

Score in C

$\bullet = 40$ *rit.* *a tempo*

Flute

Oboe

Clarinet in Bb

Horn in F

Bassoon

Marimba
using medium or soft yarn mallets as dynamics require

Piano

Narrator

Violin 1

Violin 2

Viola

Cello

“Mr. Chairman, I appreciate the opportunity today to present my views on nanotechnology. There is a growing sense in the scientific and technical community that we area bout to enter a golden new era. We are about to be able to build things that work on the smallest possible length scales, atom by

4

Fl *pp*

Ob

Cla *p* *pp*

Horn

Bsn

rit.

4

Mar. *f*

rit.

4

Pno *pp*

rit.

4

Nar

rit.

atom with the ultimate level of finesse. These little nanothings, and the technology that assembles and manipulates them -

nanotechnology - will revolutionize our industries, and our lives." "My own research these days is focused on carbon

nanotubes - an outgrowth of the "Buckyball" research that led to the Nobel Prize a few years ago. These

4

Vln 1 *pp* *non vib.*

Vln 2 *f*

Vla *f*

Cello *pp* *non vib.*

rit.

a tempo

7

Fl

Ob

Cla

Horn

Bsn

a tempo

7

Mar.

a tempo

7

Pno

a tempo

7

Nar

nanotubes are incredible. They are expected to produce fibers 100 times stronger than steel at only 1/6th the weight - almost certainly

the strongest fibers that will ever be made out of anything - strong enough, even, to build an elevator to space. In

addition, they will conduct electricity better than copper, transmit heat better than diamond and membranes made from

a tempo

7

Vln 1

Vln 2

Vla

Cello

Note to Conductor: This work is written so that the ending of musical sections into musical silence is aligned approximately with the underlying text. Do not adjust tempo beyond natural musicality.

10

Nar



3
4

these nanotubes are expected to have revolutionary impact in the technology of rechargeable batteries and fuel cells, perhaps giving us all-electric vehicles within the next 10-20 years with the performance and range of a Corvette at a fraction of the cost... They have also been shown to be true molecular wires, and have already been assembled into the first single molecule transistor ever built... Several decades from now we may see our current silicon micro-electronics replaced by carbon nano-electronics of vastly greater power and scope..."

"It's amazing what one can do... just by putting atoms where you want them to go."

(music resumes)

Fl II *a tempo* *rit.* *a tempo*

Ob *f*

Cla *f*

Horn

Bsn

Mar. II *a tempo* *rit.* *a tempo*

f *pp*

Pno II *a tempo* *rit.* *a tempo*

f *p*

Nar II *a tempo* *rit.* *a tempo*

Que #2

“Let me give you just one, personal, example... I sit before you today with very little hair on my head. It fell out a few weeks ago as a result of the chemotherapy I've been undergoing to treat a type of non-Hodgkin's lymphoma... While I am

Vln 1 II *a tempo* *rit.* *a tempo* *natural* *moving to...*

f *p*

Vln 2 *f* *p* *moving to...*

Vla *f* *p* *moving to...*

Cello *f* *p*

15 *espress.*

Fl *pp* *p* *pp*

Ob

Cla *espress.* *pp* *p*

Horn

Bsn

15

Mar.

15

Pno

15

Nar

very optimistic, this chemotherapy is a very blunt tool. It consists of small molecules which are toxic - they kill cells

in my body. Although they are meant to kill only the cancer cells, they kill hair cells too, and cause all sorts of other

havoc. Now, I'm not complaining. Twenty years ago, without even this crude chemotherapy I would already be dead. But

15 *non vib.*

Vln 1 *pp* *non vib.*

Vln 2 *pp* *non vib.*

Vla *pp* *non vib.*

Cello *pp* *non vib.*

♩ = 60

18

Fl

Ob

Cla

Horn

Bsn

pp

18

Mar.

p

p

18

Pno

p

18

Nar

twenty years from now, I am confident we will no longer have to use this blunt tool. By then nanotechnology will have given us

specially engineered drugs which are nano-scale cancer-seeking missiles, a technology that specifically targets just the mutant cancer cells in the human body, and leaves everything else... blissfully alone... I may not live to see it... But I am confident it will happen... *(music resumes)*

...Cancer - at least the

18

Vln 1

Vln 2

Vla

Cello

natural without mute

natural p without mute

p

21

Fl

Ob

Cla

Horn

Bsn

Mar.

Pno

Nar

Vln 1

Vln 2

Vla

Cello

p

natural without mute

p

type that I have - will be a thing of the past... Mr. Chairman,... Honorable Congressmen,... I believe it is in our Nation's best interest to

25

Fl

Ob

Cla

Horn

Bsn

Mar.

Pno

Nar

move boldly into this new field!" *(Narrator remains standing for a moment, emphasizing his last phrase, then sits)*

Vln 1

Vln 2

Vla

Cello

natural
without mute

This page of a musical score covers measures 29 through 32. The score is arranged in systems for various instruments. The woodwind section includes Flute (Fl), Oboe (Ob), Clarinet (Cla), Horn (Horn), and Bassoon (Bsn). The percussion section includes Maracas (Mar) and a snare drum (Nar). The string section includes Violin 1 (Vln 1), Violin 2 (Vln 2), Viola (Vla), and Cello (Cello). The Piano (Pno) part is also present. The time signature is 3/4. The key signature has one sharp (F#). The score includes various musical notations such as notes, rests, slurs, and dynamics like *ff*.

33

Fl

Ob

Cla

Horn

Bsn

Mar.

Pno

Nar

Vln 1

Vln 2

Vla

Cello

p

f

molto

fp

p

f

molto

fp

molto

f

fp

molto

f

36

Fl

Ob

Cla

Horn

Bsn

Mar.

Pno

Nar

Vln 1

Vln 2

Vla

Cello

solo, expressive

Detailed description of the musical score: This page contains measures 36, 37, and 38 of a symphonic work. The score is arranged in a standard orchestral format. The woodwind section (Flute, Oboe, Clarinet, Horn, Bassoon) and strings (Violins 1 & 2, Viola, Cello) have melodic lines, while the Percussion (Maracas) and Narca play rhythmic patterns. The key signature has one sharp (F#) and the time signature is 4/4. Measure 37 features a 'solo, expressive' instruction for the Horn. The score includes various musical notations such as slurs, accents, and dynamic markings.

39 *rit. molto* *a tempo*

Fl

Ob

Cla

Horn

Bsn

Mar.

Pno

Nar

Vln 1

Vln 2

Vla

Cello

p

f

rit. molto *a tempo*

p

f

rit. molto *a tempo*

p

f

rit. molto *a tempo*

p

f

Detailed description of the musical score: The score is for measures 39, 40, and 41. Measure 39 is in 3/4 time. Measure 40 is in 6/4 time. Measure 41 is in 3/4 time. The tempo is 'rit. molto' for measures 39 and 40, and 'a tempo' for measure 41. The Flute, Oboe, Clarinet, and Horn parts have long melodic lines starting in measure 39 and continuing through measure 41. The Maracas part has a rhythmic pattern. The Piano part has a simple accompaniment. The Narca part has a rhythmic pattern. The Violin 1, Violin 2, and Viola parts have long melodic lines. The Cello part has a simple accompaniment. Dynamics are marked as piano (p) and forte (f). The score includes various musical notations such as slurs, ties, and dynamic markings.

45 $\bullet = 40$ *rit.* *a tempo*

Fl $\frac{5}{4}$ $\frac{6}{4}$ *pp* *p* *pp* *p*

Ob $\frac{5}{4}$ $\frac{6}{4}$

Cla $\frac{5}{4}$ $\frac{6}{4}$ *pp* *pp* *p* *pp* *p* *pp*

Horn $\frac{5}{4}$ $\frac{6}{4}$

Bsn $\frac{5}{4}$ $\frac{6}{4}$

45 $\bullet = 40$ *rit.* *a tempo*

Mar. $\frac{5}{4}$ $\frac{6}{4}$ *f* *pp*

45 $\bullet = 40$ *rit.* *a tempo*

Pno $\frac{5}{4}$ $\frac{6}{4}$ *f* *pp*

45 $\bullet = 40$ *rit.* *a tempo*

Nar $\frac{5}{4}$ $\frac{6}{4}$ Que #3

Richard Smalley sat there in front of Congress with no hair, as a result of the chemotherapy, and talked about the promise of nanotechnology for cancer and other diseases, and how continued research will lead to breakthroughs in information technology, manufacturing, medicine and health,

45 $\bullet = 40$ *with mute* *rit.* *a tempo*
moving to... *non vib.*

Vln 1 $\frac{5}{4}$ $\frac{6}{4}$ *f* *pp*

Vln 2 $\frac{5}{4}$ $\frac{6}{4}$ *with mute* *pp* II ∇

Vla $\frac{5}{4}$ $\frac{6}{4}$ *with mute* *pp* II ∇

Cello $\frac{5}{4}$ $\frac{6}{4}$ *with mute* *moving to...* *pp* *non vib.* *f* *pp*

48 *rit.*

Fl *pp*

Ob

Cla *p* *pp*

Horn

Bsn

48 *rit.*

Mar. *f*

48 *rit.*

Pno *pp*

48 *rit.*

Nar

environment and energy, and national security, for this and future generations... and how it would pay off for his children... and children all over the world... In response, the United States launched the National Nanotechnology Initiative, a sweeping multi-billion dollar federal research and development program that coordinates the nanotechnology efforts of

48 *rit.*

Vln 1 *non vib.* *pp*

Vln 2 *f*

Vla *f*

Cello *non vib.* *pp*

51 *a tempo*

Fl

Ob

Cla

Horn

Bsn

51 *a tempo*

Mar.

51 *a tempo*

Pno

51 *a tempo*

Nar

nearly two dozen federal agencies, including the National Science Foundation, the Department of Defense and NASA... Dr.

Smalley's accomplishments as a scientist were formidable, but his contribution to society is best measured by his passion

that science can and will deliver a better world. In the final month of his life, Smalley stated with enthusiasm; "This is

51 *a tempo*

Vln 1

Vln 2

Vla

Cello

a magnificent time to be alive, to see these things happening in medicine and in so many other fields, and in my case to have the privilege of being a scientist in this Golden Era of Science... My own work is in a magnificently flowering mode right now. We just announced with NASA a new carbon wire that we expect will conduct electricity 10 times better than copper, have only one sixth the weight, and a strength greater than steel. If we succeed, we'll be able to rewire the world, replacing aluminum and copper in virtually every application, and permitting a vast increase in the capacity of the nation's electrical grid... That and the development of electric vehicles will enable us to wean ourselves away from gasoline, free us from dependency on middle east oil, and greatly improve the air quality in cities throughout the world.”

Rick Smalley emphasized that; “Energy is the most important problem facing mankind today. The overwhelming need for new sources of clean energy in the next 50 years - energy that can come only from undiscovered technologies - means the fate of human civilization rests with the next generation of physical scientists and engineers. The United States needs a national program on par with the Apollo moon missions that will excite future generations about science... and encourage them to become researchers...

“The message is simple...”, Smalley liked to say...:

(music resumes)

55 *a tempo* *accel.* *rit.*

Fl

Ob *f* *v*

Cla *f* *v*

Horn

Bsn

Mar. *f* *v* *+*

Pno *f* *v*

Nar

Be a Scientist... Save the World. *(Narrator remains standing for a moment, reflecting on his final words, then sits)*

Vln 1 *f* *v* *natural without mute*

Vln 2 *f* *v* *natural without mute*

Vla *f* *v* *natural without mute*

Cello *f* *v* *natural without mute*

63

Fl

Ob

Cla

Horn

Bsn

Mar.

Pno

Nar

Vln 1

Vln 2

Vla

Cello

p

f

natural without mute

Detailed description: This page of a musical score covers measures 63 to 66. The woodwind section (Flute, Oboe, Clarinet, Horn, Bassoon) and strings (Violins 1 & 2, Viola, Cello) play melodic lines, while the Maracas provide a rhythmic accompaniment. The score includes dynamic markings such as *p* (piano) and *f* (forte), and performance instructions like *natural without mute*. The time signature changes from 2/4 to 4/4 and back to 2/4. The key signature has one flat (B-flat).

67

Fl

Ob

Cla

Horn

Bsn

Mar.

Pno

Nar

Vln 1

Vln 2

Vla

Cello

ff

Detailed description: This page of a musical score covers measures 67 through 71. The woodwind section (Flute, Oboe, Clarinet, Horn, Bassoon) plays a melodic line starting on a dotted quarter note in measure 67, moving to a half note in measure 68, and then a dotted half note in measure 69, which is sustained through measure 70. The strings (Violins 1 and 2, Viola, Cello) play a rhythmic accompaniment of eighth notes in measure 67, transitioning to a sustained chord in measure 69. The Percussion (Maracas) plays a complex rhythmic pattern in measure 67. The Piano part features a dense chordal texture in measure 67, which simplifies to a sustained chord in measure 69. A *ff* dynamic marking is present in measure 70 for the strings and piano. The score concludes in measure 71 with a sharp sign on the staff.

This page of a musical score contains parts for Flute (Fl), Oboe (Ob), Clarinet (Cla), Horn, Bassoon (Bsn), Maracas (Mar.), Piano (Pno), Narcahuasi (Nar), Violin 1 (Vln 1), Violin 2 (Vln 2), Viola (Vla), and Cello. The score is divided into four measures, with measure numbers 71, 72, 73, and 74 indicated at the beginning of each staff. The time signature changes from 3/4 in measure 71 to 5/4 in measure 72, and returns to 3/4 in measures 73 and 74. The key signature is one flat (B-flat major or D minor). The score includes various musical notations such as notes, rests, slurs, and dynamic markings. The dynamics range from *p* (piano) to *f* (forte), with intermediate markings for *molto* and *fp* (fortissimo piano). The Flute part starts with a whole note in measure 71 and has a rest in measure 72. The Oboe, Clarinet, Horn, and Bassoon parts have a melodic line starting in measure 72. The Maracas part has a rhythmic pattern starting in measure 72. The Piano part has a sustained chord in measure 71 and a melodic line starting in measure 72. The Narcahuasi part has a single note in measure 72. The Violin 1 and Violin 2 parts have a melodic line starting in measure 72. The Viola and Cello parts have a sustained chord in measure 71 and a melodic line starting in measure 72.

74

Fl

Ob

Cla

Horn

Bsn

Mar.

Pno

Nar

Vln 1

Vln 2

Vla

Cello

solo, expressive

Detailed description of the musical score: The score is for measures 74, 75, and 76. Measure 74 is in 3/4 time, and measures 75 and 76 are in 4/4 time. The woodwind section (Flute, Oboe, Clarinet, Horn, Bassoon) and strings (Violins 1 & 2, Viola, Cello) play a melodic line starting on G4. The percussion (Maracas) plays a rhythmic pattern. The piano accompaniment (Piano) features a complex texture with chords and moving lines. The horn part includes the instruction 'solo, expressive' in measure 75. The score includes various musical notations such as dynamics (accents), articulation (accents), and fingering (III, IV, V, VI).

77

Fl

Ob

Cla

Horn

Bsn

Mar.

Pno

Nar

Vln 1

Vln 2

Vla

Cello

rit. molto

p

rit. molto

p

rit. molto

p

rit. molto

p

rit. molto

p

a tempo

rit.

80

Fl

Ob

Cla

Horn

Bsn

f

p

a tempo

rit.

80

Mar.

f

p

a tempo

rit.

80

Pno

f

p

a tempo

rit.

80

Nar

a tempo

rit.

80

Vln 1

Vln 2

Vla

Cello

f

p

