

## Computer Software Helps Communicate Science

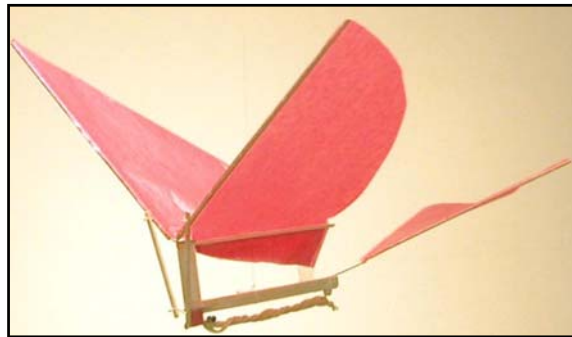
By JOHN COOK

The French General and Emperor, Napoleon Bonaparte (1769-1821), is credited with saying, "A picture is worth a thousand words." Today, a computer-generated graphic program can communicate complicated scientific theories that would have Napoleon exponentially expanding his quote by the power of ten.

Anyone interested in computers struggles with having limited time to learn all the software programs available today. Often it seems like a waste of time to learn a new computer program when you don't have any immediate application for the software. However, this school year I entered the Roanoke County Science Fair and was able to use Corel Draw, Microsoft PowerPoint and Macromedia Flash to advance to the State Regional level in the Virginia Science Fair and obtain first place.

My project's title was "Ornithopter Wing Pitch Comparison." I built an ornithopter from balsa wood and tissue paper. My hypothesis stated that a larger wing pitch, (larger wing surface) would generate more work. Ornithopters use flapping lift unlike conventional airplanes that use propellers or jet propulsion with fixed cambered wings. My ornithopter used a rubber band motor to generate the flapping of its wings.

To successfully compete in Science Fair it was important to communicate the science theory of my project to the judges. An ornithopter's flight involves Newton's Second, ( $F=M*A$ ) and Third Laws of Physics (For every Action there is an opposite and equal reaction.)



**Ornithopter  
built by John  
Cook for  
science project  
on wing pitch  
comparison**

During my presentations at my home school and each level of judging in the County Science Fair and the Regional Science Fair the main concern was explaining my project in a clear and time efficient manner.

The judges allow each student a limited amount of time to talk with them and it rarely involves reciting a memorized speech. It is answering questions the judges have after viewing the poster boards and reports.

This year I prepared a PowerPoint presentation that I ran on my laptop in a continuous loop during the Science Fair. The judges viewed the students' projects for approximately an hour before calling individual students into the gymnasium to ask the students questions about their projects. If I hadn't used my PowerPoint format for my presentation, I believe my ability to communicate how ornithopter's wings flap would have been difficult to explain in the limited amount of time available to me.

The PowerPoint Presentation consisted of 14 power point slides. I first used Corel Draw, a high-powered drawing program to draw my ornithopter wings. I

was able to animate the upstroke and down stroke of the wing and how the soft fabric caused the wing pitch to change with each flap. When the wing was in its down stroke, the tissue paper billowed out and filled with air creating a full cambered wing. This generated lift as well and forward motion. During the upstroke, the wing reverses and actually generates negative lift.

I used these individual drawings to create a slow motion animation of the ornithopter's wings flapping. I measured the work produced by the ornithopter wings as it traveled along a ten-meter thread. My PowerPoint presentation included photographs and animations of my experiment. PowerPoint is an easy program to use with many features.

A good site to learn more about PowerPoint is:  
[www.bitbetter.com/powerfaq.htm](http://www.bitbetter.com/powerfaq.htm).

My Science Fair PowerPoint presentation can be viewed at: [www.msn3d.com/ppt.htm](http://www.msn3d.com/ppt.htm). It is a shortened version without the animation.

*John Cook regularly attends meetings with his father, Tom Cook.*



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## PREZ' NOTES by Earl Abbott

[president@rvpcc.org](mailto:president@rvpcc.org)



I hope each of you is well and happy and  
enjoying personal computing.

Hank Wagner will be in Michigan on our  
meeting date, so he will be unable to give his  
presentation on networks. Our program for May  
will feature an extended Q & A. The topics ex-  
plored will depend upon who is there to ask  
questions, who is there to answer questions, and  
what questions are asked.

I do not consider myself to be a hardware or software expert.  
I expect there will be members present to answer questions on hard-  
ware or software.

I am responsible for year-to-date club actions and will be  
present to receive and/or respond to questions and comments.

I hope to see you at the meeting on May 14.

**(Meets 2nd Saturday  
of Month)**

**Next Meeting,  
Sat., May 14**

**Place:** Arnold R. Burton  
Technology Center, Room  
105, 1760 Roanoke  
Boulevard, Salem, Va.  
24153

**Time:** 9:15 a.m. - noon

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