

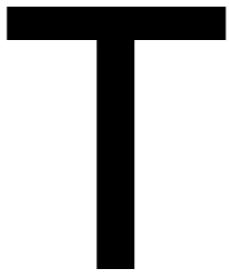
# How Diazo Works

Getting the mental model right

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Plone Symposium Midwest, 2013

This talk has been rated



Technical

Pervasive references to HTML and XML.  
Disturbing Thematic Elements

**XSL**



**HTML**

**XML**

**CSS**

# **Quick Review**

**Theme**

**Rules**

**Content**

Theme

Rules

Content



DIAZO

Theme

Rules

Content



DIAZO

Themed  
Content

Theme

Rules

Content



Themed  
Content

# Theme — HTML

The screenshot shows the Plone 4 homepage. At the top, there's a banner for 'Plone 4: Speed, Power & Beauty' featuring dandelion seeds. Below the banner, there's a navigation bar with links like Home, Download & Extend, Documentation, Get Involved, Plone Foundation, Support, Providers, and Log in. The main content area has several sections: 'The New Plone 4 Speed, Power and Beauty' (with a link to 'Under the Hood'), 'Upcoming Events' (listing 'Plone 4.3 Released' on Apr 18, 2013, and 'Introduction to Plone Class Offered Prior to Plone Symposium Midwest' on Apr 17, 2013), 'What's new in Plone 4' (linking to 'An overview of the new features.'), 'Roadmap' (linking to 'Our plans for the future.'), 'Older releases' (linking to 'Looking for a previous version?'), 'Add-on Products' (linking to 'Adapt Plone to your needs.'), 'Security Advisories' (linking to 'Security Advisories'), and 'Get Involved' (linking to 'Commercial services', 'Chat room', 'Forums', 'Sector-specific forums', 'Region-specific forums', 'Local user groups', and 'Training'). At the bottom, there's a footer with links for Downloads, Documentation, Developers, Plone Foundation, and Support, along with copyright information.

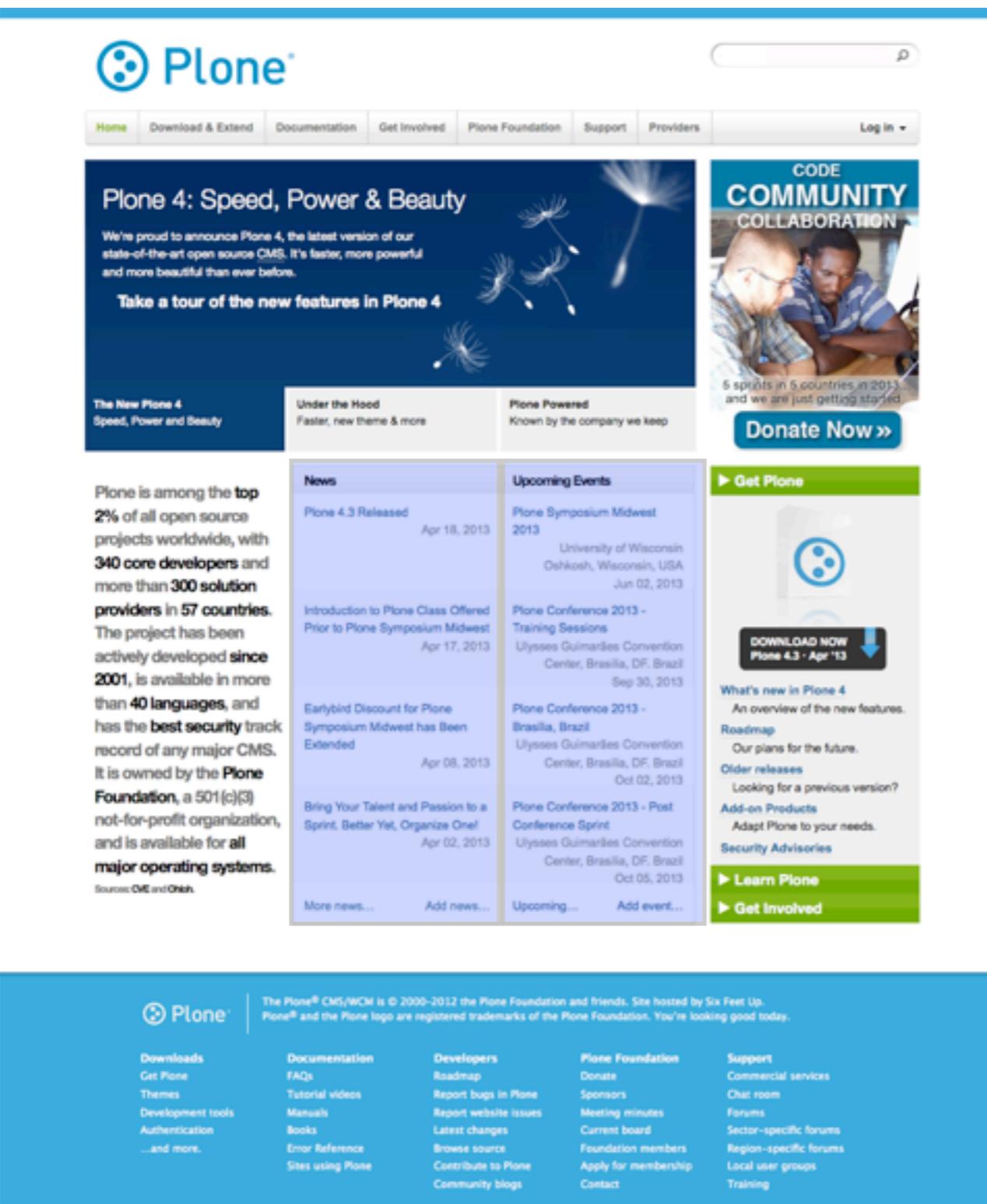
```
<html>
<head>
  <title>Styled Page</title>
  <style>...</style>
  <script>...</script>
</head>
<body>
  ...
  <div id="newsbox">...</div>
  ...
  <div id="eventbox">...</div>
  ...
  <div id="rightcolumn">...</div>
  ...
  <div id="doormat">...</div>
  ...
</body>
</html>
```

# Theme — HTML

The screenshot shows the Plone 4 homepage. At the top, there's a banner for 'Plone 4: Speed, Power & Beauty' featuring a dandelion seed. Below the banner, there are three main columns: 'The New Plone 4 Speed, Power and Beauty', 'Under the Hood Faster, new theme & more', and 'Plone Powered Known by the company we keep'. A sidebar on the left lists news items like 'Plone 4.3 Released' and 'Introduction to Plone Class Offered Prior to Plone Symposium Midwest'. The right sidebar contains links for 'Get Plone', 'What's new in Plone 4', 'Roadmap', 'Older releases', 'Add-on Products', 'Security Advisories', 'Learn Plone', and 'Get Involved'. At the bottom, there's a footer with links for 'Downloads', 'Documentation', 'Developers', 'Plone Foundation', and 'Support'.

```
<html>
<head>
  <title>Styled Page</title>
  <style>...</style>
  <script>...</script>
</head>
<body>
  ...
  <div id="newsbox">...</div>
  ...
  <div id="eventbox">...</div>
  ...
  <div id="rightcolumn">...</div>
  ...
  <div id="doormat">...</div>
  ...
</body>
</html>
```

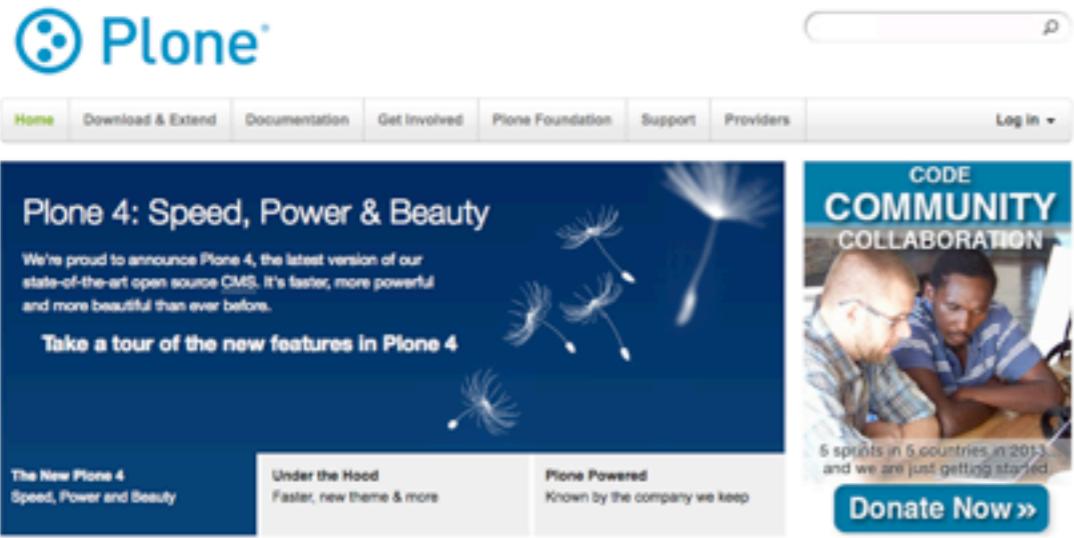
# Theme — HTML



The screenshot shows the Plone 4 homepage. At the top, there's a banner with the text "Plone 4: Speed, Power & Beauty" and a dandelion seed image. Below the banner, there are three main sections: "The New Plone 4 Speed, Power and Beauty", "Under the Hood Faster, new theme & more", and "Plone Powered Known by the company we keep". The "News" section contains several articles with titles like "Plone 4.3 Released", "Introduction to Plone Class Offered Prior to Plone Symposium Midwest", and "Earlybird Discount for Plone Symposium Midwest has Been Extended". The "Upcoming Events" section lists "Plone Symposium Midwest 2013" and "Plone Conference 2013 - Training Sessions". A "Donate Now" button is also present. The footer includes links for "Downloads", "Documentation", "Developers", "Plone Foundation", and "Support". The footer also notes that the site is hosted by Six Feet Up.

```
<html>
<head>
  <title>Styled Page</title>
  <style>...</style>
  <script>...</script>
</head>
<body>
  ...
  <div id="newsbox">...</div>
  ...
  <div id="eventbox">...</div>
  ...
  <div id="rightcolumn">...</div>
  ...
  <div id="doormat">...</div>
  ...
</body>
</html>
```

# Theme — HTML



Plone is among the **top 2%** of all open source projects worldwide, with **340 core developers** and more than **300 solution providers** in **57 countries**. The project has been actively developed **since 2001**, is available in more than **40 languages**, and has the **best security track record** of any major CMS. It is owned by the **Plone Foundation**, a 501(c)(3) not-for-profit organization, and is available for **all major operating systems**.  
Sources: O'Reilly and O'Reilly.

News	Upcoming Events	Get Plone
Plone 4.3 Released Apr 18, 2013	Plone Symposium Midwest 2013 University of Wisconsin Oshkosh, Wisconsin, USA Jun 02, 2013	 DOWNLOAD NOW Plone 4.3 - Apr '13
Introduction to Plone Class Offered Prior to Plone Symposium Midwest Apr 17, 2013	Plone Conference 2013 - Training Sessions Ulysses Guimaraes Convention Center, Brasilia, DF, Brazil Sep 30, 2013	What's new in Plone 4 An overview of the new features. Roadmap Our plans for the future. Older releases Looking for a previous version? Add-on Products Adapt Plone to your needs. Security Advisories
Earlybird Discount for Plone Symposium Midwest has Been Extended Apr 08, 2013	Plone Conference 2013 - Brasilia, Brazil Ulysses Guimaraes Convention Center, Brasilia, DF, Brazil Oct 02, 2013	► Learn Plone
Bring Your Talent and Passion to a Sprint: Better Yet, Organize One! Apr 02, 2013	Plone Conference 2013 - Post Conference Sprint Ulysses Guimaraes Convention Center, Brasilia, DF, Brazil Oct 05, 2013	► Get Involved
<a href="#">More news...</a>	<a href="#">Add news...</a>	
<a href="#">Upcoming...</a>	<a href="#">Add event...</a>	

A screenshot of the Plone footer. It includes the Plone logo, a copyright notice (The Plone® CMS/WCM is © 2000-2012 the Plone Foundation and friends. Site hosted by Six Feet Up. Plone® and the Plone logo are registered trademarks of the Plone Foundation. You're looking good today.), and a footer menu with links for Downloads, Documentation, Developers, Plone Foundation, and Support.

```
<html>
<head>
  <title>Styled Page</title>
  <style>...</style>
  <script>...</script>
</head>
<body>
  ...
  <div id="newsbox">...</div>
  ...
  <div id="eventbox">...</div>
  ...
  <div id="rightcolumn">...</div>
  ...
  <div id="doormat">...</div>
  ...
</body>
</html>
```

# Theme — HTML

The screenshot shows the Plone 4 homepage. At the top, there's a banner with the text "Plone 4: Speed, Power & Beauty" and a dandelion seed image. Below the banner, there's a navigation bar with links like Home, Download & Extend, Documentation, Get Involved, Plone Foundation, Support, Providers, and Log in. A search bar is also present. To the right of the banner is a "CODE COMMUNITY COLLABORATION" section featuring two people working together. Below this, there's a "Donate Now" button. The main content area has three columns: "News" (listing "Plone 4.3 Released" and "Introduction to Plone Class Offered Prior to Plone Symposium Midwest"), "Upcoming Events" (listing "Plone Symposium Midwest 2013" and "Plone Conference 2013 - Training Sessions"), and "Plone Powered" (listing "Known by the company we keep"). On the left, there's a sidebar with information about Plone's impact ("The New Plone 4 Speed, Power and Beauty") and a "Get Plone" section with a download button. At the bottom, there's a footer with links to Downloads, Documentation, Developers, Plone Foundation, and Support.

```
<html>
<head>
  <title>Styled Page</title>
  <style>...</style>
  <script>...</script>
</head>
<body>
  ...
  <div id="newsbox">...</div>
  ...
  <div id="eventbox">...</div>
  ...
  <div id="rightcolumn">...</div>
  ...
  <div id="doormat">...</div>
  ...
</body>
</html>
```

The screenshot shows the Plone footer. It includes the Plone logo, copyright information ("The Plone® CMS/WCM is © 2000-2012 the Plone Foundation and friends. Site hosted by Six Feet Up. Plone® and the Plone logo are registered trademarks of the Plone Foundation. You're looking good today."), and a footer menu with links to Downloads, Documentation, Developers, Plone Foundation, and Support categories.

# Content — HTML

```
<html>
<head>
    <title>Content Page</title>
    <style>...</style>
    <script>...</script>
</head>
<body>
    ...
<dl class="portlet portletNews">
    <dt class="portletHeader">
        ...
    </dt>

    <dd class="portletItem odd">
        ...
    </dd>
    ...
</dl>
    ...
</body>
</html>
```

# Content — HTML

```
<html>
<head>
    <title>Content Page</title>
    <style>...</style>
    <script>...</script>
</head>
<body>
    ...
<dl class="portlet portletNews">
    <dt class="portletHeader">
        ...
    </dt>

    <dd class="portletItem odd">
        ...
    </dd>
    ...
</dl>
    ...
</body>
</html>
```

# Rules — XML

```
<?xml version="1.0" encoding="UTF-8"?>
<rules
    xmlns="http://namespaces.plone.org/diazo"
    xmlns:css="http://namespaces.plone.org/diazo/css"
    xmlns:xsl="http://www.w3.org/1999/XSL/Transform">

    <rules css:if-content="#visual-portal-wrapper">

        <theme href="index.html" />
        ...
        <replace
            css:theme-children="#newsbox"
            css:content="dl.portletNews" />
        ...
    </rules>

</rules>
```

# Rules — XML

```
<?xml version="1.0" encoding="UTF-8"?>
<rules
    xmlns="http://namespaces.plone.org/diazo"
    xmlns:css="http://namespaces.plone.org/diazo/css"
    xmlns:xsl="http://www.w3.org/1999/XSL/Transform">

    <rules css:if-content="#visual-portal-wrapper">

        <theme href="index.html" />
        ...
        <replace
            css:theme-children="#newsbox"
            css:content="dl.portletNews" />
        ...
    </rules>

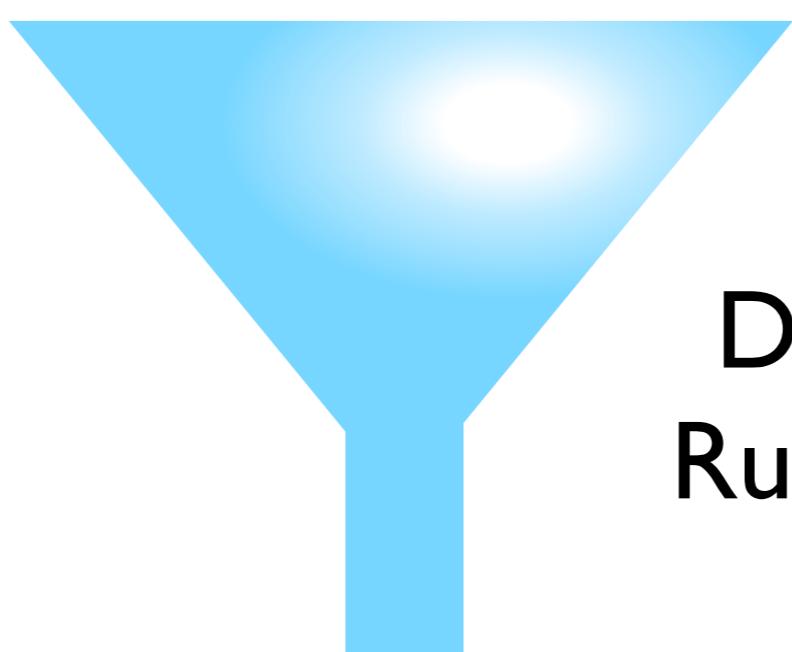
</rules>
```

# **How it works:**

## **A Naïve Mental Model**

Theme

Content

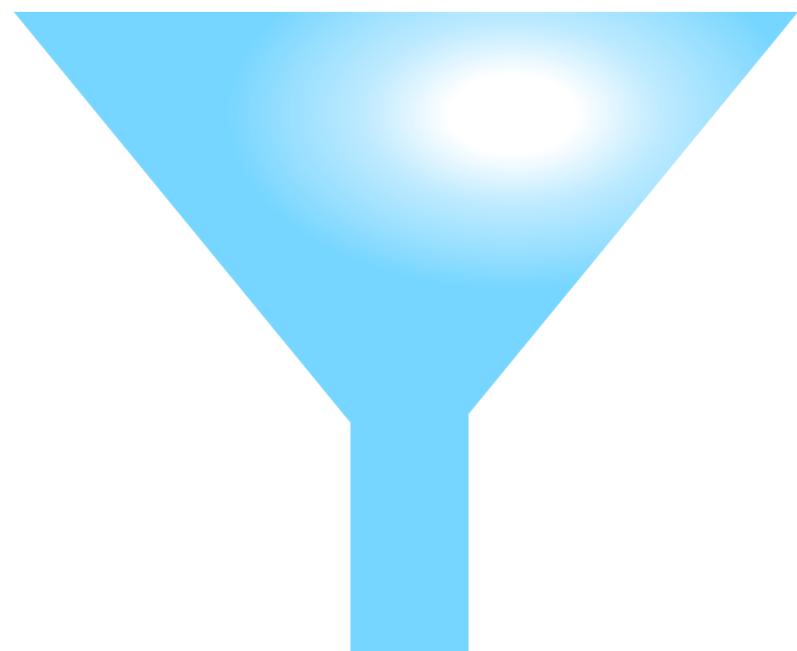


Diazo  
Rule #1

Theme I

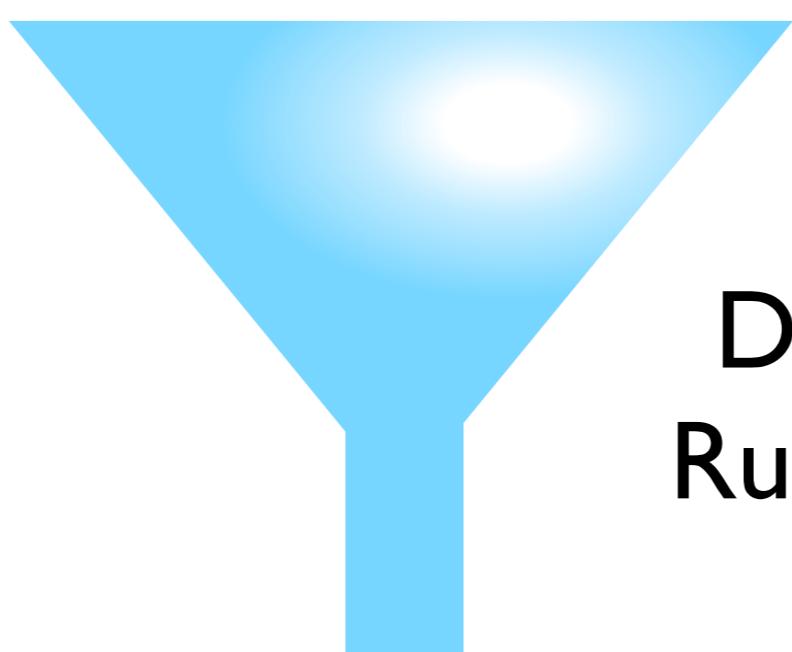
Theme I

Content



Theme1

Content

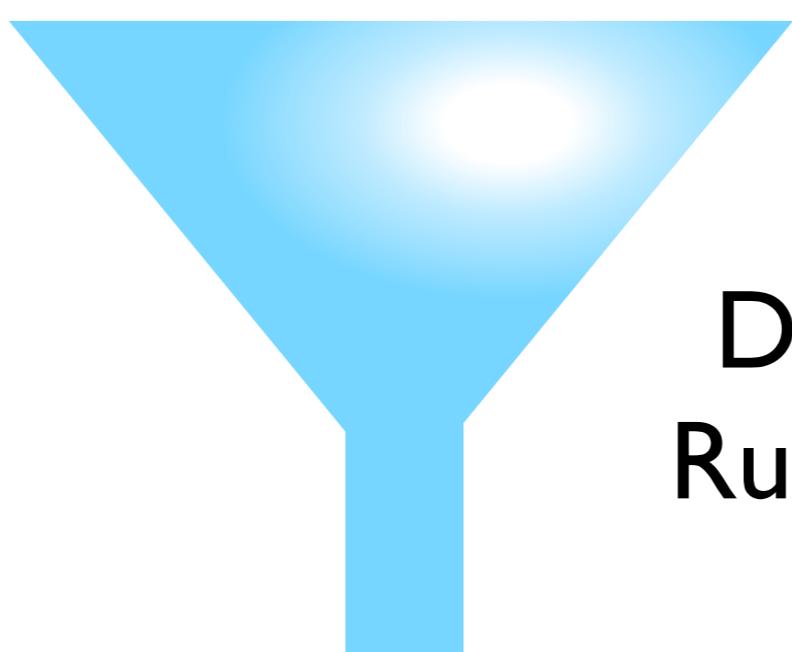


Diazo  
Rule #2

Theme2

Theme2

Content



Diazo  
Rule #3

Theme3

**Content  
drops / replaces**

**Things get messy.**

**Theme**

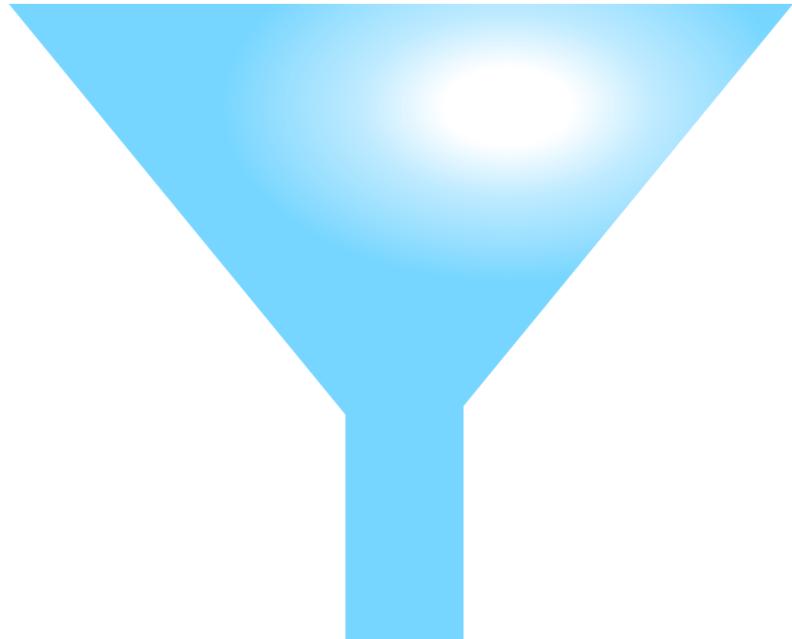
**Content**



**Diazo  
Content  
Rule**

Theme

Content



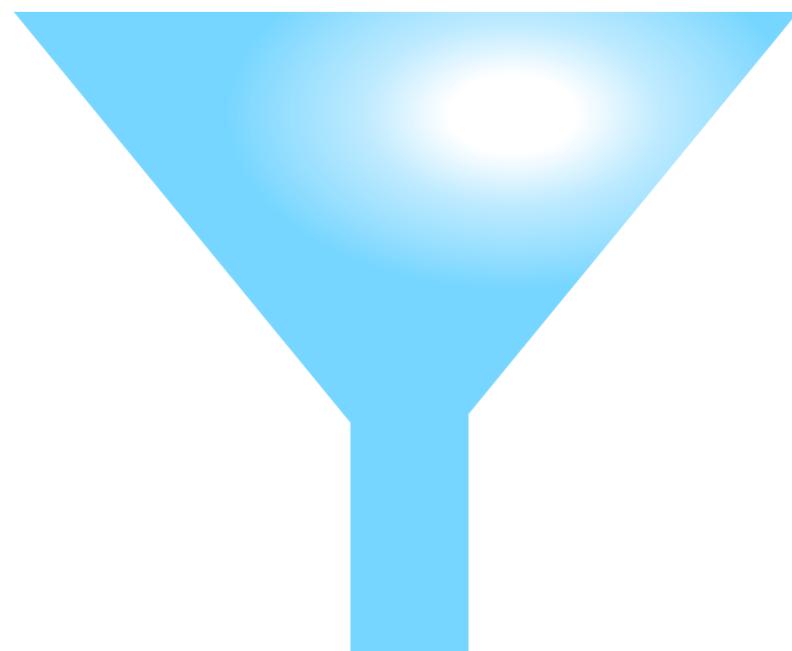
Diazo  
Content  
Rule

Cooked  
Content

Theme

Content

Cooked  
Content



Remaining  
DIAZO  
Rules

Theme

Content

Cooked  
Content

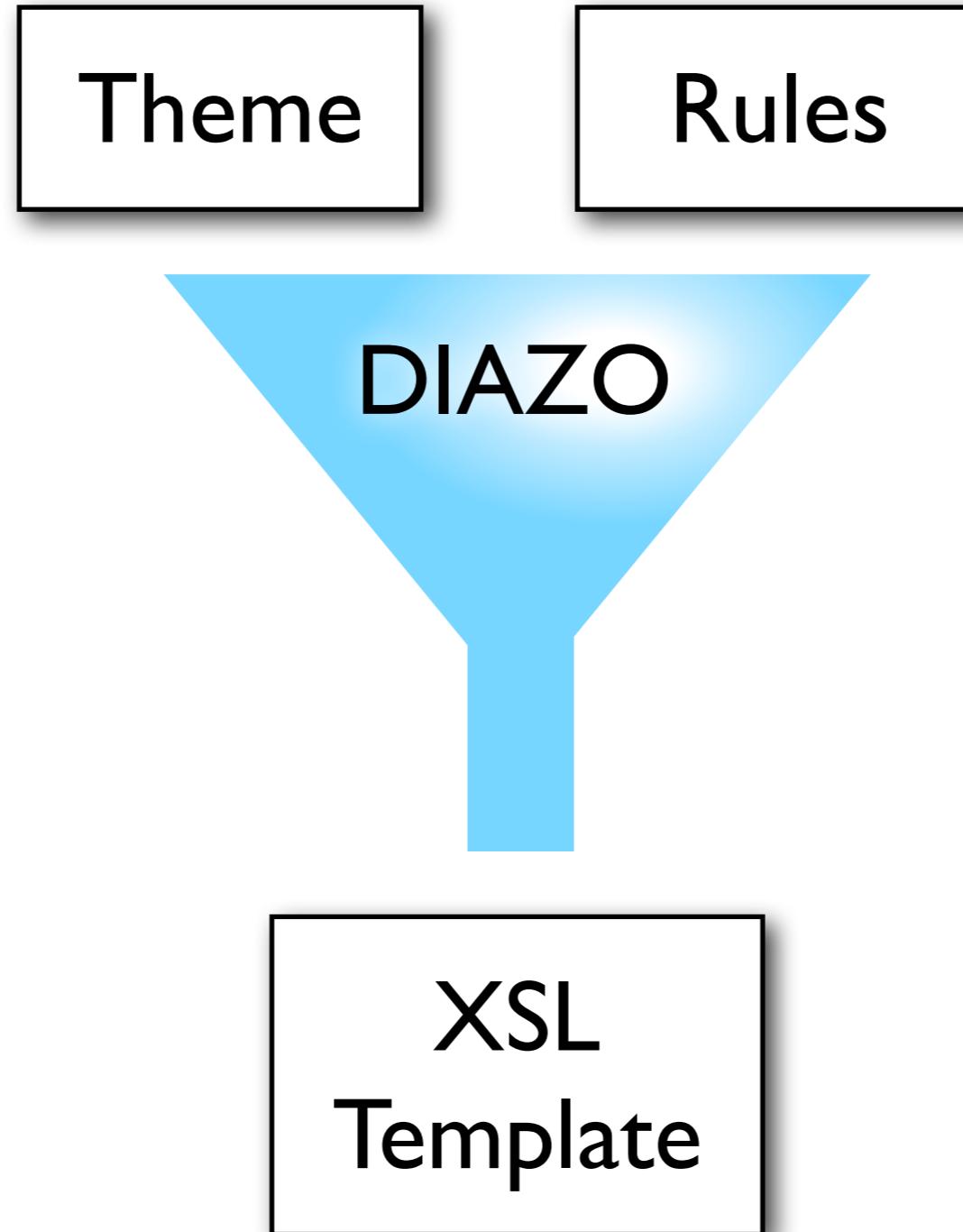
Remaining  
DIAZO  
Rules



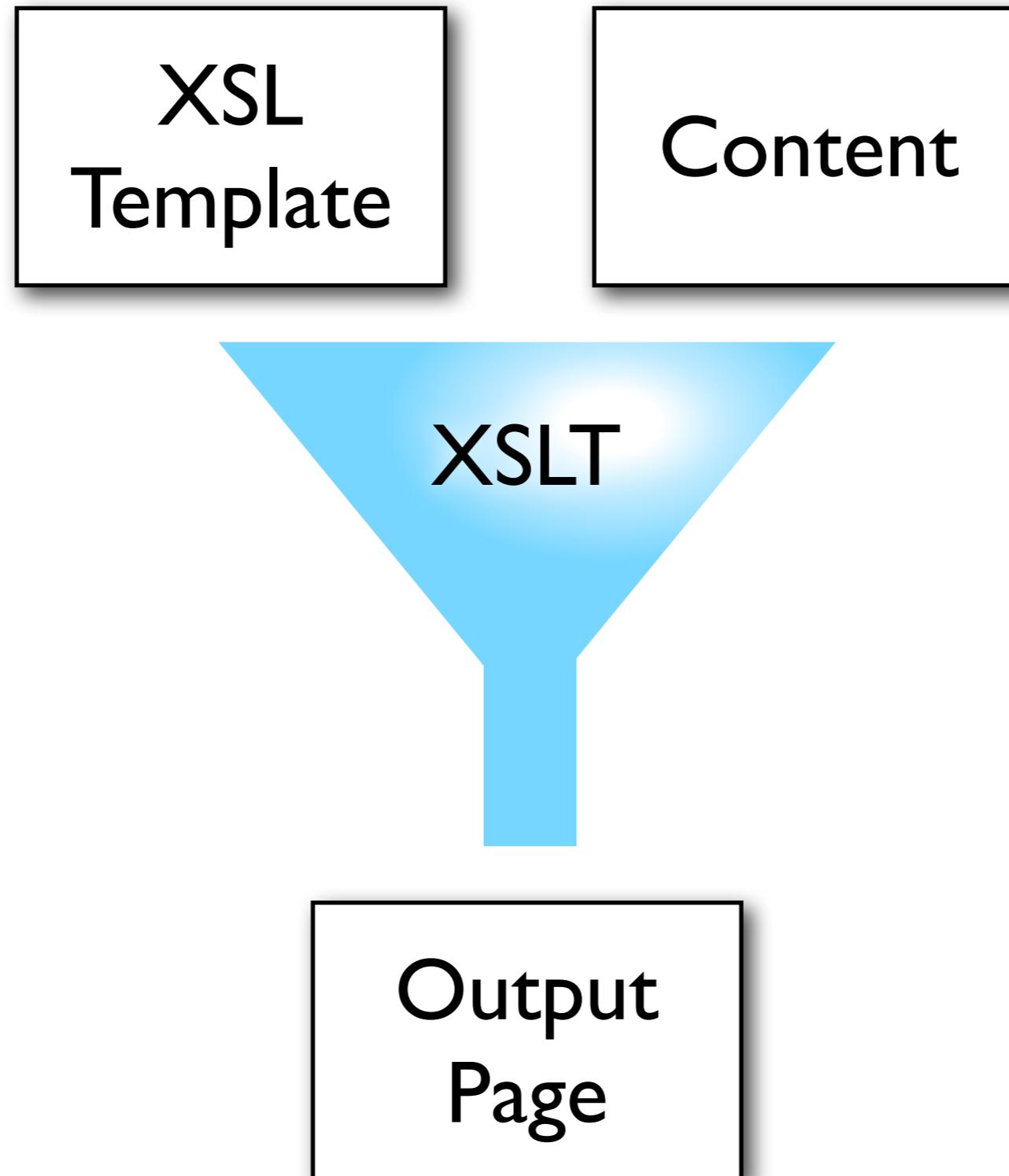
# **How it works:**

## **A Better Mental Model**

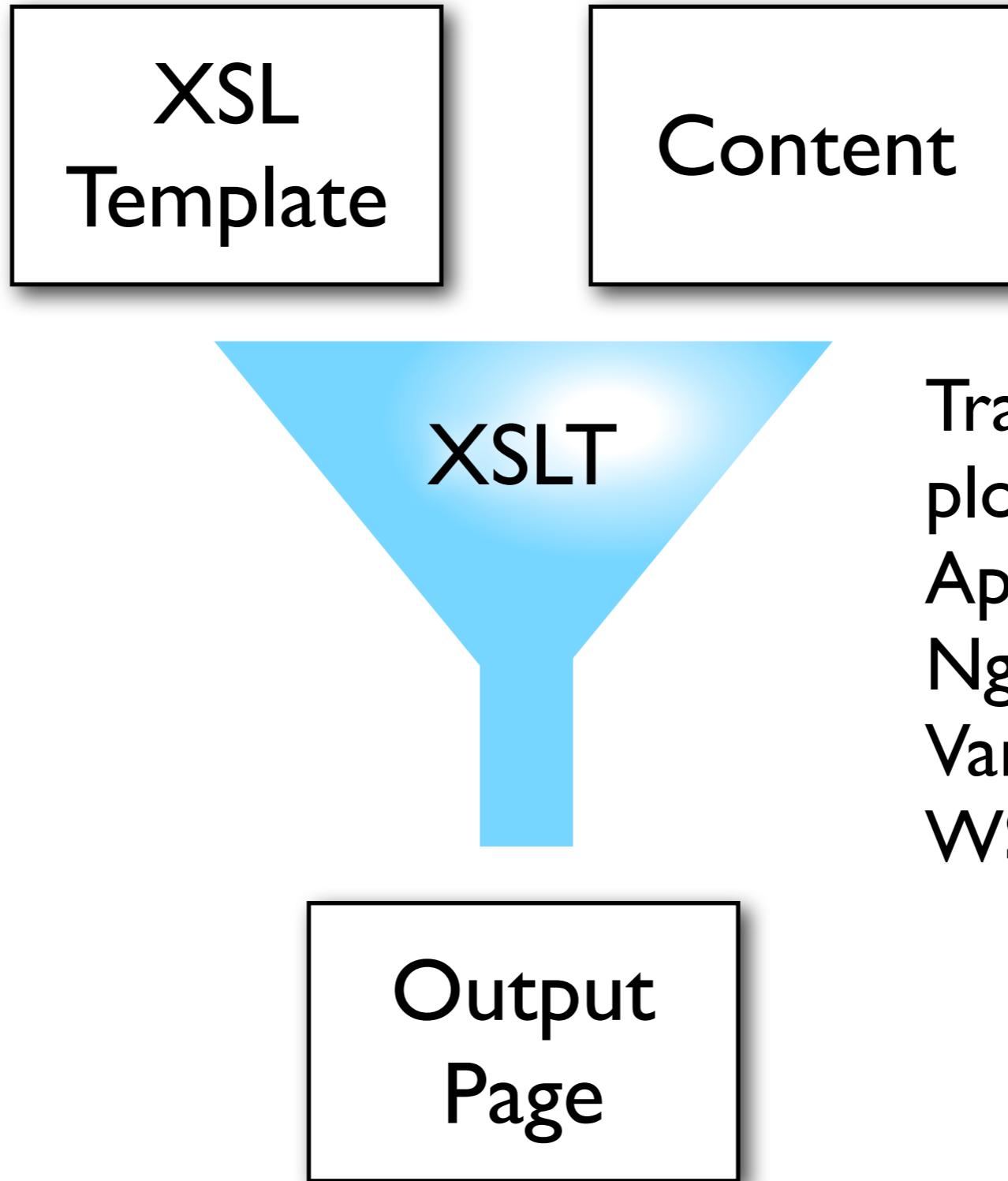
P  
A  
R  
T  
  
O  
N  
E



P  
A  
R  
T  
  
T  
W  
O

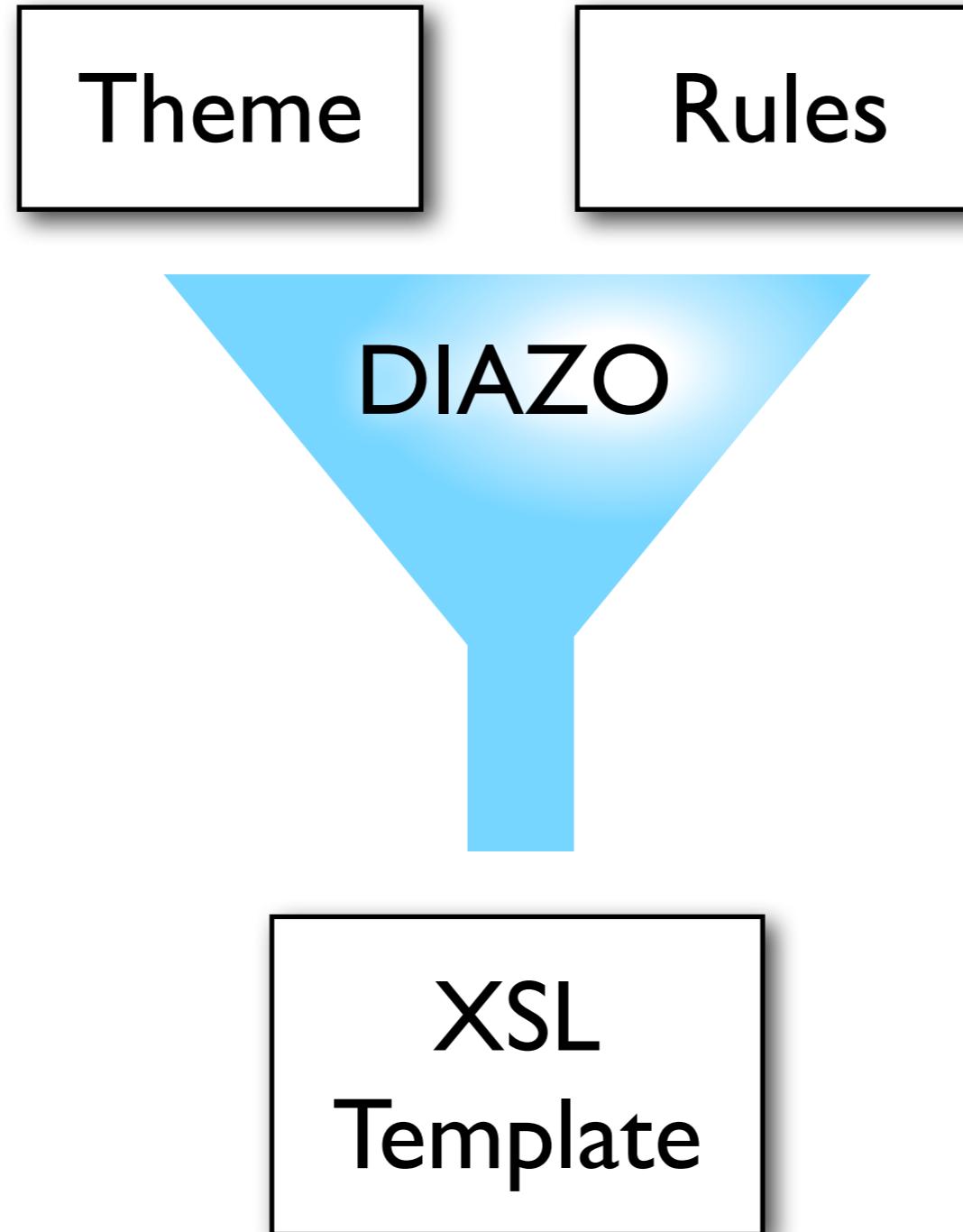


P  
A  
R  
T  
  
T  
W  
O



Transform Engine:  
plone.app.theming  
Apache  
Nginx  
Varnish  
WSGI ...

P  
A  
R  
T  
  
O  
N  
E



P  
A  
R  
T  
O  
N  
E

Theme

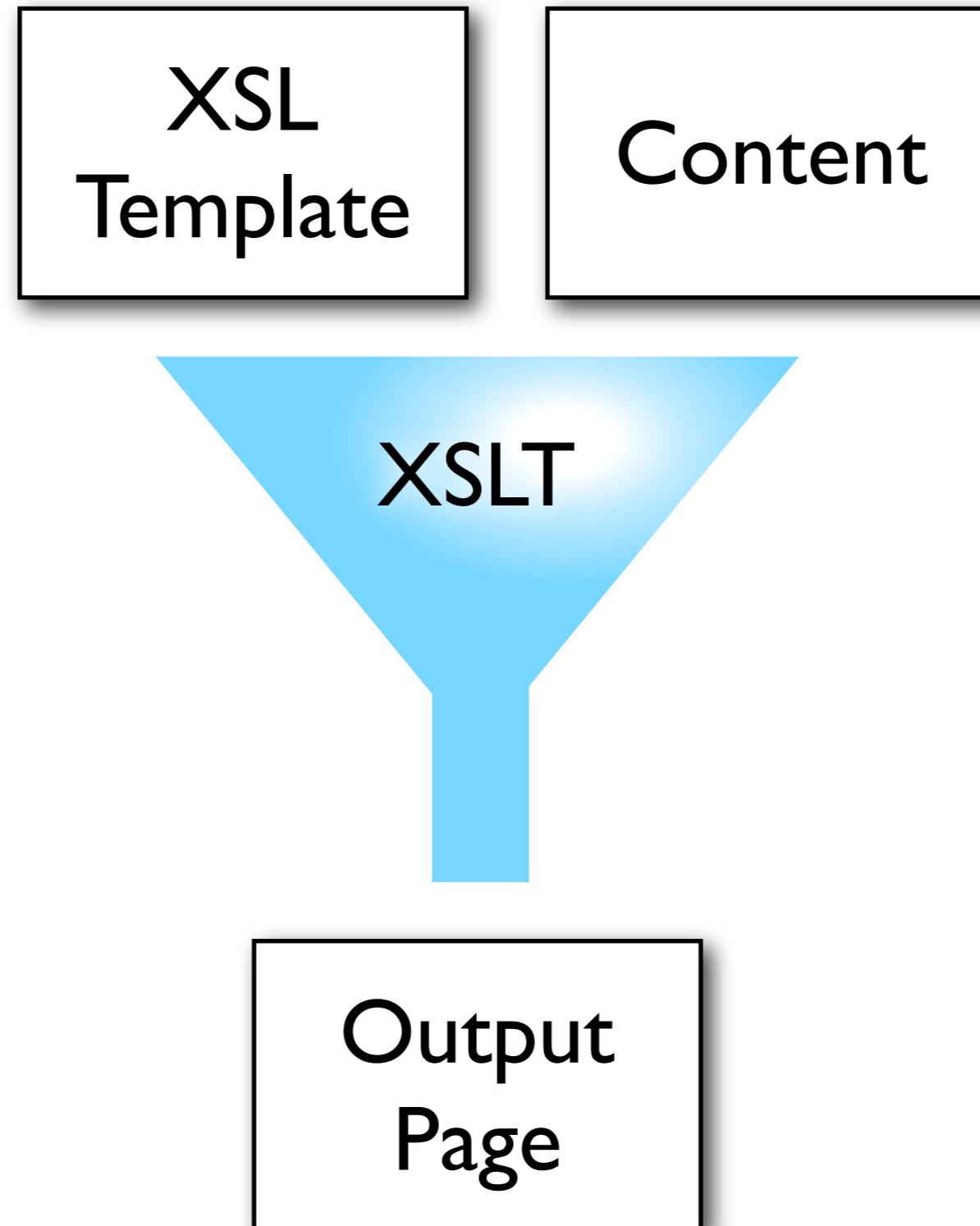
Rules

DIAZO

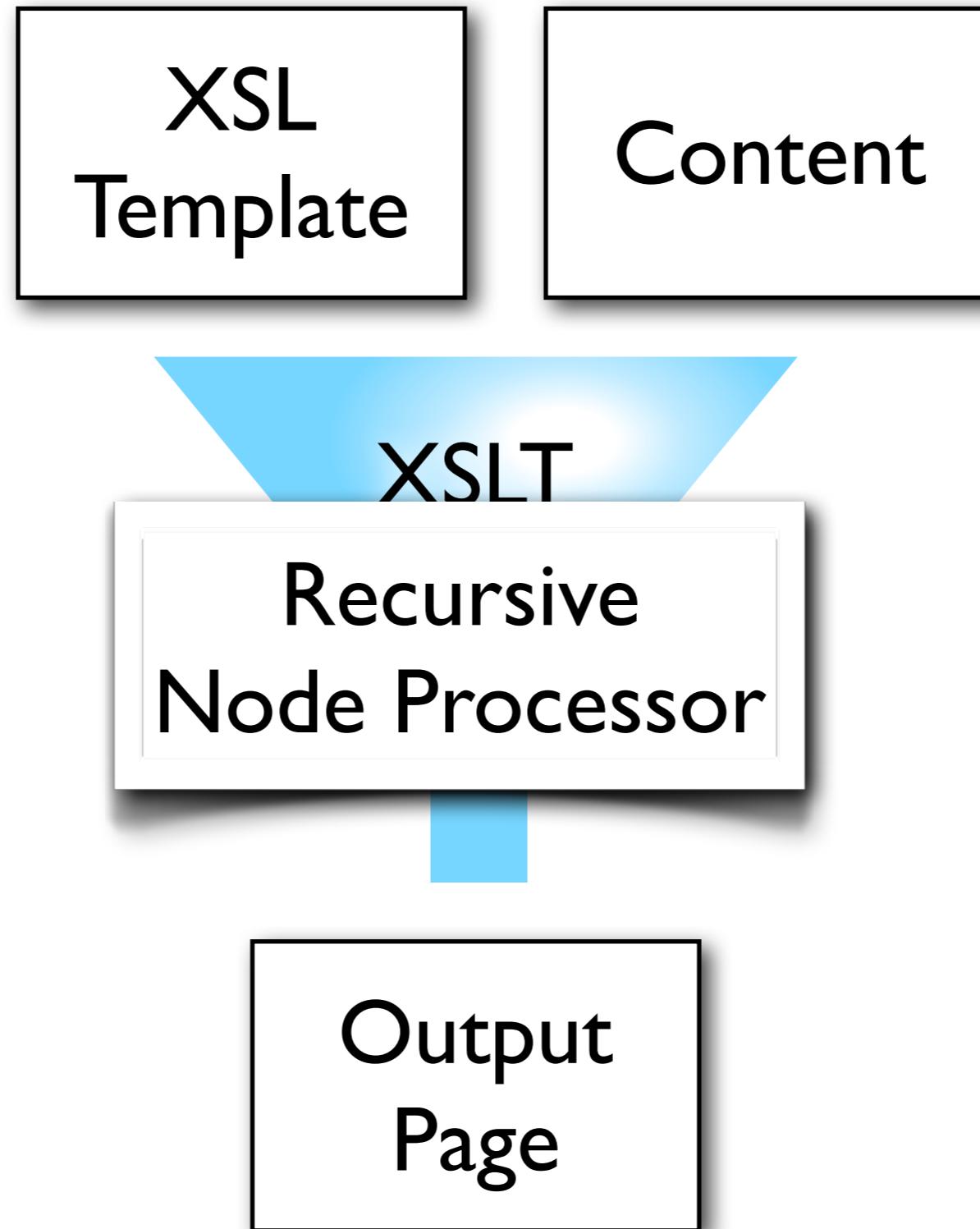
More like CSS  
than Python

XSL  
Template

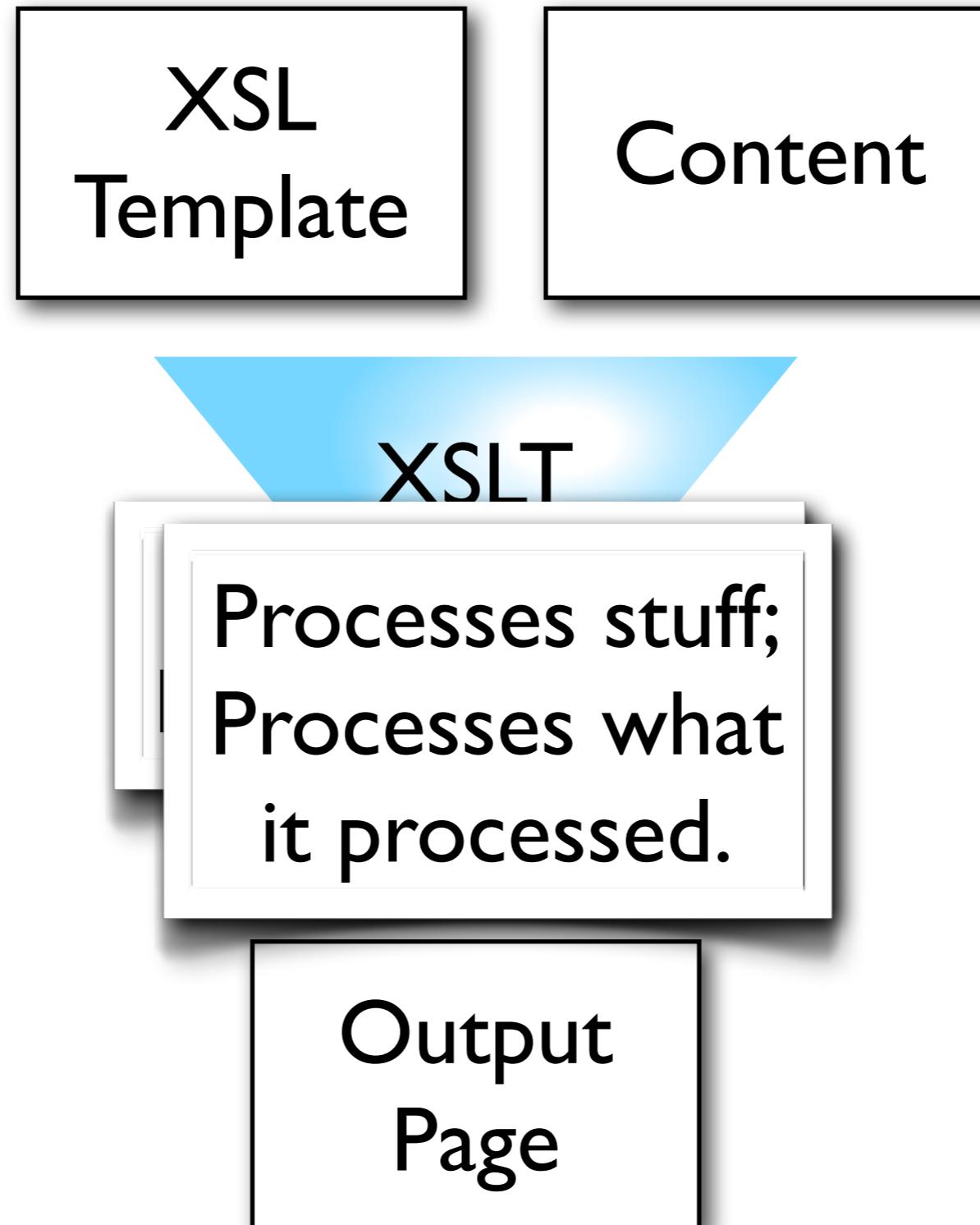
P  
A  
R  
T  
  
T  
W  
O



P  
A  
R  
T  
  
T  
W  
O



P  
A  
R  
T  
  
T  
W  
O



R  
U  
L  
E

```
<replace
    css:theme="#theme1"
    css:content="#content1"
/>
```

T  
H  
E  
M  
E

```
<body>
    ...
    <div id="theme1">
        Theme1 Stuff
    </div>
    ...
</body>
```

R  
U  
L  
E

```
<replace
    css:theme="#theme1"
    css:content="#content1"
/>
```

X  
S  
L

```
<body>
    ...
    XSL: pull in #content1
    ...
</body>
```

R  
U  
L  
E

```
<replace
    css:theme="#theme1"
    css:content="#content1"
/>
```

O  
U  
T  
P  
U  
T

```
<body>
    ...
    <div id="content1">
        Content1 Stuff
    </div>
    ...
</body>
```

R  
U  
L  
E

```
<replace
  css:theme-children="#theme1"
  css:content="#content1"
/>
```

T  
H  
E  
M  
E

```
<body>
  ...
  <div id="theme1">
    Theme1 Stuff
  </div>
  ...
</body>
```

R  
U  
L  
E

```
<replace
  css:theme-children="#theme1"
  css:content="#content1"
/>
```

X  
S  
L

```
<body>
  ...
    <div id="theme1">
      XSL: pull in #content1
    </div>
  ...
</body>
```

R  
U  
L  
E

```
<replace
  css:theme-children="#theme1"
  css:content="#content1"
/>
```

O  
U  
T  
P  
U  
T

```
<body>
  ...
  <div id="theme1">
    <div id="content1">...</div>
  </div>
  ...
</body>
```

R      <replace  
U        css:theme="#theme1"  
L        css:content="#content1"  
E        **css:if-content="#something"**  
/>

---

X  
S  
L

R      <replace  
U        css:theme="#theme1"  
L        css:content="#content1"  
E        **css:if-content="#something"**  
/>>

---

XSL:if content has #something

X  
S  
L

R      <replace  
U        css:theme="#theme1"  
L        css:content="#content1"  
E        **css:if-content="#something"**  
/>>

---

X  
S  
L

XSL:if content has #something  
XSL: pull in #content1

R      <replace  
U        css:theme="#theme1"  
L        css:content="#content1"  
E        **css:if-content="#something"**  
/>>

---

XSL:if content has #something  
XSL: pull in #content1  
XSL:else

R  
U  
L  
E

```
<replace
    css:theme="#theme1"
    css:content="#content1"
css:if-content="#something"
/>
```

X  
S  
L

```
XSL:if content has #something
    XSL: pull in #content1
XSL:else
    <div id="theme1">
        Theme1 Stuff
    </div>
```

R  
U  
L  
E  
S

```
<before theme="#theme1" ... />  
  
<before theme-children="#theme1" ... />  
  
<after theme-children="theme1" ... />  
  
<after theme="theme1" ... />
```

X  
S  
L

R  
U  
L  
E  
S

```
<before theme="#theme1" ... />  
  
<before theme-children="#theme1" ... />  
  
<after theme-children="theme1" ... />  
  
<after theme="theme1" ... />
```

---

XSL: pull in #cbefore

X  
S  
L

R  
U  
L  
E  
S

```
<before theme="#theme1" ... />  
  
<before theme-children="#theme1" ... />  
  
<after theme-children="theme1" ... />  
  
<after theme="theme1" ... />
```

X  
S  
L

XSL: pull in #cbefore  
<div id="theme1">

R  
U  
L  
E  
S

```
<before theme="#theme1" ... />  
  
<before theme-children="#theme1" ... />  
  
<after theme-children="theme1" ... />  
  
<after theme="theme1" ... />
```

X  
S  
L

```
XSL: pull in #cbefore  
<div id="theme1">  
    XSL: pull in #cbefore-children
```

R  
U  
L  
E  
S

```
<before theme="#theme1" ... />  
  
<before theme-children="#theme1" ... />  
  
<after theme-children="theme1" ... />  
  
<after theme="theme1" ... />
```

X  
S  
L

```
XSL: pull in #cbefore  
<div id="theme1">  
    XSL: pull in #cbefore-children  
    Theme 1 Stuff
```

R  
U  
L  
E  
S

```
<before theme="#theme1" ... />  
  
<before theme-children="#theme1" ... />  
  
<after theme-children="theme1" ... />  
  
<after theme="theme1" ... />
```

X  
S  
L

```
XSL: pull in #cbefore  
<div id="theme1">  
    XSL: pull in #cbefore-children  
    Theme 1 Stuff  
    XSL: pull in #cafter-children
```

R  
U  
L  
E  
S

```
<before theme="#theme1" ... />  
  
<before theme-children="#theme1" ... />  
  
<after theme-children="theme1" ... />  
  
<after theme="theme1" ... />
```

X  
S  
L

```
XSL: pull in #cbefore  
<div id="theme1">  
    XSL: pull in #cbefore-children  
    Theme 1 Stuff  
    XSL: pull in #cafter-children  
</div>
```

R  
U  
L  
E  
S

```
<before theme="#theme1" ... />  
  
<before theme-children="#theme1" ... />  
  
<after theme-children="theme1" ... />  
  
<after theme="theme1" ... />
```

X  
S  
L

```
XSL: pull in #cbefore  
<div id="theme1">  
    XSL: pull in #cbefore-children  
    Theme 1 Stuff  
    XSL: pull in #cafter-children  
</div>  
XSL: pull in #cafter
```

R  
U  
L  
E  
S

```
<after theme-children="theme1" ... />  
  
<before theme-children="#theme1" ... />  
  
<after theme="theme1" ... />  
  
<before theme="#theme1" ... />
```

X  
S  
L

```
XSL: pull in #cbefore  
<div id="theme1">  
    XSL: pull in #cbefore-children  
    Theme 1 Stuff  
    XSL: pull in #cafter-children  
</div>  
XSL: pull in #cafter
```

# **Content drops / replaces**

**Content  
drops / replaces**

**Remember Part 2?**

R  
U  
L  
E

```
<replace
    css:theme="#theme1"
    css:content="#content1"
/>
```

X  
S  
L

R  
U  
L  
E

```
<replace
    css:theme="#theme1"
    css:content="#content1"
/>
```

X  
S  
L

```
XSL: pull in #content1
```

R  
U  
L  
E

```
<replace
  css:theme="#theme1"
  css:content="#content1"
/>
```

X  
S  
L

```
XSL: pull in #content1
XSL: process what just got
pulled in
```

R  
U  
L  
E

```
<replace
    css:theme="#theme1"
    css:content="#content1"
/>
```

X  
S  
L

```
XSL: pull in #content1
XSL: process what just got
pulled in
“content” drops / replaces
```

R  
U  
L  
E  
S

```
<before css:theme="#theme1" ... />  
  
<after css:theme="#theme1" ... />  
  
<drop css:content="#nastytag" />
```

X  
S  
L

```
XSL: pull in #cbefore  
<div id="theme1">  
    Theme 1 Stuff  
</div>  
XSL: pull in #cafter
```

R  
U  
L  
E  
S

```
<before css:theme="#theme1" ... />  
  
<after css:theme="#theme1" ... />  
  
<drop css:content="#nastytag" />
```

X  
S  
L

```
XSL: pull in #cbefore – do content drop  
<div id="theme1">  
    Theme 1 Stuff  
</div>  
XSL: pull in #cafter – do content drop
```

R  
U  
L  
E  
S

```
<drop css:content="#nastytag" />  
  
<before css:theme="#theme1" ... />  
  
<after css:theme="#theme1" ... />
```

X  
S  
L

```
XSL: pull in #cbefore – do content drop  
<div id="theme1">  
    Theme 1 Stuff  
</div>  
XSL: pull in #cafter – do content drop
```

**Let's apply  
that knowledge**

**Let's apply  
that knowledge**

**Moving Content**

R  
U  
L  
E

```
<replace
    css:theme-children="#rightcol"
    css:content-children="#col3"
    />
<drop css:content=".portletNews" />
<replace
    css:theme-children="#newsslot"
    css:content=".portletNews"/>
```

---

```
T      ...
H      <div id="#newsslot" />
E      ...
M      <div id="#rightcol" />
E      ...

```

</body>

R  
U  
L  
E

```
<replace
  css:theme-children="#rightcol"
  css:content-children="#col3"
  mode="raw" />
<drop css:content=".portletNews" />
<replace
  css:theme-children="#newsslot"
  css:content=".portletNews"/>
```

---

```
T      ...
H      <div id="#newsslot" />
E      ...
M      <div id="#rightcol" />
E      ...
</body>
```

**mode = “raw”?**

**mode = “raw”?**

**Is there a “cooked”?**

R  
U  
L  
E

```
<replace
  css:theme-children="#rightcol"
  css:content-children="#col3"
/>
```

X  
S  
L

XSL: pull in #col3  
XSL: do “content” drops and  
replaces on what was  
inserted

R  
U  
L  
E

```
<replace
  css:theme-children="#rightcol"
  css:content-children="#col3"
  mode="raw" />
```

X  
S  
L

XSL: pull in #col3  
XSL: do routine cleanup,  
 but no content drops /  
 replaces

# **Lessons Learned**

**Rule order  
doesn't matter.**

**Rule order  
doesn't matter.**

**Order rules  
for clarity.**

**Solve conflicts  
with specificity.**

**Solve conflicts  
with specificity.**

**Just like CSS.**

**Rules may only look at  
original themes  
or content**

**Rules may only look at  
original themes  
or content**

**If you want to look at  
transformed content,  
you must write XSL.**

**Rules may only look at  
original themes  
or content**

**If you're not doing that today!** at transformed content, you must write XSL.

# **Exploring Diazo**

```
parts =
```

```
    ...
```

```
diazotools
```

```
    ...
```

```
[diazotools]
```

```
recipe = zc.recipe.egg
```

```
eggs = diazo
```

## **diazocompiler:**

```
$ bin/diazocompiler rules.xml \
-o theme.xsl
```

## **diazorun:**

```
$ bin/diazorun -xsl theme.xsl \
content.html
```

