The Revolution Will Be Automated

Computers that Create

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Available from all good
Web megastores

Enter through the Gift Shop

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!
Portrait of the Artist’s Owner As A Young(-ish) and Strange Man
-- Simon Colton’s The Painting Fool

Color-Mapped Depictions of Evolved Mathematical Formulae
-- Penousal Machado’s NEVAR
I don’t believe in *autonomous* computational creativity.

Not a big believer, eh?
You know I’m not really the ghost of your dead husband, right?

Collaborative *Co*-Creation
Happy Birthday
To
Elsa / Aunt Elsa

12/01/1926 to 12/01/2006

FRIÛL to Binghamton

“Bon complean” alla piu’ bella “polentona” di Ciserils.

Avanti a cent’anni!

<em>Hmmm, <B>Delicious! </B> </em>
Who taught you guys to *tweet*? Jackson Pollack?
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
Doc, I get such strange power-surges when I sleep!

Ja? Tell me more about your mother board.
Back in *Greenbow, Alabama*, folks used to say

"That boy's a *runnin' fool* 'cos I like to run too."

"That's nice."

I need a nap!

"How does *Tony Stark* carry all this weight?"

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

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Not easy, is it, big brain?
Come in, *relax,* sit, sit ...

Have a little *cheese* ...

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
Do you have “Fifty Shades of Dorian Grey”?

I’m afraid we have “N Shades of Grey” for all integer values of N in [0 ... 9999]

Fortunately, we don’t know how to find any of them.

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!
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 objet ne 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.

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

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

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

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

On voit autant les images et les mots dans une réalité :

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

Un objet ne fait jamais le même office que 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.

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

Ou bien le contraire :

Rene Magritte’s Checklist
Creativity is Complex: A Checklist to Remember
### Osborne’s Checklist

#### To Start

<table>
<thead>
<tr>
<th>1. Adapt?</th>
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<tbody>
<tr>
<td>a. Are there new ways to use this as is?</td>
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<tr>
<td>b. Other uses if modified?</td>
<td></td>
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</table>

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<tr>
<th>2. Modify?</th>
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<tr>
<td>g. Change form?</td>
<td>h. Change shape?</td>
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<th>3. Minify?</th>
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<td>d. Lower?</td>
<td>e. Shorter?</td>
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<tr>
<td>g. Omit?</td>
<td>h. Streamline?</td>
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<tr>
<td>j. Understate?</td>
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#### Mains

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<th>4. Magnify?</th>
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<td>g. Thicker?</td>
<td>h. Extra value?</td>
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<th>5. Substitute?</th>
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<td>d. Other Material?</td>
<td>e. Other process?</td>
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<tr>
<td>g. Other place?</td>
<td>h. Other approach?</td>
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<th>6. Rearrange?</th>
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<tr>
<td>a. Switch parts?</td>
<td>b. Other pattern?</td>
</tr>
<tr>
<td>d. Other sequence?</td>
<td>e. Swap cause &amp; effect?</td>
</tr>
<tr>
<td>f. Change pace?</td>
<td>g. Change schedule?</td>
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#### Desserts

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<th>7. Reverse?</th>
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<tbody>
<tr>
<td>a. Swap Positive &amp; Negative?</td>
<td>b. How about opposites?</td>
</tr>
<tr>
<td>c. Turn it backward?</td>
<td>d. Upside down?</td>
</tr>
<tr>
<td>e. Reverse roles?</td>
<td>f. Turn tables?</td>
</tr>
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<tr>
<th>8. Combine?</th>
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<tbody>
<tr>
<td>d. Ensemble?</td>
<td>e. Combine units?</td>
</tr>
<tr>
<td>g. Combine appeals?</td>
<td>h. Combine ideas</td>
</tr>
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Creativity as Search: *Peeking Under the Covers*
Doublets as Search
Exploratory Creativity
Conceptual spaces contain states of obvious value.

An explorer navigates a conceptual space, looking for areas with states of value.

An explorer searches a space using a specific value metric for its various states.

Conceptual spaces contain states of obvious value.

Some states in a conceptual space are worth searching for.
Conventional route to established areas of value in the space

Transformed space, identified by a pioneering searcher

Does creativity lie in the states we find, or the paths?
Transformational Creativity: Changing Spaces

Whoa!
Conventional, established space as used by everyone else

Transformed space, identified by a pioneering searcher

Transformation allows us to climb outside a space, to a new one
Combinatorial Creativity *(to be explored in depth in future lectures)*

What if someone asks for “Sex on the beach”?

Yeah Baby!
But seriously, they never *do*. 
Creative Combination of domains can yield spaces with interesting quirks.

In complex spaces, the long-way around is the most intelligent route to a goal.

An too-obvious short-cut can cause us to rush to judgment. Blame System 1.

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?
I hate the smell of “P” in the morning!

Oh do stop whining!

My users really put the “H” in “Sit please”
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?

If any of you mooks *rats* on me, I’ll *rip* you a new *portal*!
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