

Appendix 1. CQL code for modelling of contiguous stylistic phases of the development of the Malice Culture (coded by T.J. Chmielewski with the use of OxCal 4.4 package)

```
Plot()
{
  Outlier_Model("charcoal",Exp(1,-10,0),U(0,3),t);
  Sequence("Malice culture")
  {
    Boundary("Malice Ia (start)");
    Phase("Malice Ia")
    {
      R_Date("Poz-121003",5890,35);
      R_Date("Poz-15978",5880,40)
      {
        Outlier("charcoal",1);
      };
      R_Date("GrN-5977",5855,40)
      {
        Outlier("charcoal",1);
      };
      R_Date("Poz-77984",5830,40)
      {
        Outlier("charcoal",1);
      };
      R_Date("Poz-71637",5800,35)
      {
        Outlier("charcoal",1);
      };
      R_Date("Gd-6967",5730,130)
      {
        Outlier("charcoal",1);
      };
    };
    Boundary("Malice Ia/Ib (transition)");
    Phase("Malice Ib")
    {
      R_Date("MKL-799",5820,90)
      {
        Outlier("charcoal",1);
      };
      Combine("TRG14-15_feature 1")
      {
        R_Date("MKL-A5166",5779,24)
        {
```

```
Outlier();
};
R_Date("MKL-A5165",5755,23)
{
  Outlier("charcoal",1);
};
R_Date("MKL-A5162",5741,23)
{
  Outlier("charcoal",1);
};
R_Date("MKL-A5163",5737,23)
{
  Outlier("charcoal",1);
};
R_Date("MKL-A5168",5737,23)
{
  Outlier("charcoal",1);
};
};
Combine("ZKC8_well")
{
  R_Date("Poz-45435",5760,40);
  R_Date("Ki-13694",5690,40);
};
R_Date("MKL-A5164",5705,23)
{
  Outlier("charcoal",1);
};
R_Date("GdA-7312",5690,30);
R_Date("Poz-127153",5670,40);
R_Date("Poz-127152",5640,40);
R_Date("GdA-7310",5640,30);
R_Date("Poz-127156",5610,40);
};
Boundary("Malice Ib/Ic (transition)");
Phase("Malice Ic")
{
  R_Date("Poz-91126",5605,35);
  R_Date("Poz-91125",5585,35);
  R_Date("Poz-96806",5570,40);
};
Boundary("Malice Ic/II (transition)");
Phase("Malice II")
{
```

```
R_Date("Poz-57913",5590,40)
{
  Outlier("charcoal",1);
};
R_Date("Poz-57916",5590,40)
{
  Outlier("charcoal",1);
};
R_Date("Poz-60513",5580,35)
{
  Outlier("charcoal",1);
};
R_Date("Poz-57917",5565,35)
{
  Outlier("charcoal",1);
};
R_Date("Poz-60512",5545,35);
R_Date("Poz-62480",5525,35)
{
  Outlier("charcoal",1);
};
R_Date("Poz-505596",5520,40);
R_Date("Poz-505595",5490,40);
R_Date("Poz-127154",5470,40);
Combine("RZW31_feature 18")
{
  R_Date("Poz-16473",5480,40)
  {
    Outlier("charcoal",1);
  };
  R_Date("Poz-16474",5450,40)
  {
    Outlier("charcoal",1);
  };
};
R_Date("Poz-63725",5452,35)
{
  Outlier("charcoal",1);
};
Combine("SWZ6_feature 50")
{
  R_Date("Gd-2910",5450,100)
  {
    Outlier("charcoal",1);
  };
};
```

```
};  
R_Date("Poz-62494",5420,35)  
{  
  Outlier("charcoal",1);  
};  
};  
R_Date("Poz-57821",5360,35)  
{  
  Outlier("charcoal",1);  
};  
R_Date("Poz-62493",5300,35)  
{  
  Outlier();  
};  
};  
Boundary("Malice II (end)");  
};  
};
```

Appendix 2. CQL code for modelling of contiguous trapezoid stylistic phases of the development of the Malice Culture (coded by T.J. Chmielewski with the use of OxCal 4.4 package)

```
Plot()
{
  Outlier_Model("charcoal",Exp(1,-10,0),U(0,3),t);
  Sequence("Malice culture")
  {
    Boundary("Malice Ia (start)")
    {
      Transition("Start of Malice Ia (duration)");
      Start("Start of Malice Ia (start)");
      End("Start of Malice Ia (end)");
    };
    Phase("Malice Ia")
    {
      R_Date("Poz-121003",5890,35);
      R_Date("Poz-15978",5880,40)
      {
        Outlier("charcoal",1);
      };
      R_Date("GrN-5977",5855,40)
      {
        Outlier("charcoal",1);
      };
      R_Date("Poz-77984",5830,40)
      {
        Outlier("charcoal",1);
      };
      R_Date("Poz-71637",5800,35)
      {
        Outlier("charcoal",1);
      };
      R_Date("Gd-6967",5730,130)
      {
        Outlier("charcoal",1);
      };
    };
    Boundary("Malice Ia/Ib (transition)")
    {
      Transition("Transition from Malice Ia to Ib (duration)");
      Start("Transition from Malice Ia to Ib (start)");
      End("Transition from Malice Ia to Ib (end)");
    };
  };
}
```

```
};
Phase("Malice Ib")
{
  R_Date("MKL-799",5820,90)
  {
    Outlier("charcoal",1);
  };
  Combine("TRG14-15_feature 1")
  {
    R_Date("MKL-A5166",5779,24)
    {
      Outlier();
    };
    R_Date("MKL-A5165",5755,23)
    {
      Outlier("charcoal",1);
    };
    R_Date("MKL-A5162",5741,23)
    {
      Outlier("charcoal",1);
    };
    R_Date("MKL-A5163",5737,23)
    {
      Outlier("charcoal",1);
    };
    R_Date("MKL-A5168",5737,23)
    {
      Outlier("charcoal",1);
    };
  };
  Combine("ZKC8_well")
  {
    R_Date("Poz-45435",5760,40);
    R_Date("Ki-13694",5690,40);
  };
  R_Date("MKL-A5164",5705,23)
  {
    Outlier("charcoal",1);
  };
  R_Date("GdA-7312",5690,30);
  R_Date("Poz-127153",5670,40);
  R_Date("Poz-127152",5640,40);
  R_Date("GdA-7310",5640,30);
  R_Date("Poz-127156",5610,40);
```

```

};
Boundary("Malice Ib/Ic (transition)")
{
  Transition("Transition from Malice Ib to Ic (duration)");
  Start("Transition from Malice Ib to Ic (start)");
  End("Transition from Malice Ib to Ic (end)");
};
Phase("Malice Ic")
{
  Combine("SMR4_fetaure H26")
  {
    R_Date("Poz-91126",5605,35);
    R_Date("Poz-91125",5585,35);
  };
  R_Date("Poz-96806",5570,40);
  R_Date("GdA-7428",5545,36);
};
Boundary("Malice Ic/II (transition)")
{
  Transition("Transition from Malice Ic to II (duration)");
  Start("Transition from Malice Ic to II (start)");
  End("Transition from Malice Ic to II (end)");
};
Phase("Malice II")
{
  R_Date("Poz-57913",5590,40)
  {
    Outlier("charcoal",1);
  };
  R_Date("Poz-57916",5590,40)
  {
    Outlier("charcoal",1);
  };
  R_Date("Poz-60513",5580,35)
  {
    Outlier("charcoal",1);
  };
  R_Date("Poz-57917",5565,35)
  {
    Outlier("charcoal",1);
  };
  R_Date("Poz-60512",5545,35);
  R_Date("Poz-62480",5525,35)
  {

```

```
Outlier("charcoal",1);
};
R_Date("Poz-505596",5520,40);
R_Date("Poz-505595",5490,40);
R_Date("Poz-127154",5470,40);
Combine("RZW31_feature 18")
{
  R_Date("Poz-16473",5480,40)
  {
    Outlier("charcoal",1);
  };
  R_Date("Poz-16474",5450,40)
  {
    Outlier("charcoal",1);
  };
};
R_Date("Poz-63725",5452,35)
{
  Outlier("charcoal",1);
};
Combine("SWZ6_feature 50")
{
  R_Date("Gd-2910",5450,100)
  {
    Outlier("charcoal",1);
  };
  R_Date("Poz-62494",5420,35)
  {
    Outlier("charcoal",1);
  };
};
R_Date("Poz-57821",5360,35)
{
  Outlier("charcoal",1);
};
R_Date("Poz-62493",5300,35)
{
  Outlier();
};
};
Boundary("Malice II (end)")
{
  Transition("End of Malice II (duration)");
  Start("End of Malice II (start)");
};
```



```
End("End of Malice II (end)");  
};  
};  
};
```