Crash when loading project with custom renderer for vector layers

I have custom renderer for vector layers, and can save project including information about this custom renderer. But when I try to open saved project QGIS crashes. Here is backtrace

```
#0  0x0000000000000000 in ?? ()
#1  0x0000000000000001 in QgsSymbolV2::mapUnitScale (this=0x7fff5c019040) at
   /home/alex-devel/cpp/qgis/src/core/symbology-ng/qgssymbolv2.cpp:274
#2  0x0000000000000002 in QgsMarkerSymbolV2::renderPoint (this=0x7fff5c019040, point=..., f=0x7ff63dfdb0, context=..., layerId=-1, selected=false)
   at /home/alex-devel/cpp/qgis/src/core/symbology-ng/qgssymbolv2.cpp:1251
#3  0x0000000000000003 in QgsSymbolV2::renderFeature (this=0x7fff5c019040, feature=..., context=..., layer=-1, selected=false, drawVertexMarker=false,
   currentVertexMarkerType=1, currentVertexMarkerSize=3) at
   /home/alex-devel/cpp/qgis/src/core/symbology-ng/qgssymbolv2.cpp:718
#4  0x0000000000000004 in QgsFeatureRendererV2::renderFeatureWithSymbol (this=0xa8bfb0, feature=..., symbol=0x7ff5c019040, context=..., layer=-1, selected=false,
   drawVertexMarker=false) at /home/alex-devel/cpp/qgis/src/core/symbology-ng/qgsrendererv2.cpp:283
#5  0x0000000000000005 in QgsFeatureRendererV2::renderFeature (this=0xa8bfb0, feature=..., context=..., layer=-1,
   selected=false, drawVertexMarker=false) at
   /home/alex-devel/cpp/qgis/src/core/symbology-ng/qgsrendererv2.cpp:277
#6  0x0000000000000006 in sipQgsFeatureRendererV2::renderFeature (this=0xa8bfb0, a0=..., a1=..., a2=-1, a3=false, a4=false)
   at /home/alex-devel/cpp/qgis/build/python/core/sip_corepart1.cpp:37671
#7  0x0000000000000007 in QgsVectorLayerRenderer::drawRendererV2 (this=0x2fd9780, fit=...) at
   /home/alex-devel/cpp/qgis/src/core/qgsvectorlayerrenderer.cpp:312
#8  0x0000000000000008 in QgsVectorLayerRenderer::render (this=0x2fd9780) at
   /home/alex-devel/cpp/qgis/src/core/qgsvectorlayerrenderer.cpp:249
#9  0x0000000000000009 in QgsMapRendererCustomPainterJob::doRender (this=0x13e6bd0) at
   /home/alex-devel/cpp/qgis/src/core/qgsmapperenderercustompainterjob.cpp:251
#10 0x000000000000000a in QgsMapRendererCustomPainterJob::staticRender (self=0x13e6bd0) at
   /home/alex-devel/cpp/qgis/src/core/qgsmapperenderercustompainterjob.cpp:214
#11 0x000000000000000b in QtConcurrent::StoredFunctorCall1<void, void (*)(QgsMapRendererCustomPainterJob*)>::runFunctor (this=0x2fd9730)
   at/usr/include/qt4/QtCore/qtconcurrentstoredfunctioncall.h:277
#12 0x000000000000000c in QtConcurrent::RunFunctionTask<void>::run (this=0x2fd97320) at
   /usr/include/qt4/QtCore/qtconcurrentrunbase.h:134
#13 0x000000000000000d in QThreadPool::run (this=0x346cea0) at concurrent/qthreadpool.cpp:108
#14 0x000000000000000e in QThreadPool::start (arg=0x346cea0) at thread/qthread_unix.cpp:349
#15 0x000000000000000f in start_thread (arg=0x7ff637d700) at pthread_create.c:309
#16 0x0000000000000010 in clone () at /sysdeps/unix/rssv/linux/x86_64/clone.S:111
```

Test plugin with custom renderer for point layers attached.

Seems there are some issues with interaction between Python bindings and C++ core code.

### Related issues:
- Related to QGIS Application - Bug report # 13973: Crash when switching from c... Closed 2015-12-10

### Associated revisions
- Revision 03eed110 - 2016-01-25 06:16 PM - Martin Dobias
  - Improve renderer class documentation (refs #14025)

### History
- **#1** - 2015-12-22 07:03 AM - Alessandro Pasotti
  - Assignee set to Martin Dobias

  Not sure, but this could be the problem:

  ```cpp
  src/core/symbology-ng/qgssinglesymbolrendererv2.cpp:458
  
  QgsSymbolV2List symbols = const_cast<QgsFeatureRendererV2 *>( renderer )->symbols( context );
  
  the about to be cloned object is a sip object.
  ```

- **#2** - 2016-01-25 08:28 AM - Martin Dobias
  - Resolution set to invalid
  - Status changed from Open to Closed
  - File mytestrenderer.py added

  The real issue was that symbols returned by the test renderer have not been initialized before being used in symbolForFeature().

  Attached (fixed and simplified) version works fine for me - closing as invalid. I have some ideas how the situation could be improved in QGIS 3 so that custom renderer implementations are less crash-prone...

### Files
- renderertest.tar.bz2 4.12 KB 2015-12-22 Alexander Bruy
- mytestrenderer.py 3.22 KB 2016-01-25 Martin Dobias