Slide 16

Bad Smell

Law of Demeter Violation

Talking to strangers

Design Idea

Fluent API

RQ2: What is the relation? How does the design idea overrule the bad smell?
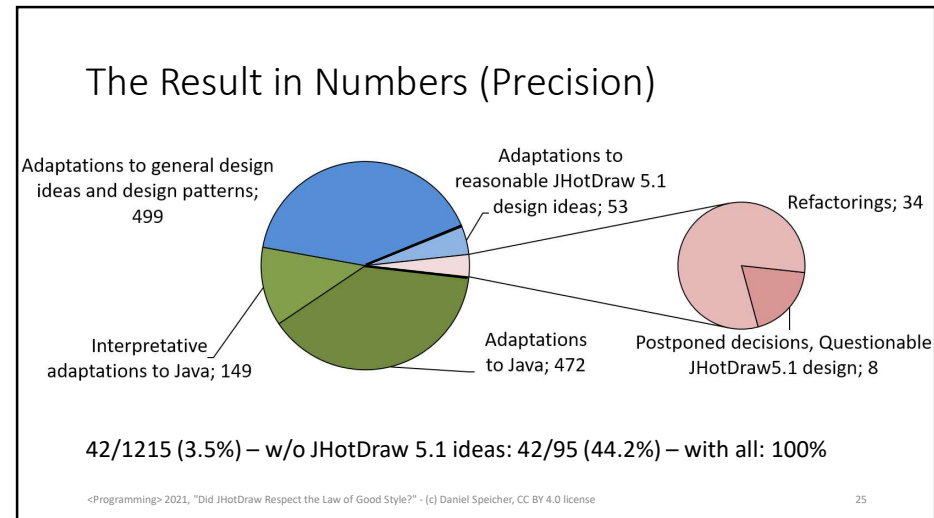
RQ1: Nature of the Design Ideas impacting Bad Smells?

```
@Test public void
reportsLostWhenAuctionClosesImmediately() {
  context.checking(new Expectations() {{
    atLeast(1).of(sniperListener).sniperStateChanged(new SniperSnapshot(ITEM_ID, 0, 0, LOST));
  }});
  sniper.auctionClosed();
}
```

RQ3: Consequences for the [operational] definitions of Bad Smells and Design Ideas?

Slide 25

The Result in Numbers (Precision)

Adaptations to general design ideas and design patterns; 499

Adaptations to reasonable JHotDraw 5.1 design ideas; 53

Refactorings; 34

Interpretative adaptations to Java; 149

Adaptations to Java; 472

Postponed decisions, Questionable JHotDraw5.1 design; 8

42/1215 (3.5%) – w/o JHotDraw 5.1 ideas: 42/95 (44.2%) – with all: 100%

Slide 26

Highlights   **(RQ2)**

- The smell definition was incomplete:
  - Elements of the language: Inner Classes, Collections, Array length
- Developers had chosen designs conflicting with the smell:
  - Data Classes (`Rectangle`: 366 ~ 30.1 %)
  - Access to Selection and Drawing through View* (specific to JHotDraw)
- The smell definition needs interpretation:
  - "classes that are instantiated in M" must include creational design pattern
- The code may be interpreted to the Law:
  - Downcast parameter, Covariant Accessor Methods, Constructor Parameters

* Brings helpful orthogonality to the design. Thanks to Lars Grammel (@lgrammel) for elucidating this point!

Slide 27

Possible Adaptations of Law of Demeter   **(RQ3)**

Law of Demeter Violation

It is a violation of the Law of Demeter if an executable M of class C uses members other types than friend types or their supertypes.

Friend types are:
C,
types of fields of C,
types of parameters of M, or
classes that are instantiated in M.

Everybody's friend are: *public static*

Collections   *.Length*   *Data Class*

If you are friend with you are friend with: *DrawingView*, *Drawing*, *Figure*

An *anonymous inner class* shares the friends of its outer class

Downcast Parameter

Singleton Access

Factory Method Call