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## ANSI J16 and ISO WG21 Co-located Meeting, 22-26 October 2001

### Record of Discussion

Motions are recorded as follows:

*Motion (mover, seconder)*

[passed|failed] J16 (# in favor, # opposed, # abstaining, # not present or not voting, total eligible to vote)

[passed|failed] WG21 (# in favor, # opposed, # abstaining)

**Monday, October 22, 8:30am-5:30pm**

#### 1. Opening activities

Clamage called the meeting to order on Monday, October 22, 2001, at 08:47 PDT.

##### 1.1 Opening comments

##### 1.2 Introductions

##### 1.3 Membership, voting rights, and procedures for the meeting

We have a number of people participating by teleconference this week. Clamage raised the question whether attending by teleconference counts as attending for the purpose of voting rights. It was decided not to grant a blanket exclusion and the discussion was put on hold to be revisited later.

##### 1.4 Agenda review and approval

There will be discussion on Thursday about the TC, with a formal vote on Friday.

##### 1.5 Distribution of position papers, WG progress reports, WG work plans for the week, and other documents that were not distributed before the meeting.

Caves summarized the facilities for the meeting and room arrangements.

## 1.6 Approval of the minutes of the previous meeting

Motion to approve the minutes:

**Motion (Charney, Brown) passed J16 (lots, 0, 0) and WG21 (lots, 0, 0).**

## 1.7 Report on the WG21 Sunday meeting

Plum summarized the WG21 meeting. The drafting committee will be Georges Schumacher, Robert Klarer, and Matt Austern. It is time for the committee to begin discussion on whether to revise/affirm/withdraw the C++ standard. There will be an Evolution working group to begin this discussion. There is apparently no controversy within SC22 about the Library TR, and the letter ballot has been initiated. Both WG14 and WG21 have agreed to appoint an expanded group of liaisons consisting of all people and companies who send representatives regularly to both committees. The liaison from C++ to C are: Francis Glassborow (UK), Jan Kristofferson (Denmark), Robert Klarer (IBM), Greg Colvin (Oracle), Steve Clamage (Sun), and Tom Plum and John Benito ex officio as conveners. Tana Plauger asked whether all companies represented on both committees would be part of the liaison. Plum responded that it was possible but was not being opened up carte blanche because the intent is not to form a pressure group from one committee onto the other.

## 1.8 Liaison reports

Glassborow gave a C committee report. The TR is being worked on and the registration vote ends on Friday; this vote is not on the content as much as that the outline of the document is correct. The UK intends to vote No on that TR vote. The main body consists of three elements: new types to be used for embedded systems; a hardware i/o proposal; and named address spaces. The draft should be considered by the end of April. Glassborow suggested having a technical session at a future co-located meeting where WG14 representatives explain to WG21 members the form and impact of WG14's changes. WG14 has processed 79 DRs. WG14 wants to be able to just publish the C TC without charge, and there seems to be no problem with that. The Rationale should be ready for general release at the end of the year, and no permission is needed to publish this.

For about 5 years the ACCU has been campaigning to get permission to publish the C and C++ standards in hard copy at a reasonable price. Glassborow and Goldthwaite reported that BSI has granted permission and Wiley has agreed to publish these standards as books. Plum noted that we can request ISO to allow us to freely publish the TC as changes to the 1998 standard, and this permission is routinely granted because then people will still have to buy the base standard). WG21 would be unlikely ever to get ISO permission to publish in book form a revised C++ standard incorporating the TC changes. However, BSI indicated to Goldthwaite that it is BSI policy to apply the TC changes to the base standard and then to publish that updated standard as a British Standard. Since the \$18 download PDF C++ standard is actually a national body standard (ANSI standard), there would be a precedent for BSI to furnish that updated British Standard to a textbook publisher.

Stroustrup said that the greater liaison between WG14 and WG21 was positive, but there was still the issue of compatibility between the two languages and the coordination of changes. When WG14 does something, WG21 automatically views it as something to add, and this relationship may not appear to be reciprocal.

The following people would like to review the C TR and see if we have a C++ position to communicate to the liaison group:

- Dave Abrahams
- Steve Adamczyk
- Chuck Allison
- Lawrence Crowl
- Beman Dawes
- Clark Nelson
- P.J. Plauger
- Michiel Salters
- Bill Seymour
- Bjarne Stroustrup
- Detlef Vollman

The above people will exchange mail using a new official committee reflector to be called "liaison". [After discussion between Koenig and Plum, the reflector is now named "c++std-embed".] This led to a discussion about general policies for reflectors, professionalism, and flame wars.

## **1.9 New business requiring actions by the committee**

### **1.9.1 Expanded liaison between C and C++ committees.**

Nothing further was added to the earlier discussion under 1.7 and 1.8.

## **2. Organize subgroups, establish working procedures.**

The Core, Library, and Performance working groups will work separately all day tomorrow and Wednesday. On Thursday we will discuss Evolution issues.

The committee broke into subgroups at 10:43 PDT.

## **3. WG sessions (Core, Library, Performance).**

**The Core and Library groups will work on Defect Reports. Performance will set its own agenda.**

**Tuesday, October 23, 8:00am-5:30pm**

### **4. WG sessions continue.**

**Wednesday, October 24, 8:00am-5:30pm**

### **5. WG sessions continue.**

The WG chairs will arrange for any DRs ready to be proposed for resolution to be written up in motion form, and made available in printed form by the end of the day.

**Thursday, October 25, 8:30am-11:30am**

### **6. General session.**

Clamage called the meeting to order at 08:18 PDT.

#### **6.1 WG status and progress reports.**

Plum reported that he exchanged email with Koenig yesterday and Koenig expects to finish the TC today. Plum reported that we have already approved forwarding the TC subject to the project editor's review and proofreading. When the project editor decrees that the review and proofreading are finished, which is expected tomorrow, it will be forwarded for processing in ISO ballots; no further committee votes are needed.

Austern reported that LWG has spent most of the week processing DRs, none of them interesting enough to discuss in full committee. LWG has been processing reports at about the same rate as they have been received. When it comes to new extensions, we have been discussion principally Dawes' "trial balloon" Boost document and Austern's hash tables document. Myers added that as a Boost non-participant he was extremely impressed with the Boost proposal work. Austern said the three main LWG tasks at this meeting were processing DRs, considering extensions, and proofreading the TC. No major TC problems have been found. Austern said that the only motion for tomorrow will be to move a list of issues to DR status, ones that were in Ready status in the pre-Redmond mailing except for issues 241, 267, and 284 which were Ready in the pre-Redmond mailing but which the LWG has decided are not Ready.

Nelson reported that the U.S. TAG meeting tomorrow will include discussion of our position on the JEFF spec revote. Nelson has a floppy with the spec itself along with Sun comments.

Adamczyk reported that CWG has nothing to bring forward to a vote other than the usual vote to move to DR status the 15 items in the pre-Redmond mailing that were in Ready status, including items like the reference-to-reference issue and a nice reworking of the definition of dependent names by Spicer. CWG is resolving issues at about the same rate they are being received. There are five particular issues to note:

- Issue 226: Default arguments on template parameters of function templates. The decision was to go ahead to allow default arguments on any template function parameters.
- Issue 273: POD classes and operator&. This reached an overwhelming (if different-from-before) consensus, that POD classes may have an operator& and that implementers have to be careful with their use of operator&. In particular, it was surprising to some that a nonmember operator& was already legal, and apparently useful as some parts of Boost make use of it.
- Issue 218: Argument-dependent lookup and non-functions. Deferred for further discussion. Adamczyk said there was no question that eventually there would be discussion of an extension to allow pointer-like things like function objects to be discovered in argument-dependent lookup. In particular, Koenig's input was wanted at the next meeting.
- Issue 222: New sequence point in assignment. Seymour pointed out that WG14 was doing some work on sequence points and this issue would benefit from coordination between WG21 CWG and WG14.
- Issue 229: Partial specialization of function templates. Was this a library need? Austern reported that this involves three closely related library issues, 225, 226, and 229; they are messy issues and LWG is putting together a small group to discuss this between meetings, the LWG does not yet know whether partial specialization of function templates would solve these issues.

Hinnant asked whether item 2 in Core Issue 214 had been discussed. Adamczyk and Spicer reported that they were working on clarification but there was no question it was ambiguous.

Goldthwaite reported that the Performance TR paper is coming along nicely. The biggest hole is in the hardware I/O. The Irish and UK panels have been calling to remove the hardware I/O portion and leave it for WG14. Glassborow clarified his and UK's position as more to split hardware from the other material in order to be able to vote separately on the two issues, because Glassborow reported that there are contentious issues and UK intends to vote No for registration of the TR in the all-together form it is now. Plum opined that the part that has the most agreement is to see Kristofferson's work be part of the TR in a form that is usable to the C language such that the same interface is implementable in C++ using templates; we want to see this as an example of C and C++ working together on a particular item. There was discussion about the progress of the TR and the relationship between WG14 and WG21.

## **6.2 Presentation and discussion of DRs ready to be voted on. Straw votes taken.**

Covered above. There were no straw votes.

Stroustrup made a presentation of the proposed Evolution working group. A copy of the detailed slides will be in the post-meeting mailing.

There followed some discussion about compatibility between C and C++ at a technical and committee level.

Plum pointed out that there has been significant effort to make code work the same way in the intersection of the languages, including for bool and complex. Plum also noted that there is a solid majority in both committees who feel that compatibility is important, and more effort for compatibility than the presentation gave credit for. Plum noted the large group of liaison in both directions from both committees. Plum expressed concern that this presentation can be seen as disrespectful and insulting and an impediment to compatibility, and that more homework needs to be done in details that have already been provided. Plum pleaded that Stroustrup change the tone of his presentation to the C community. Stroustrup responded that parts of the C community are touchy while expressing very little restraint when it comes to the C++ community and its members and that this poisons the debate. Stroustrup said he felt he should continue to publicly discuss this and have discussion in the community and not just in the back rooms of the committee.

Seymour said that Plum had said many of the things he (Seymour) had wanted to say, and that he has heard people on both committees say some strong things about the motives of the people on the other committee and that this is not helpful. Seymour pleaded with all of us to behave ourselves.

Plauger made a milder point about the list of differences between the two standards, that not all arise out of ignorance or unilateral actions of the C committee in the past, and in particular the choice of making things like `and` and `or` keywords and the conformance model was made deliberately by this committee in the knowledge that the C committee had already done it differently. Stroustrup repeated that he had said several times that we can't say one side or the other was wrong consistently and that he had already said such a view would be "stupid," and that this bit of what he was saying is often forgotten instantly. Plauger asked that this be emphasized more. Stroustrup noted that many past decisions depended on who was in the room at the time and what year it was, and such decisions can and should be revisited.

Austern said he was disturbed that the common subset was defined by what two committees have not done at any given moment, and what is in the common subset now may not be in the common subset in five years.

Plum used the keywords/macros `and` and `or` as an example, and said that as a user you didn't need to know about the difference in writing code. Stroustrup said that you did have to be aware of the difference and which headers to include. Stroustrup said he had tried to pick two particular examples, `void*` and `bool`, as specific examples for discussion and there was no response.

Glassborow said that hearing `bool` come up as an example brings up `wchar_t` and that the two languages treat this differently because the languages have radically different views of the preprocessor, both of which are justifiable. C++ tries to avoid the preprocessor for good reasons; C prefers the use of the preprocessor to protect legacy code. Glassborow reminded that in C++ adding `bool` was a contentious issue for the same reason (protecting legacy code). Stroustrup said that in his paper he intended to have a section on preprocessor issues and didn't have time to write it, and that such a section would probably appear in the final version of his paper.

Powell said that in the absence of cooperation between the committees it shouldn't prevent us from doing what's right. Plum said that there was no absence of cooperation.

Abrahams said he considered himself an outside observer most of the divergence happened before his time, but he wanted to say the same thing as Glassborow about the radically different attitude toward the preprocessor. We should not see the C committee's use of the preprocessor as introducing evil into the world. Stroustrup said that he does view the use of macros as introducing evil into the world, but that the C committee has no choice about that, and he understands that, it's not a surprise to him. Stroustrup said that for `wchar_t` we should perhaps have included a keyword `wchar`, since we needed a keyword, and included a macro `wchar_t` in a header.

Plum said that, trying to think of what constructively we can do, it would be helpful for him to ask the C committee to produce a liaison statement about how C99 was intended to be used in the intersection. Plum said that the C committee left it as an exercise to the reader, that "it should be obvious how you would write compatibility headers." Plum said that when someone puts together a list of horror stories it becomes possible to view those areas as areas that are not possible for compatibility. Stroustrup said that compatibility headers will help for some simpler issues, and unless they are standard would be a problem for the more complex one. Stroustrup expressed grave doubts that a good compatibility header for numerics could be produced. Plum noted that Randy Meyers had spent time last year professionally writing a substantial consulting project which used just such a compatibility header.

Plauger strongly encouraged people who care about this to go to the Dinkumware website and browse the available C99 compatibility header. Plauger said he wanted to support Stroustrup in his concern about drift, and that compatibility headers cause an intellectual overhead for all users and provide a minefield. Plauger expressed sadness that he saw more contention due to ignorance about the intentions of the other committee than out of real issues, which leads to needless rancor. Plauger expressed that he felt a need to attend C meetings again to do his part to paper over these problems. Stroustrup said he wanted to do this but was unable, and one reason that made it more difficult is that they are now back-to-back.

Spicer said that if he were on the C committee the comments about inline functions would probably be offensive to him, as it made it sound like C didn't understand inline and that they got it wrong. Stroustrup said he didn't mean it to be offensive, but it was an example where C took a feature already in C++ and made an incompatible version of it, that some members knew what they were doing and had good reasons for it, and that it has happened again and again, he suspected with `void*`. Stroustrup said that some C members were stating an incompatible feature was compatible and was meant to be compatible.

Plauger expressed concerns about characterizing ignorance. Plum noted that Stroustrup had indeed used the word "ignorance" about C++ in his presentation as a reason that the C committee got inline wrong and that this was insulting.

Stroustrup agreed that that was too strong a statement, but that members of the C committee had in public stated that C inline was meant to be compatible with C++ and that C inline was compatible with C++.

Glassborow noted that we have both committees working on hardware I/O putting parallel work into different TRs. This should be done by people working jointly and not separately as they are now.

After lunch the Evolution group will meet for a time limit of one hour. Everyone with one or two exceptions wanted to participate in Evolution. After that, existing subgroups will break out.

The committee broke into subgroups at 12:02 PDT.

#### **Thursday, October 25, 1:00pm-5:30pm**

**7. WG sessions continue. DR motions modified as needed, made available in printed form by the end of the day.**

#### **Friday, October 26, 8:00am-11:00am**

##### **8. Review of the meeting**

Clamage called the meeting to order at 08:24 PDT.

##### **8.1 Formal motions, including DRs to be resolved.**

###### **Core Motion**

Move that we submit to the Project Editor as Potential Defect Reports the following core language issues in J16/01-0035 = WG21 N1321 “C++ Standard Core Language Active Issues List, Revision 19”: 106 112 113 122 136 139 140 160 175 207 216 224 252 272 277.

**Motion (Adamczyk, Sutter) passed J16 (16, 0, 0) and WG21 (6, 0, 0).**

###### **Library Motion**

Move that we submit to the Project Editor as Potential Defect Reports the following library issues in J16/01-0031 = WG21 N1317 “C++ Standard Library Active Issues List (Revision 19)”: 49 109 117 182 228 230 232 235 238 242 250 259 264 266 271 272 273 275 281 285 286 288 292 295 297 298 301 303 306 307 308 312.

**Motion (Austern, Charney) passed J16 (16, 0, 0) and WG21 (6, 0, 0).**

Motion to thank the host. There was sustained applause. Clamage said that these were probably the nicest facilities we've had to date.

**Motion passed by acclamation.**

##### **8.2 Review of action items, decisions made, and documents approved by the committee**

Koenig confirmed that the TR draft would be in the post-meeting mailing. Koenig and Clamage will collaborate to produce a new PDF of the updated standard with PDF bookmarks as soon as possible thereafter, to be made available on the committee website and the pre-Curaçao mailing.

##### **8.3 Issues delayed until Friday**

There was discussion about the publication of the standard with the TC by BSI and Wiley. BSI says that they routinely apply TC diffs to standards documents. There was discussion about whether both C++98 and C++98+TC with diffs should be made available in print, so that readers could see the differences between the two versions of the standards, and there was strong sentiment for including only the the latest amended version, not two versions of the standard in the book.

## **9. Plans for the future**

### **9.1 Next meeting**

Salters had no new information about the Curaçao meeting.

### **9.2 Mailings**

Nelson said that the post-Redmond mailing deadline is two weeks from today, November 9, 2001. The pre-Curaçao mailing deadline is March 12, 2002.

### **9.3 Following meetings**

The October 2002 meeting will be in Santa Cruz, CA, at the Santa Cruz Convention Center, hosted by Dinkumware and Perennial. The expected dates for October 2002 are: 14-18th (C) and 20th-25th (C++).

The April 2003 meeting will be in Oxford, UK, hosted by BSI. Tentative dates: 3/31 to 4/4 (C) and 4/7 to 4/11 (C++).

The October 2003 meeting will be in Kona, HI, hosted by Plum Hall.

### **Friday, October 26, 11:00am-Noon**

Motion to Adjourn:

**Motion (Glassborow, Charney) passed J16 (lots, 0, 0) and WG21 (lots, 0, 0).**

Meeting adjourned at 09:13 PDT.

**J16 Attendance List**

<b>Organization</b>	<b>Representative</b>	<b>Mon</b>	<b>Tue</b>	<b>Wed</b>	<b>Thu</b>	<b>Fri</b>
Adobe Systems	Mat Marcus	A	A	A	A	A
Amazon.com	Gary Powell	A	A	A	A	
AT&T	Bjarne Stroustrup	A	A	A	A	A
AT&T	Matt Austern	V	V	V	V	V
Borland	John Wiegley	V	V	V	V	
Charney & Day	Reg Charney	V	V	V	V	V
Compaq Computer	PremAnand M. Rao	V	V	V	V	V
Dinkumware, Ltd.	P. J. Plauger	V	V	V	V	V
Dinkumware, Ltd.	Tana Plauger	A	A	A	A	A
Edison Design Group	Daveed Vandevoorde	A	A	A	A	A
Edison Design Group	John Spicer	A	A	A	A	A
Edison Design Group	Steve Adamczyk	V	V	V	V	V
Fermi National Accelerator Lab.	Marc Paterno	A	A	A	A	A
Fermi National Accelerator Lab.	Walter Brown	V	V	V	V	V
IBM	Robert Klarer	V	V	V	V	V
Indiana University	Jeremy Siek	A	A	A	A	A
Intel	Clark Nelson	V	V	V	V	V
Intel	Max Domeika			A	A	A
Intel	John Parks			A	A	A
Microsoft	Jonathan Caves	V	V	V	V	V
Microsoft	Philip Lucido	A	A	A	A	
None (Abrahams)	David Abrahams	A	A	A	A	A
None (Alexandrescu)	Andrei Alexandrescu			A	A	
None (Dawes)	Beman Dawes	V	V	V	V	V
None (Myers)	Nathan Myers	A	A	A	A	
None (Seymour)	Bill Seymour	V	V	V	V	V
PeerDirect	Herb Sutter	V	V	V	V	V
Perennial	Angelique Lippert	V	V	V	V	V
Pixo	Bill Gibbons	A	A	A	A	A
Plum Hall	Tom Plum	V	V	V	V	V
Programming Research	Michael Spencer	V	V	V	V	
Rational Software	Thomas Wilcox	V	V	V	V	V
Red Hat	Jason Merrill	V	V	V	V	
Rogue Wave Software	Martin Sebor	V	V	V	V	
Sun Microsystems	Lawrence Crowl	V	V	V	V	V
Sun Microsystems	Steve Clamage	A	A	A	A	A
Utah Valley State College	Chuck Allison	A	A	A	A	



