the challenges of minimalism.

Hisham Muhammad

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minimalism.
minimalism. minimalism.
the right thing. worse is better.
simplicity. The design must be simple, both in implementation and interface. It is more important for the interface to be simple than the implementation.

correctness. The design must be correct in all observable aspects. Incorrectness is simply not allowed.

consistency. The design must be consistent. A design is allowed to be slightly less simple and less complete to avoid inconsistency. Consistency is as important as correctness.

completeness. The design must cover as many important situations as is practical. All reasonably expected cases must be covered. Simplicity is not allowed to overly reduce completeness.

simplicity. The design must be simple, both in implementation and interface. It is more important for the implementation to be simple than the interface. Simplicity is the most important consideration in a design.

correctness. The design should be correct in all observable aspects. It is slightly better to be simple than correct.

consistency. The design must not be overly inconsistent. Consistency can be sacrificed for simplicity in some cases, but it is better to drop those parts of the design that deal with less common circumstances than to introduce either complexity or inconsistency in the implementation.

completeness. The design must cover as many important situations as is practical. All reasonably expected cases should be covered. Completeness can be sacrificed in favor of any other quality. In fact, completeness must be sacrificed whenever implementation simplicity is jeopardized. Consistency can be sacrificed to achieve completeness if simplicity is retained; especially worthless is consistency of interface.
simplicity. The design must be simple, both in implementation and interface.

It is more important for the interface to be simple than the implementation.

Simplicity is the most important consideration in a design.
**correctness.** The design **must** be correct in all observable aspects.

Incorrectness is simply not allowed.

**correctness.** The design **should** be correct in all observable aspects.

It is slightly better to be simple than correct.
Consistency. The design must be consistent.

A design is allowed to be slightly less simple and less complete to avoid inconsistency.

Consistency is as important as correctness.

Consistency. The design must not be overly inconsistent.

Consistency can be sacrificed for simplicity in some cases, but it is better to drop those parts of the design that deal with less common circumstances than to introduce either complexity or inconsistency in the implementation.
completeness. The design must cover as many important situations as is practical. All reasonably expected cases must be covered.

Simplicity is not allowed to overly reduce completeness.

completeness. The design must cover as many important situations as is practical. All reasonably expected cases should be covered.

It can be sacrificed in favor of any other quality. It must be sacrificed if implementation simplicity is at risk. Consistency can be sacrificed to get completeness if simplicity is retained.
both work.
when things go wrong.
LuaDec - a Lua decompiler

Hisham Muhammad
<hisham@inf.puc-rio.br>

Lua Workshop 2005
modular.
ALGUIEN LO SABE.

WHO WATCHES THE WATCHMEN?
luarocks.fs.win32  luarocks.fs.lua
$ luarocks install luarocks
scope.
mechanisms, not policies.
when in doubt, make it extensible.
extensible url protocols.
extensible build types.
one build type
to rule (80% of) them all.
rocks_trees = {
    name = "user",
    root = "/Users/hisham/luarocks"
},

name = "system",
root = "/System/Aliens/LuaRocks"
}

runtime_external_deps_patterns = {
    bin = {
        "?",
        include = {
            "?.h"
        },
        lib = {
            "Lib?.so",
            "Lib?.so.x"
        }
    }
}

runtime_external_deps_subdirs = {
    bin = "bin",
    include = "include",
    lib = {
        "lib",
        "lib64"
    }
}

static_lib_extension = "a"
sysconfdir = "/System/Settings/luarocks"
target_cpu = "x86_64"
upload = {
    api_version = "1",
    server = "https://luarocks.org",
    tool_version = "1.8.0"
}

user_agent = "Luarocks/3.9.1 linux-x86_64"
variables = {
    AR = "ar",
    BZIP2 = "bunzip2",
    CC = "gcc",
    CFLAGS = "-O2 -fPIC",
    CXX = "g++",
    CXXFLAGS = "-O2 -fPIC",
    GNU = "true",
    GNU_PREFIX = "/usr/local",
    GNU_INSTALL_GLIB = false,
    GNU_INSTALL.Interface = false,
    GNU_INSTALL_SLIB = true,
    GNU_INSTALL_LIB = false,
    GNU_INSTALL_LIBDIR = "/usr/local/lib",
    GNU_INSTALL_LDLIB = false,
    GNU_INSTALL_PKG = false,
    GNU_INSTALL_PKGDIR = false,
    GNU_INSTALL_SLIB = true,
    GNU_INSTALL_SLIBDIR = "/usr/local/lib",
    GNU_INSTALL_SLIBDIRS = false,
    GNU_INSTALL_STLIB = false,
    GNU_INSTALL_STLIBDIR = "/usr/local/lib",
    GNU_INSTALL_STLIBDIRS = false,
    GNU_INSTALL_TXLIB = false,
    GNU_INSTALL_TXLIBDIR = "/usr/local/lib",
    GNU_INSTALL_TXLIBDIRS = false,
    GNU_INSTALL_UNLIB = false,
    GNU_INSTALL_UNLIBDIR = "/usr/local/lib",
    GNU_INSTALL_UNLIBDIRS = false,
    GNU_INSTALL_USERLIB = false,
    GNU_INSTALL_USERLIBDIR = "/usr/local/lib",
    GNU_INSTALL_USERLIBDIRS = false,
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    GNU_INSTALL_USERXLIBDIR = "/usr/local/lib",
    GNU_INSTALL_USERXLIBDIRS = false,
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    GNU_INSTALL_ZLIB = false,
ugh.
zero dependencies

dog-foods optional deps

well-defined scope

minimal base, yet extensible
a large system that tries to be all things to all people :(
what happened? two things.
reducing complexity ≠ shifting complexity around
the world is dynamic
minimalistic software maintenance?
setting boundaries.
simplicity over compatibility.
I have intentionally caricatured the worse-is-better philosophy to convince you that it is obviously a bad philosophy and that the New Jersey approach is a bad approach.

However, I believe that worse-is-better, even in its strawman form, has better survival characteristics than the-right-thing, and that the New Jersey approach when used for software is a better approach than the MIT approach.
lessons learned?
zero dependencies for users
simplified scope
minimal base that is extensible, not extended
simplicity.
correctness.
completeness.
consistency.
simplicity over time.
correctness over time.
completeness over time.
consistency over time.
thank you.
Taxonomy of Package Management
in Programming Languages and Operating Systems

Hisham Muhammad
Kong Inc.
hisham@konghq.com

Lucas C. Villa Real
IBM Research
lucasvr@br.ibm.com

Michael Homer
Victoria University of Wellington - Wellington, New Zealand
mwh@ecs.vuw.ac.nz

Abstract
Package management is instrumental for programming languages and operating systems, and yet it is neglected by both areas as an implementation detail. For this reason, it lacks the same kind of conceptual organization: we lack terminology to classify them or to reason about their design trade-offs. In this paper, we share our experience in both OS and language-specific package manager development, categorizing families of package managers and discussing their design implications beyond particular implementations. We also identify possibilities in the still largely unexplored area of package manager interoperability.

Keywords  package management, operating systems, module systems, filesystem hierarchy

In a future section...