Copyin/Copyout and Async I/O
X3J3/97-144

- Compilers pass some arguments via copyin/out
- Problems with MPI, HPF, & async I/O
  - ► copyout mechanism can overwrite a value stored via I/O
  - ► copyin can "miss" the values being READ
- considered restricting use of async I/O list items to avoid this issue, but the hammer was too **BIG**

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- Proposed approach
  - ► describe, in the standard, those cases when a compiler usually uses copyin/copyout, and prohibit them (via a constraint)
  - ► give enough information to the compiler to know when copyin/out is NOT wanted, compiler must not use copyin/out in these cases

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- require ASYNC attribute for dummy args and require explicit interface for any routine with a dummy arg with the ASYNC attribute
- use text from interp 125 to describe those cases where copyin/copyout is typically used, and have a constraint to prohibit those cases when the corresponding dummy arg has the async attribute
- compiler is still free to pass by address or descriptor

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- Disallow function calls in async I/O lists
- interp 125 describes when pointers/targets passed as arguments are associated, which is similar to when a compiler must pass by address or descriptor. We will "disallow" other cases for async i/o in the absence of POINTER and TARGET attribute on a dummy argument.