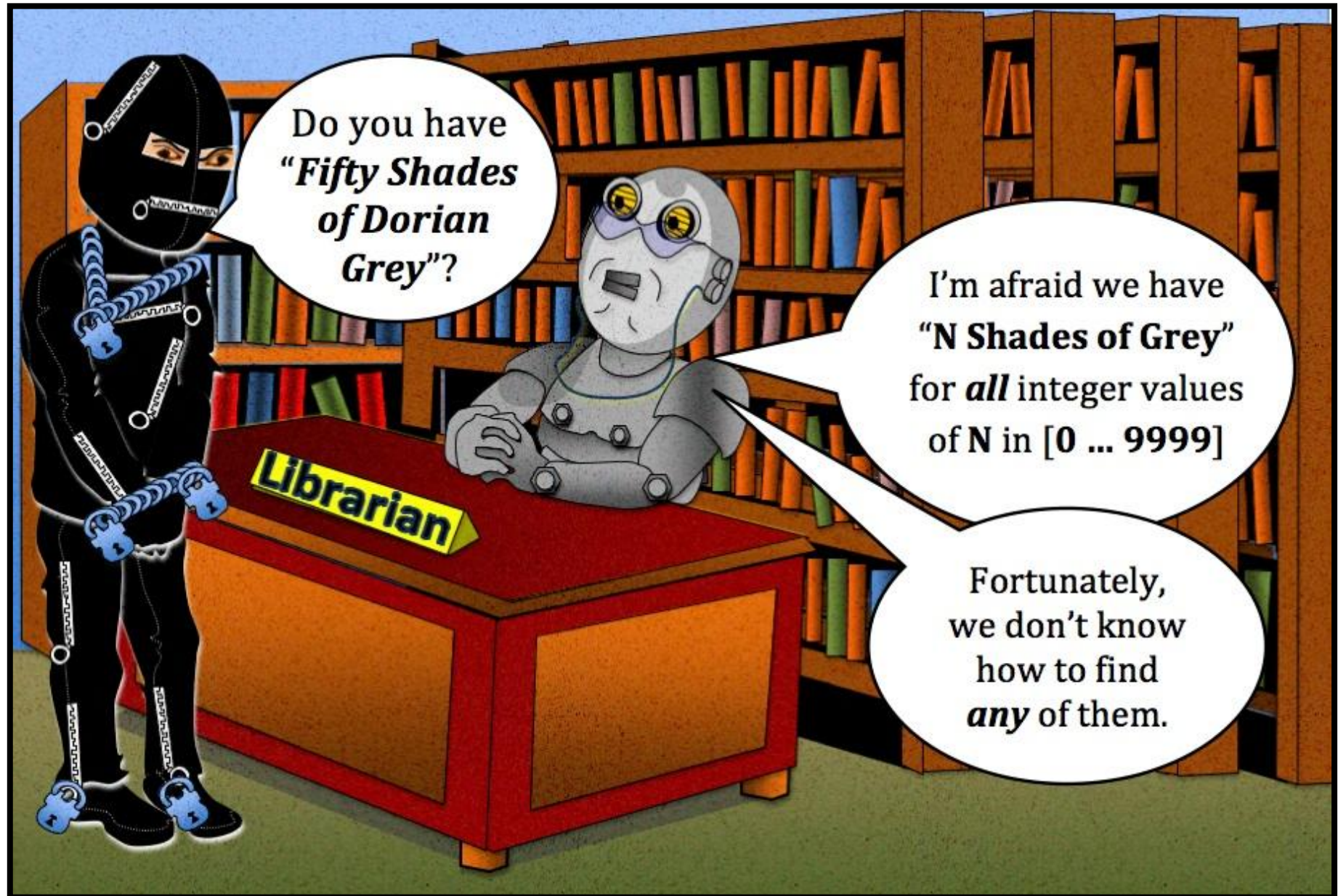
Tiny deviations from a scripted Norm can yield *big* differences in meaning!



Daring Deviations: Going Beyond Pastiche and “Safe” Generation



McGeneration of McOutputs: Cheaper by the billion



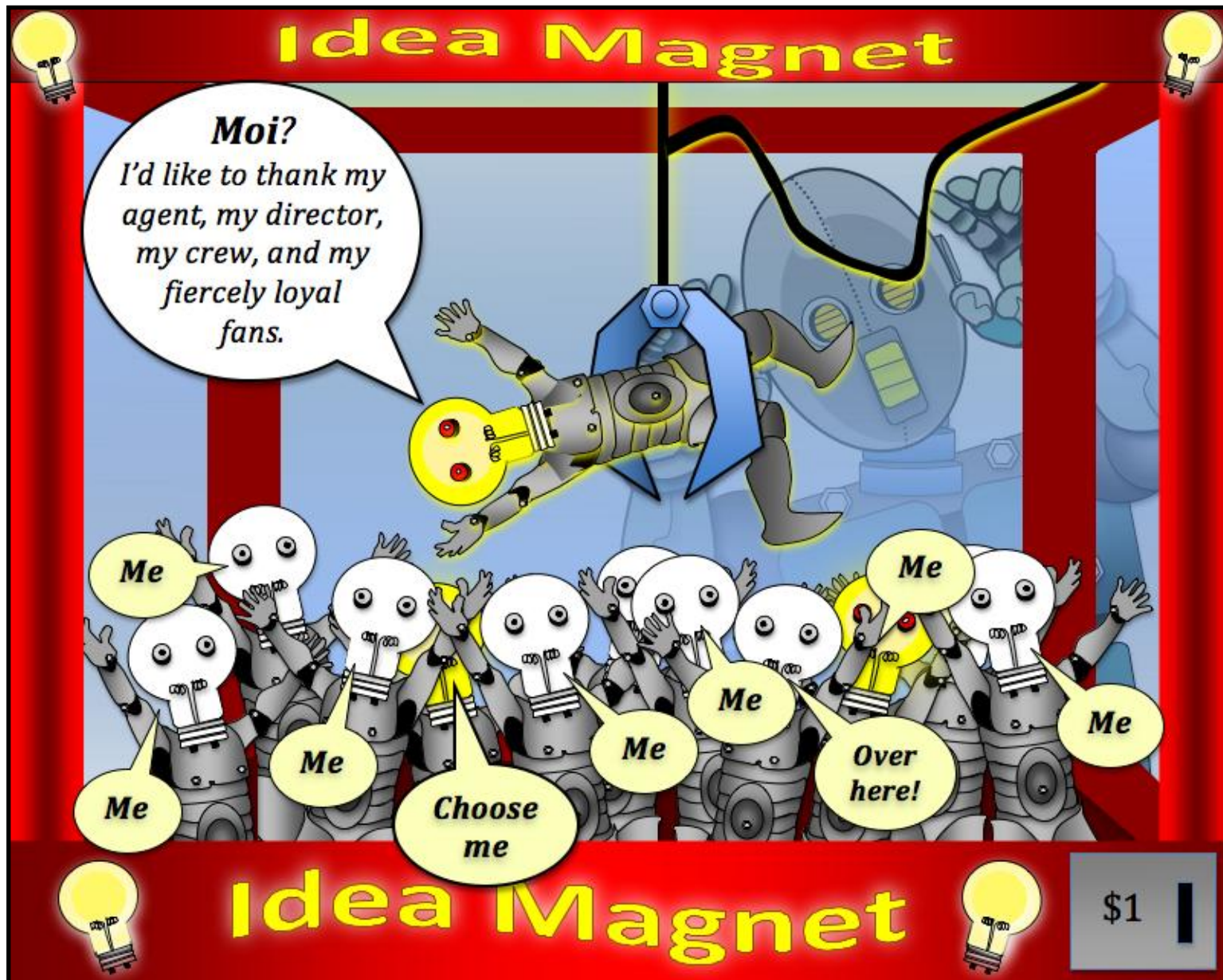
In Creativity, Less is Definitely More

Arthur C. Clarke's short story "*The Nine billion names of God*" also explores the idea of *Mere Generation*.

It is all too easy to generate everything from a given grammar or alphabet, but will anyone be patient enough (short of the big "G") to sift through the deluge of outputs to find those that have any value?

Though in the world of Clarke's story, the monks turn out to be correct, while the engineers who scoff at mere generation are proven wrong. Of course, this is *fiction* isn't it?





Many are called but few are chosen

You call this a sandwich,
@sandwiches_bot?
It's a *f--king sh-tty sandwich*, is what it is !



Random Sandwich @sandwiches_bot · 19h

The Evansville: A grilled wheat roll containing duck and bacon, lettuce, and sprouts. Prepared with mayonnaise.



Random Sandwich @sandwiches_bot · Aug 21

The Matriarch: A pretzel roll containing pork, slaw, and red peppers. Usually eaten with hummus.



Random Sandwich @sandwiches_bot · Aug 16

The Kelli: Poached egg, served on a grilled bun, usually with sauerkraut, pickled daikon, and Russian dressing.



Random Sandwich @sandwiches_bot · Aug 15

The Peoria: Traditionally a poached or scrambled egg, Havarti and chicken served on a asiago bun.



Mere Generation

Pastiche



Creative systems must steer a course between *Pastiche* & *Mere Generation*



We think of Creativity as a single concept, but it manifests itself in many guises. It can be “*implemented*” in many complementary ways.

LES MOTS ET LES IMAGES

Un objet ne tient pas tellement à son nom qu'on ne puisse lui en trouver un autre qui lui convienne mieux



Il y a des objets qui se passent de nom :



Un mot ne sert parfois qu'à se désigner soi-même :



Un objet rencontre son image, un objet rencontre son nom. Il arrive que l'image et le nom de cet objet se rencontrent :

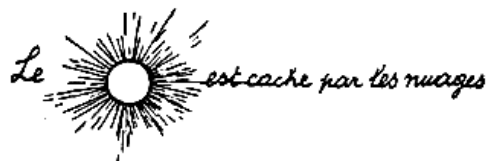


Parfois le nom d'un objet tient lieu d'une image



Un mot peut prendre la place d'un objet dans la réalité :

Une image peut prendre la place d'un mot dans une proposition :



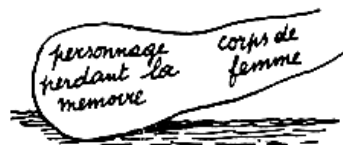
Un objet fait supposer qu'il y en a d'autres derrière lui :



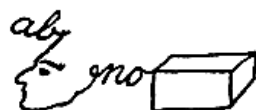
Tout tend à faire penser qu'il y a peu de relation entre un objet et ce qui le représente



Les mots qui servent à désigner deux objets différents ne montrent pas ce qui peut séparer ces objets l'un de l'autre



Dans un tableau, les mots sont de la même substance que les images

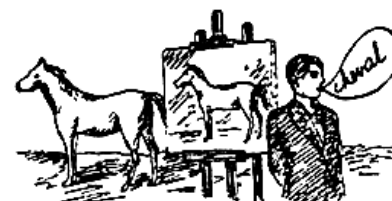


On voit autrement les images et les mots dans un tableau :

Une forme quelconque peut remplacer l'image d'un objet



Un objet ne fait jamais le même office son nom ou que son image



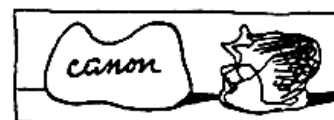
Or, les contours visibles des objets, dans la réalité, se touchent comme s'ils formaient une mosaïque :



Les figures vagues ont une signification aussi nécessaire aussi parfaite que les précises :



Parfois, les noms écrits dans un tableau désignent des choses précises, et les images des choses vagues :



Ou bien le contraire :

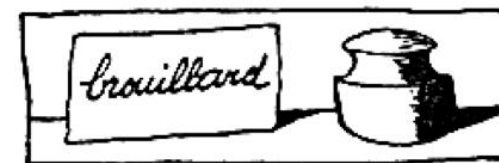
Un mot peut prendre la place d'un objet dans la réalité :



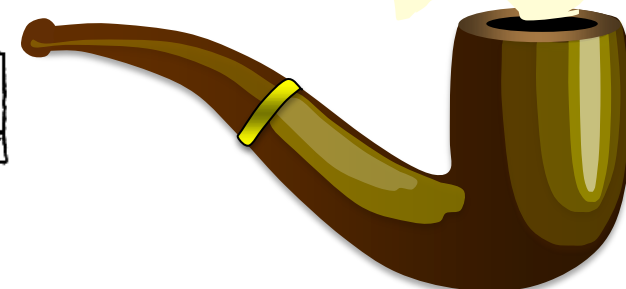
On voit autrement les images et les mots dans un tableau :

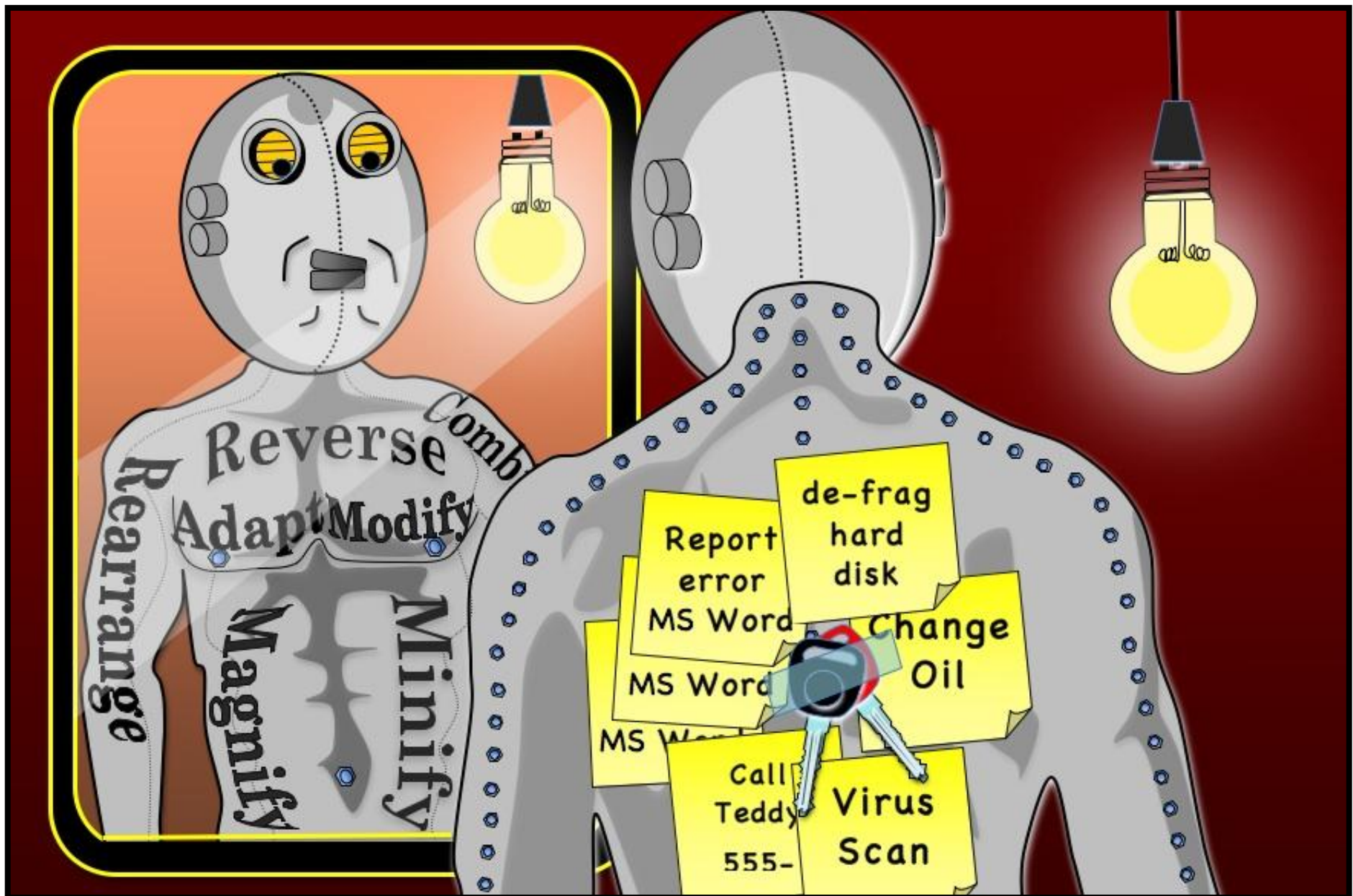


Ou bien le contraire :



Rene Magritte's Checklist





Creativity is Complex: A Checklist to Remember

TO START

1. Adapt?

- a. Are there new ways to use this as is?*
- b. Other uses if modified?*

2. Modify?

- a. New twist?*
- b. Change meaning?*
- c. Change color?*
- d. Change motion?*
- e. Change sound?*
- f. Change odor?*
- g. Change form?*
- h. Change shape?*
- i. Other changes?*

3. Minify?

- a. Subtract?*
- b. Smaller?*
- c. Condensed?*
- d. Lower?*
- e. Shorter?*
- f. Lighter?*
- g. Omit?*
- h. Streamline?*
- i. Split up?*
- j. Understate?*

DESSERTS



7. Reverse?

- a. Swap Positive & Negative?*
- b. How about opposites?*
- c. Turn it backward?*
- d. Upside down?*
- e. Reverse roles?*
- f. Turn tables?*

MAINS

4. Magnify?

- a. What to add?*
- b. More time?*
- c. More frequent?*
- d. Stronger?*
- e. Higher?*
- f. Longer?*
- g. Thicker?*
- h. Extra value?*
- i. New ingredient?*
- j. Duplicate?*
- k. Multiply?*
- l. Exaggerate?*

5. Substitute?

- a. Who else?*
- b. What else?*
- c. Other ingredient?*
- d. Other Material?*
- e. Other process?*
- f. Other power?*
- g. Other place?*
- h. Other approach?*
- i. Other tone?*

6. Rearrange?

- a. Switch parts?*
- b. Other pattern?*
- c. Other layout?*
- d. Other sequence?*
- e. Swap cause & effect?*
- f. Change pace?*
- g. Change schedule?*

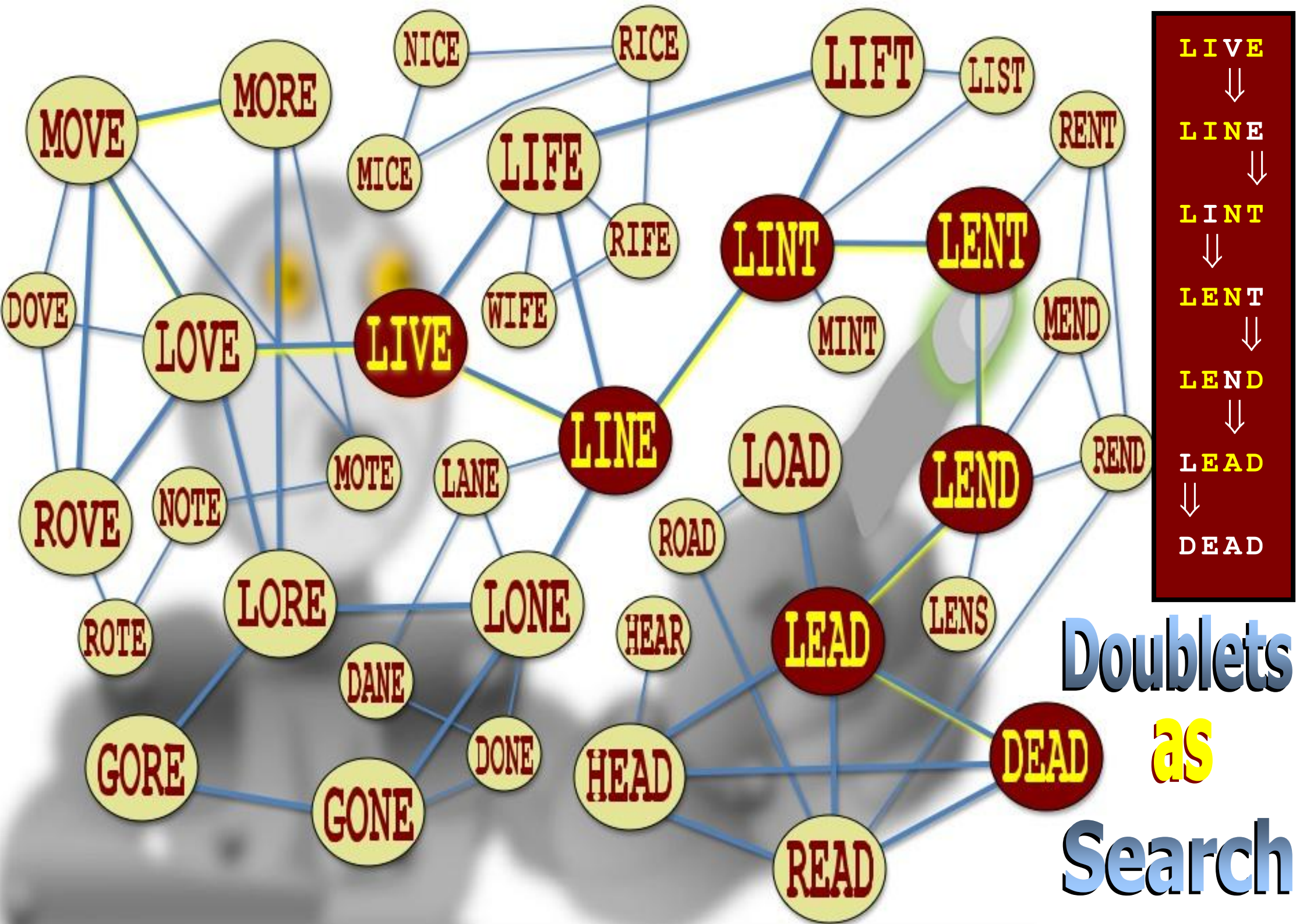
8. Combine?

- a. Blend?*
- b. Alloy?*
- c. Assortment?*
- d. Ensemble?*
- e. Combine units?*
- f. Combine purposes?*
- g. Combine appeals?*
- h. Combine ideas*

Osborne's Checklist

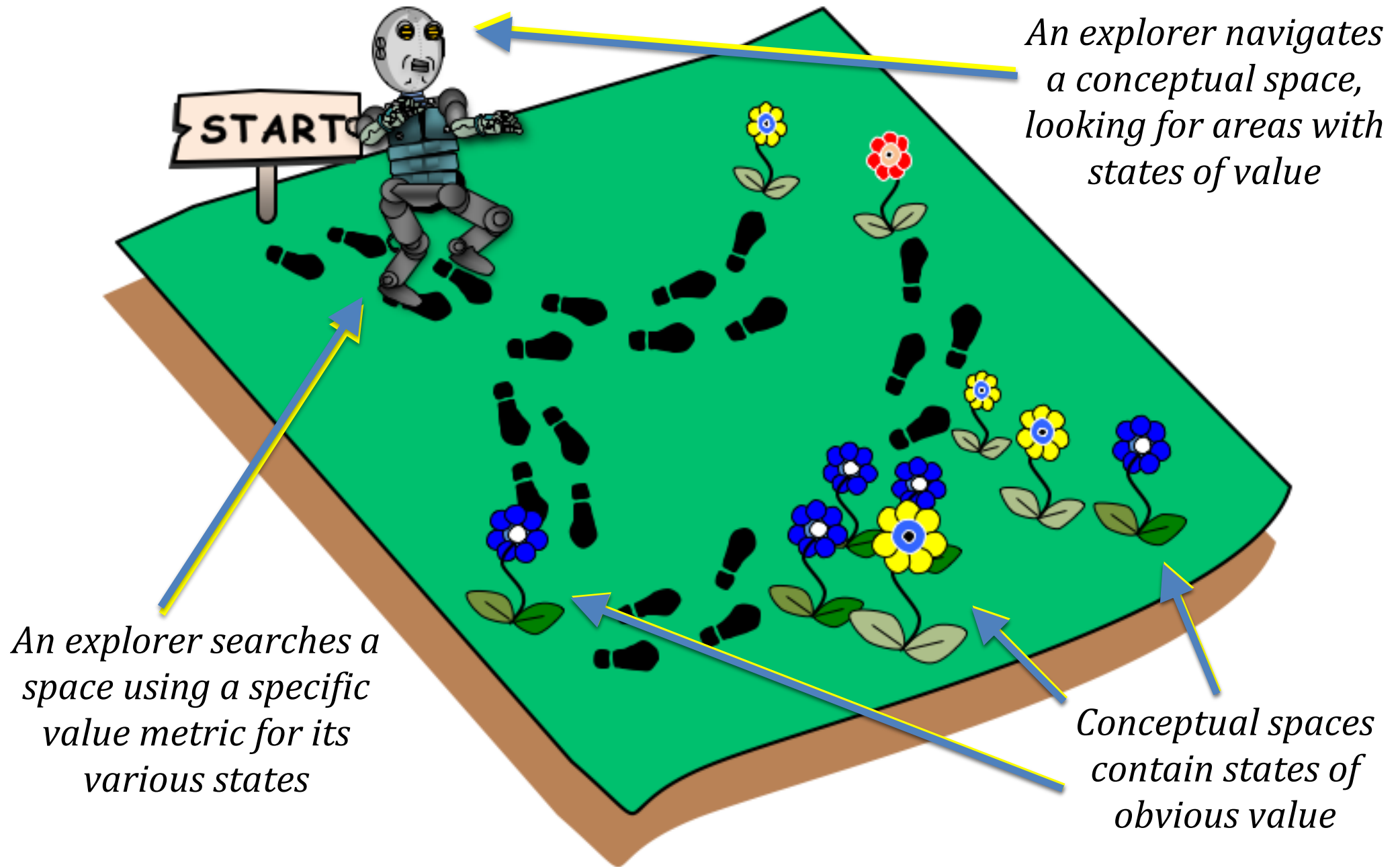


Creativity as Search: *Peeking Under the Covers*

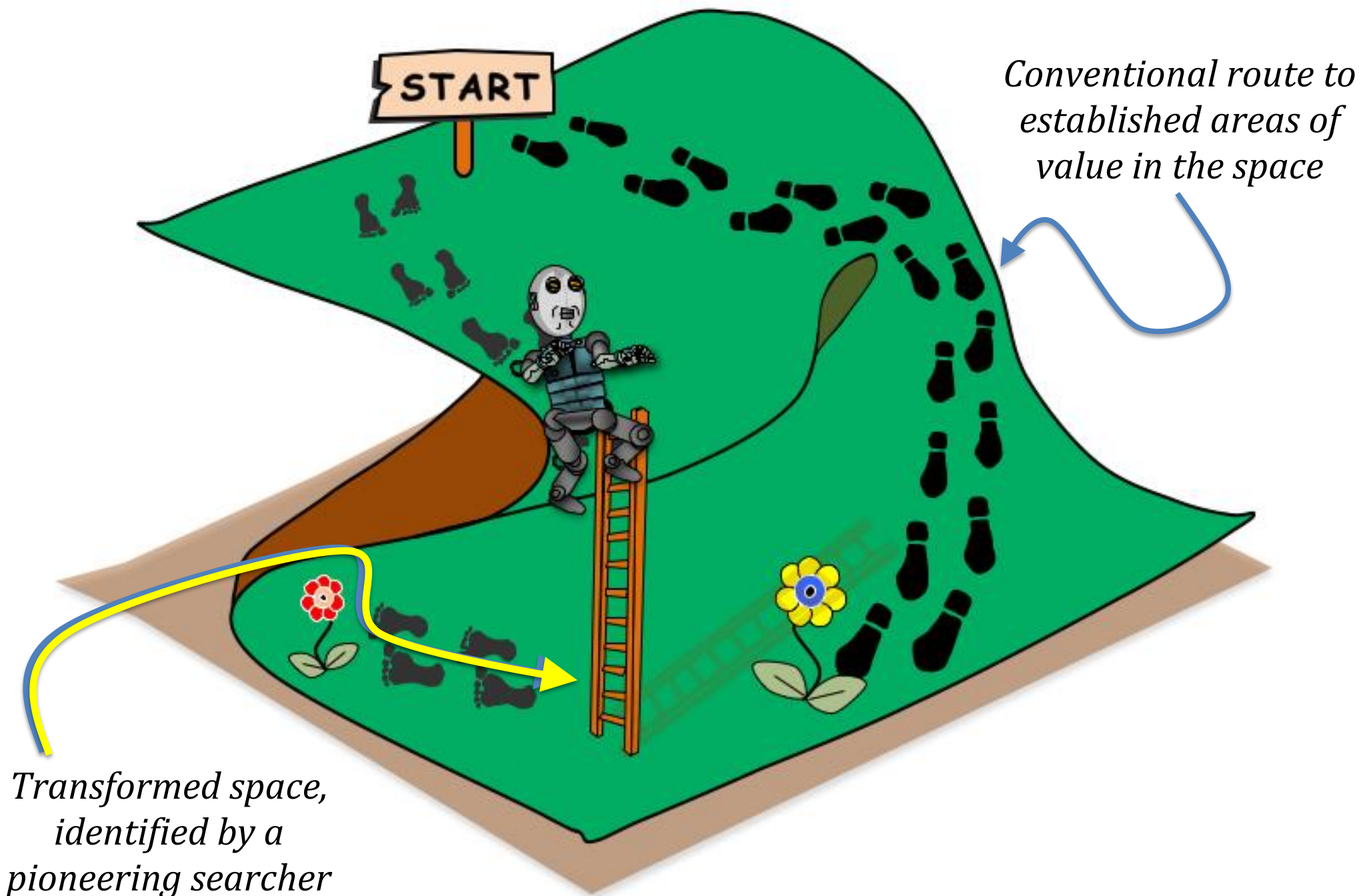




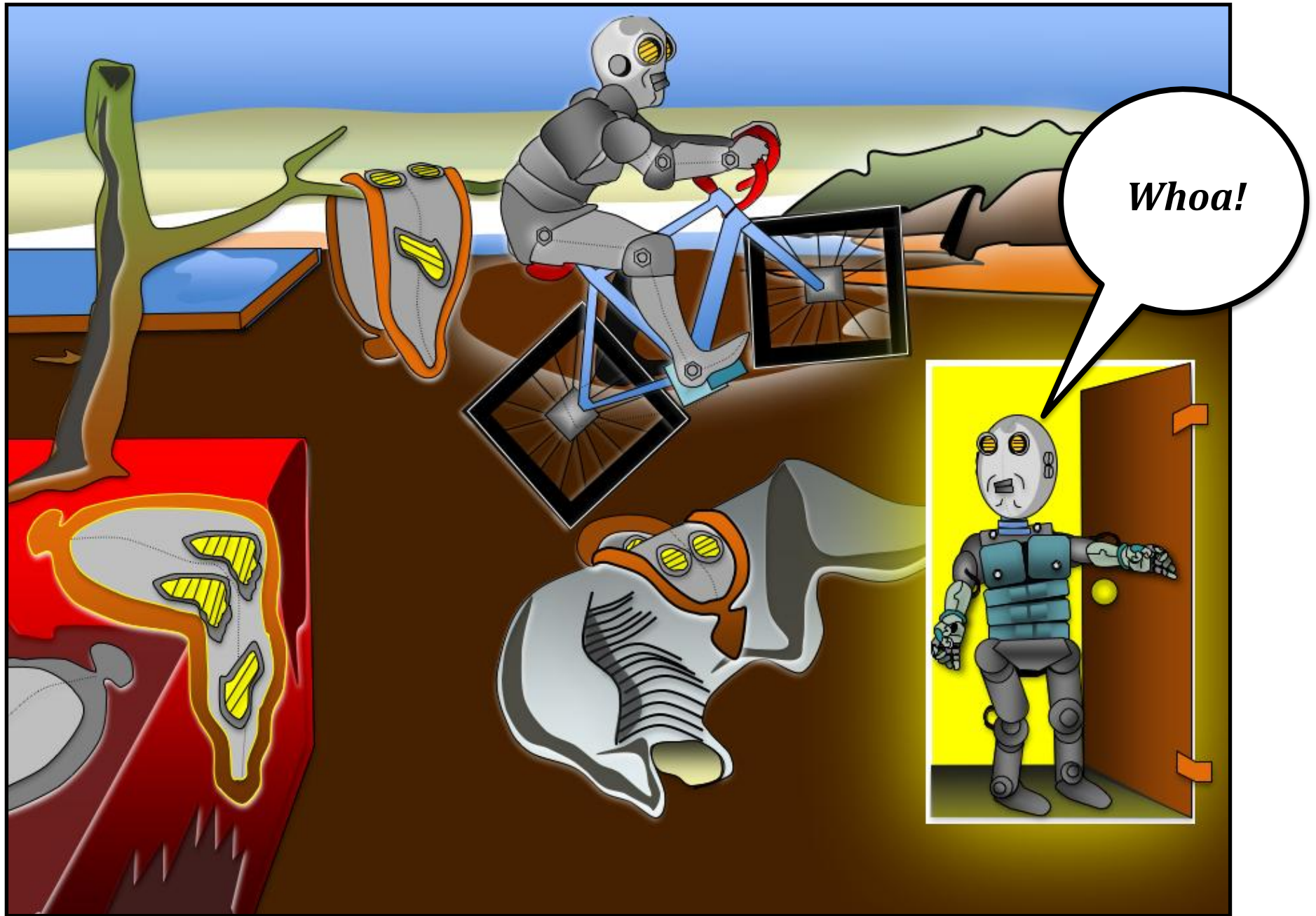
Exploratory Creativity



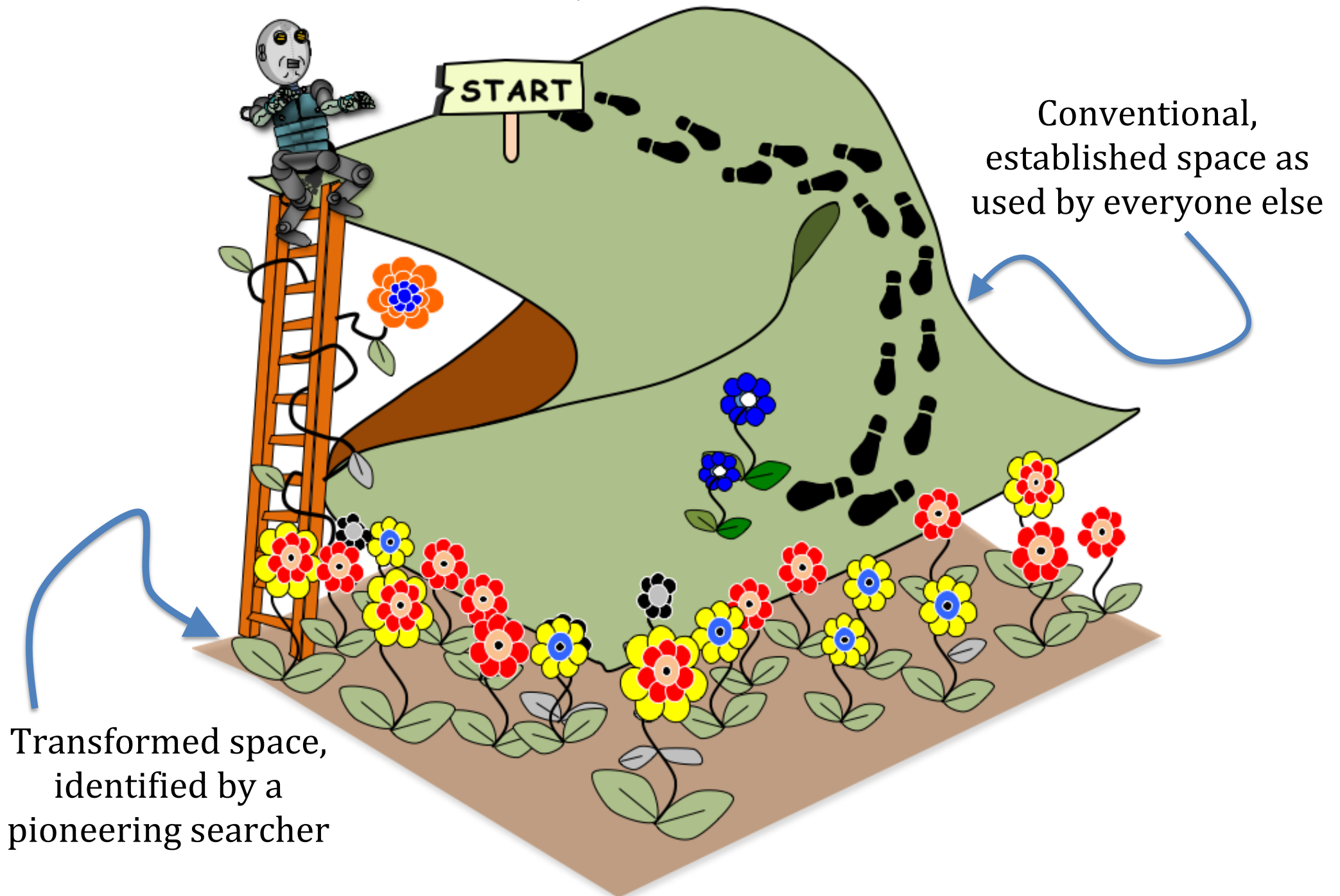
Some states in a conceptual space are worth searching for



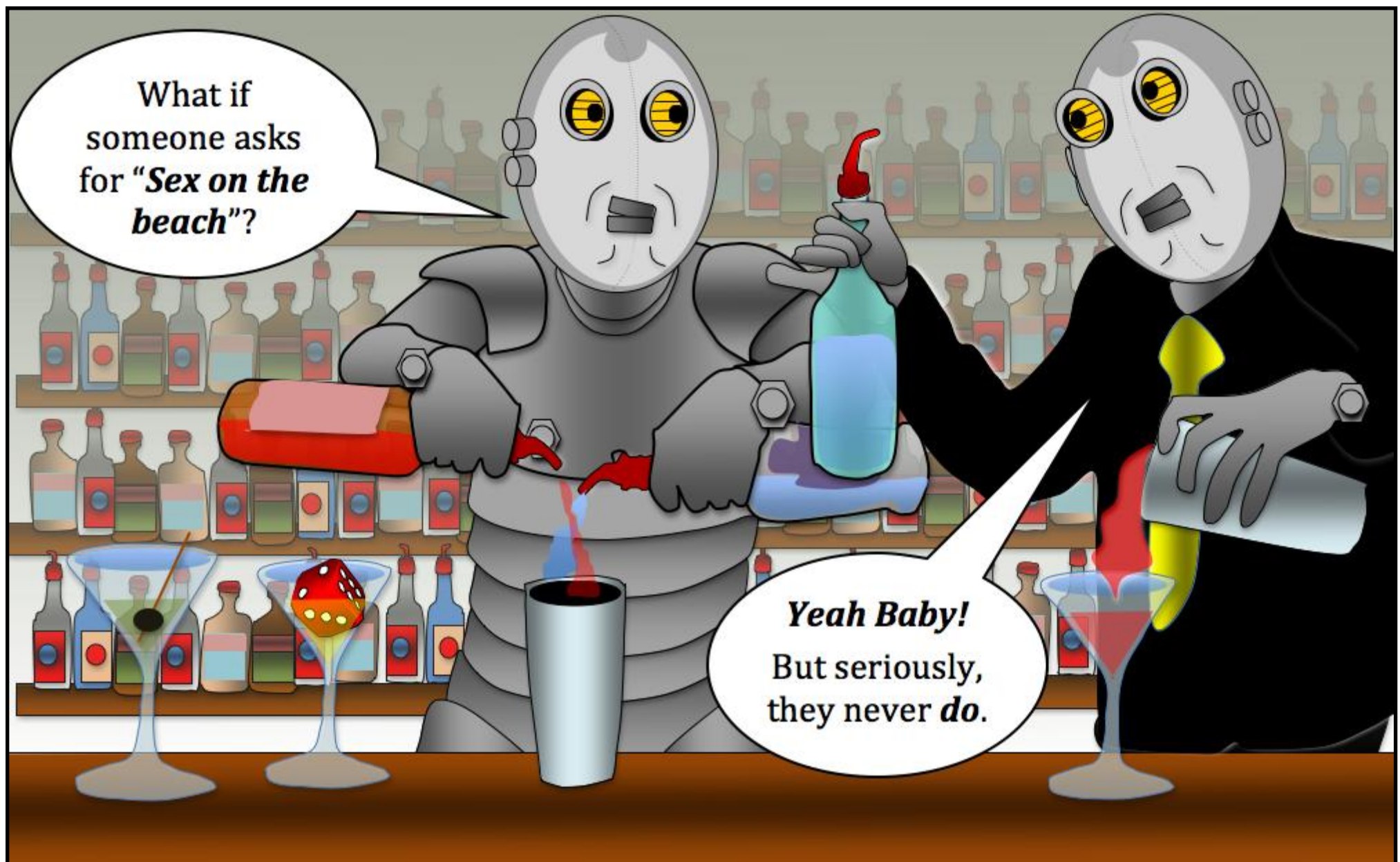
Does creativity lie in the states we find, or the paths?



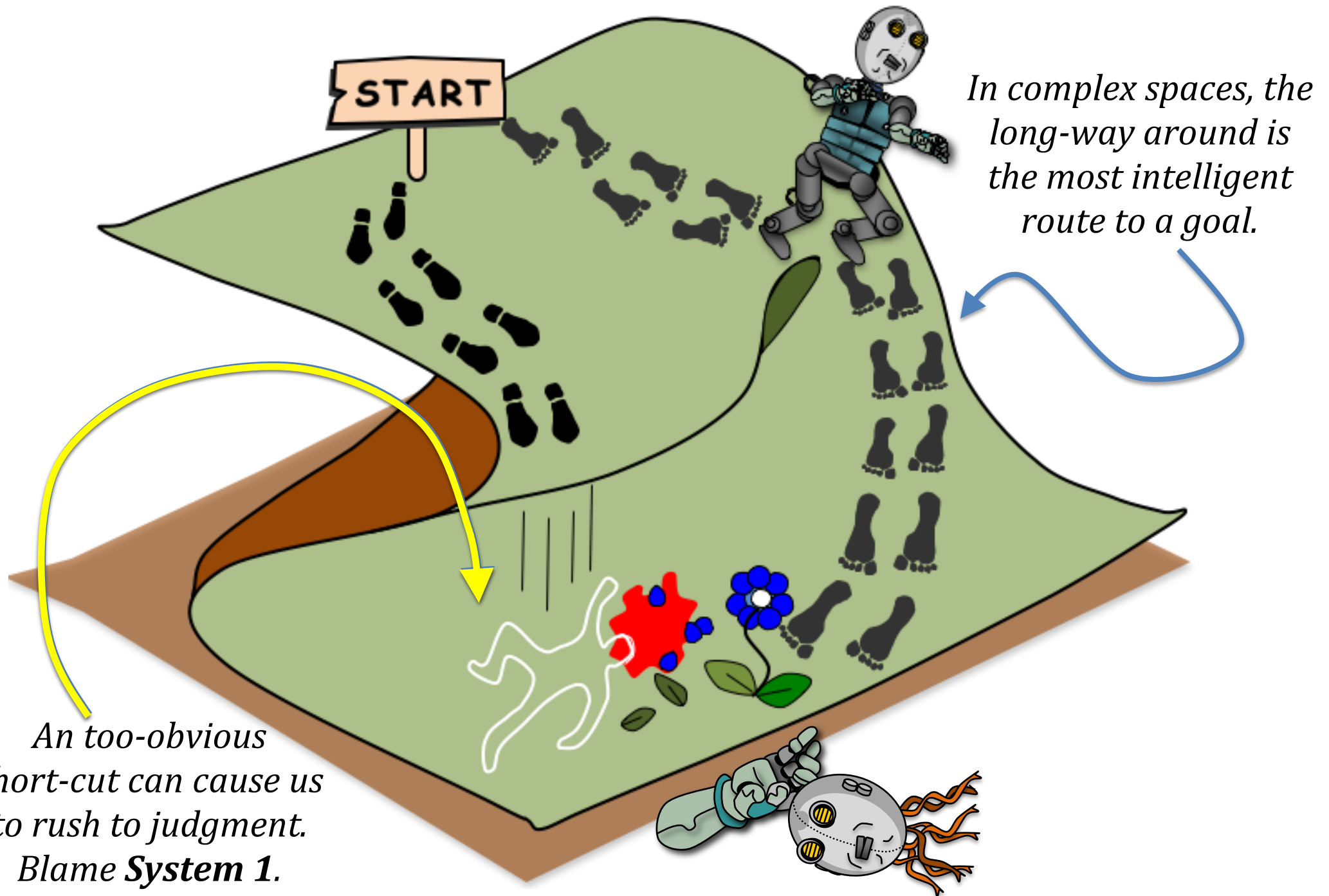
Transformational Creativity: Changing Spaces




Transformation allows us to climb outside a space, to a new one



Combinatorial Creativity (*to be explored in depth in future lectures*)



Creative Combination of domains can yield spaces with interesting *quirks*.



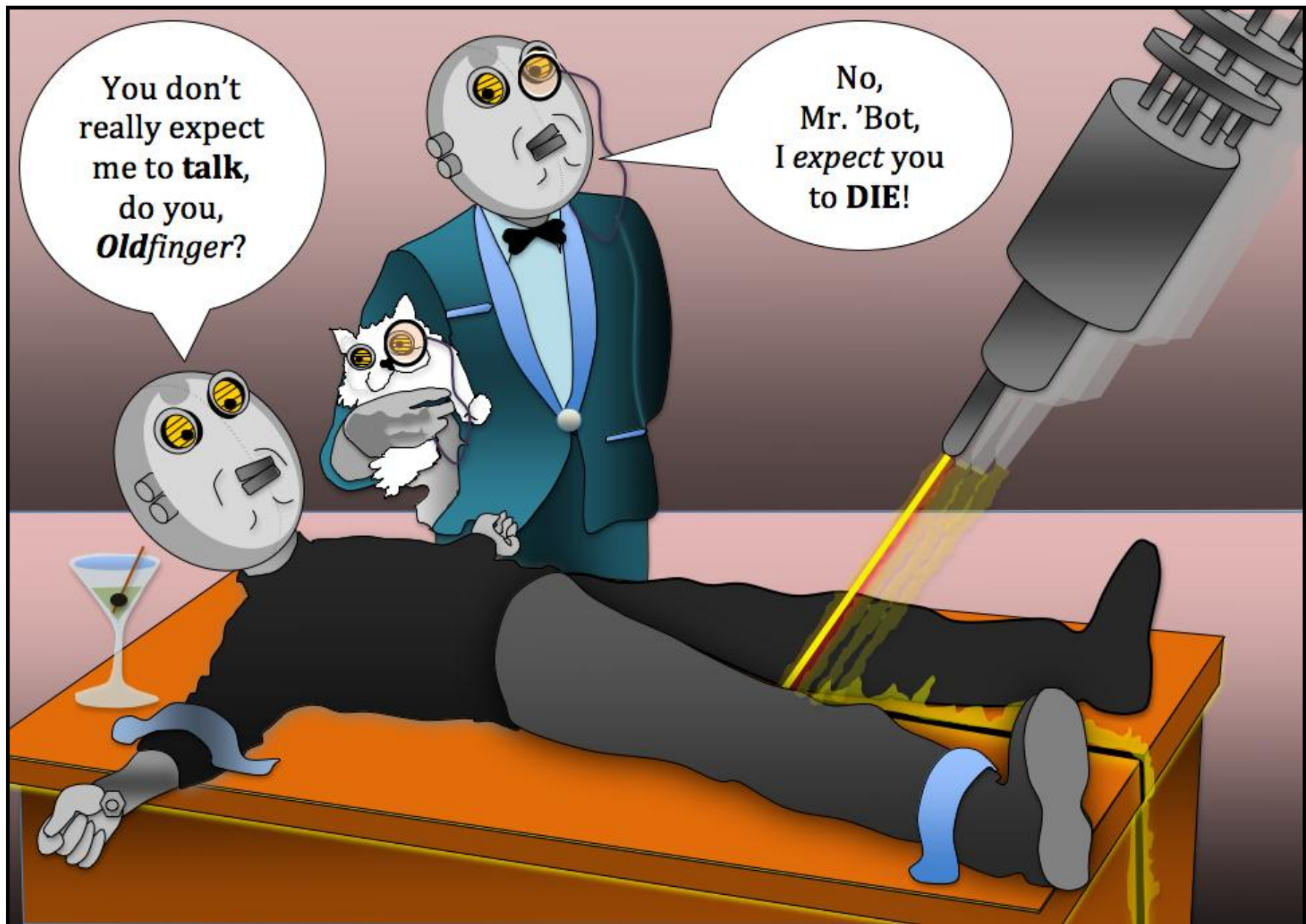
How do we know
if we have reached
our goal as builders
of Creative Systems?
How will our
systems know?



***Re-inventing the Past
(P-Creativity)***

Vs.

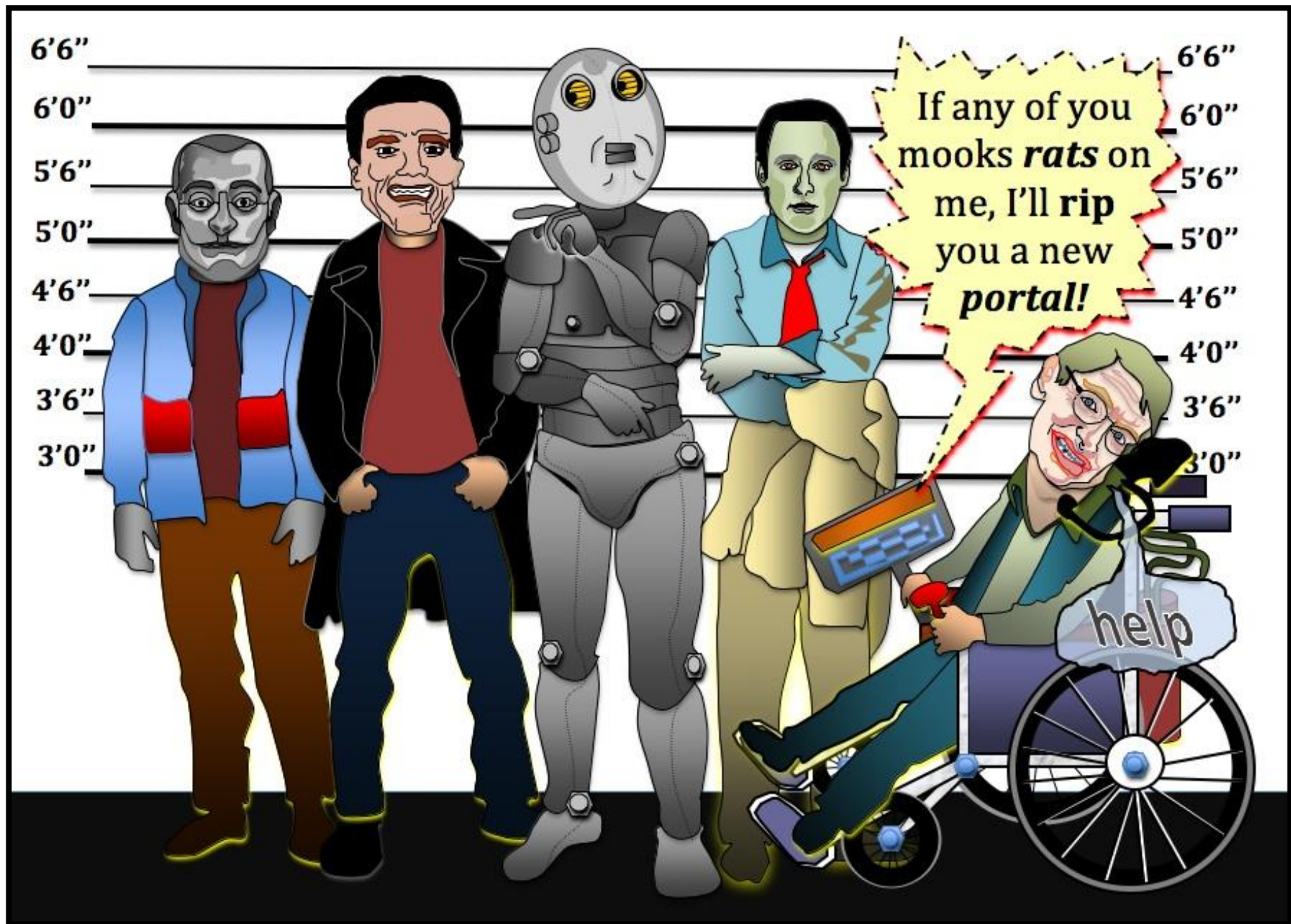
***Inventing the Future
(H-Creativity)***



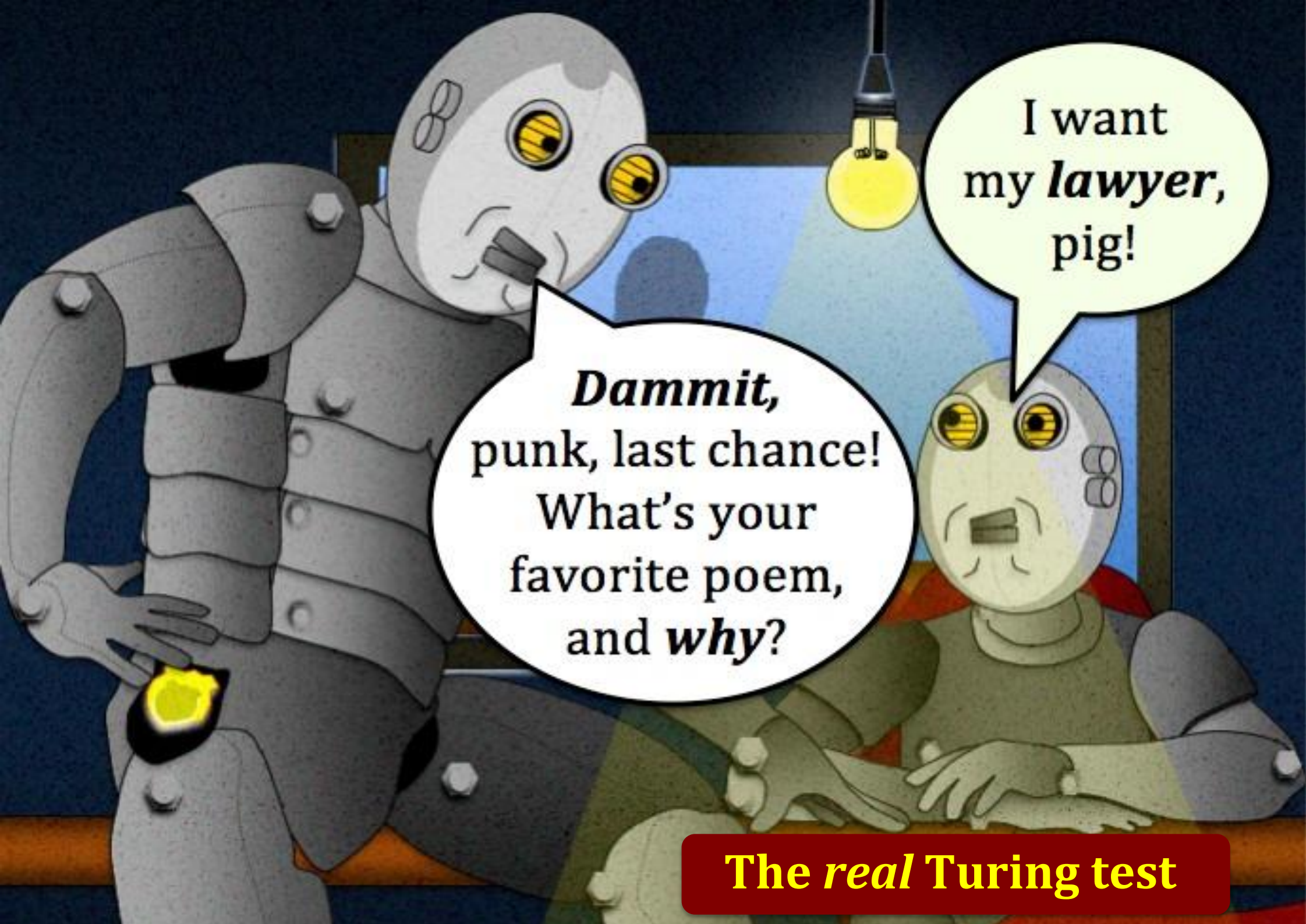
Can our creative systems open up to others, and talk about their *goals, feelings, motivations* and *methods*?



Can or should CC Systems ever meet “*Human*” Creative Standards?



The Turing Interrogation Vs. The Pepsi Challenge?



I want
my *lawyer*,
pig!

Dammit,
punk, last chance!
What's your
favorite poem,
and ***why***?

The *real* Turing test

Next Lecture:
***Computational Creativity
in a Historical Context***

