

# *Tree of Knowledge*



*"He who lights his taper at mine receives light without darkening me"*

*T. Jefferson*

# *Tree of Knowledge*



*Inside a dark tent, there is a tree.*

*From the branches hang glowing fruit: large and small ornaments filled with bioluminescent fluid.*

*Visitors can marvel at the sight of a glowing tree.*

*But they will also be encouraged to pick the small fruit-- magic amulets to take home.*

*As a result, small fragments of light will spread from the tent -- each fragment a conversation, a seed. In this way, knowledge of the tree spreads; and the flow of curious visitors increases; and the story-- the light-- spreads still further.*

*A virtuous cycle.*

*Knowledge is Magic.*

# Philosophical Stance

To Clarke's quote "Any sufficiently advanced technology is indistinguishable from magic", we want to oppose our own: "Any insufficiently understood technology is indistinguishable from magic" - hence "Knowledge is magic".

The wonders of nature have been, for a long time, a mystery to us. In the early days, anything that could not be "rationally" understood was regarded as "magic". Today, we entered an era where most of the magic realm can be explained by scientific theories. The masters of science are the new "wizards" of our time.

Yet, the rise of human knowledge did not eliminate the dependency that once existed between the wizard and the primitive man. Indeed, the modern man is just as ignorant as before: even though "magic" has progressively been replaced by "science", we are still living in a world that we are unable to comprehend.

Only knowledge can ensure that the wonders of science and technology will no longer be shrouded in mystery. With the Tree of Knowledge, we propose to build a mysteriously glowing tree, that the public can interact with to apprehend the beautiful intricacy of the underlying "magic". We want to remind people that "Knowledge is magic" because "magic" is, indeed, merely a lack of knowledge.

We want to use magic in order to create knowledge.

Magic, at its best, is the intentional invocation of wonder.

Magic is about transformation-- of the world and of oneself. And so knowledge is magic in these senses, as well.

With this project we seek to represent the ways in which knowledge spreads: We represent knowledge with organic light. Visitors can "pick" the light, and take it with them. On their journeys, friends may see the illuminated fruit and ask about it; and some number of these will seek out the origin, to get a bit of their own; and this in turn they will show to their friends. In this way, we make tangible ideas of knowledge, openness, and sharing.

And maybe invoke a bit of wonder...

We aim to use knowledge in order to create magic.

# *Interactivity*

*The lower-hanging "fruit" of the tree will be small amulets filled with bioluminescent algae. People will be encouraged to pick these, and with the attached leather strings will be able to make small necklaces and bracelets to take home. (Staff will refresh the tree every few minutes, to maintain a supply of luminescent fruit.)*

*At the same time, staff will be on hand to "attach knowledge" to the amulet, by explaining bioluminescence and introducing the public to bioengineering.*

# *Creativity*

*The project merges genetic engineering and art, using cutting edge biotechnology to create a visual spectacle, rich in symbolism. That is: the project uses knowledge from the frontiers of science to illustrate-- literally, to illuminate-- the nature of knowledge itself.*

# *Visual impact*

*We aim to attract visitors with a mysteriously glowing tree, and the spectacle of people picking bioluminescent fruit. It is our hope that the small fruit -- the glowing amulets -- will spread from the site; and that each will be a small spectacle of its own, generating conversation and further visitors.*

# *Feasibility*

*The key to the piece is algae which have been engineered to enhance bioluminescence. The genetics of bioluminescence are well understood. We are working together with researchers from the Harvard Medical School and the MIT Center for Bits & Atoms, and have access to necessary tools and facilities at BossLab in Somerville.*

*To help the algae survive in the cold, the tent will be heated; and the amulets will be provided as necklaces and bracelets, to benefit from body heat.*

# *Appropriateness*

*The project will be a family friendly exhibit, intended to induce a sense of wonder, to illustrate knowledge in general, and to teach about biotechnology. We hope to bring wonder and light to the new year --*



# Construction / Installation

Tree of  
Knowledge

*In the weeks leading up to the event, we will bio-engineer a large quantity of bioluminescent algae.*

*The general plan calls for a tree within a heated tent. Since we assume that all the trees in the park are too big, we will provide our own tree.*

*On the morning of the event, we will set up the tree in our designated tent and we'll hang algae-filled ornaments from its branches. (It might be easier to have the tree installed before setting-up the tent, so we might need to discuss logistics with you.)*

## Resources

*From Figment, we need a tent (10x10), power for the fan/heater, and vehicle access for a cargo van or a pickup truck that will transport the tree.*

*We will provide all the other materials, including the tree, the heater and the fan.*

*The tree will be transported to the site with a cargo van / pick-up truck that we will rent.*

## Safety Concerns

*The bioluminescent algae are naturally occurring organisms. Although we might engineer them for extra luminescence, the algae remain natural. These algae are not toxic, but for poetic reasons, we will advise people not to eat the fruit.*

## Deconstruction

*It will take about 6 hours to break down the installation.*

*All elements will be removed from the site.*

## Location

*Anywhere in the park.*

# Budget

<i>Item</i>	<i>Price (\$)</i>	<i>Quantity</i>	<i>Total (\$)</i>
<i>Logistics</i>			
<i>Tree</i>	<i>500</i>	<i>1</i>	<i>500</i>
<i>Heater</i>	<i>225</i>	<i>1</i>	<i>225</i>
<i>Fan</i>	<i>15</i>	<i>1</i>	<i>15</i>
<i>Ladders</i>	<i>50</i>	<i>3</i>	<i>150</i>
<i>Pickup truck</i>	<i>110</i>		<i>110</i>
<i>Ornaments</i>			
<i>Big ornaments</i>	<i>2</i>	<i>50</i>	<i>100</i>
<i>Small charms</i>	<i>0.3</i>	<i>2000</i>	<i>600</i>
<i>Necklace string</i>	<i>4</i>	<i>40</i>	<i>160</i>
<i>Algae</i>			
<i>Algae (liters)</i>	<i>50</i>	<i>10</i>	<i>500</i>
<i>Dispenser</i>	<i>4</i>	<i>8</i>	<i>32</i>
<i>Alcohol (sterilizer)</i>	<i>18</i>	<i>3</i>	<i>54</i>
<i>Total</i>			<i>2446</i>