CAMBRIDGE

Cambridge University Press
978-1-107-10250-7 - Social Sequence Analysis: Methods and Applications
Benjamin Cornwell
Index
More information

Index

Abbott, Andrew, 33, 38, 39, 40, 41, 42, 44, 138
Abell, Peter, 35
activity sequences. *See also* microsequence analysis
  American Time Use Survey, 80, 118
  boundary specification, 69
  directed sequence networks, 171
  element subsets in directed sequence networks, 193–94
  Multinational Time Use Study, 79
  recurrence, 63
  routine, 247–51
  sequence subset evolution, 206
  structural measures for sequence networks, 188–89
  synchrony, 232–34
  ties, 65
  time warping, 118
  transformation costs, 43–44
  two-mode recurrent sequences, 176–79
activity space, 26–27
Acton, Ryan M., 213
adjacency matrices, 163–64
affiliation matrices, 165, 168, 170–71, 191
affiliation network analysis ("two-mode" network analysis), 50, 162
agglomerative hierarchical clustering, 131–32, 270
  criteria for identifying clusters, 270–71, 272
  distinction from divisive clustering, 131–32
  partitional clustering versus, 131n2
Aisenbrey, Silke, 36, 45, 119–20, 122
alphabet expansion, 65, 145–46
alternative sequence-comparison techniques, 33
American Time Use Survey (ATUS), 6, 80–82, 80n11, 80n12, 81n13, 81n14
  microsequence analysis, 217–18, 217n2, 217n3, 218n4, 218n5, 218n6, 218n7
  optimal matching sequence classification, 220–22, 220n10, 220n8, 220n9
  subset identification, 193
  tempograms, 140, 141f. 5.4
  temporal granularity, 216
  time warping, 118
  transition and switching analysis, 225
arbitrary operation costs, 120–22
  fixed substitution costs, 121
  static costs, 121–22
archival research, 72
arcs, 164
asymmetric network matrices, 164
ATUS. *See* American Time Use Survey
average linkage (clustering criteria), 272

Bakeman, Roger, 64, 91, 95, 99–100
Bales, Robert F., 28, 53
base rate problem, 85
Batagelj, Vladimir, 191
Bearman, Peter S., 30, 43, 120–21, 157, 158, 194
Becker, Gary, 213
Berger, Clarence Q., 213, 244
β (logit transform) statistic (measure of sequential connection), 92–93, 94
betweenness centrality, 187n6–88, 188n7
  two-mode sequence networks, 188

© in this web service Cambridge University Press www.cambridge.org

CAMBRIDGE

Cambridge University Press
978-1-107-10250-7 - Social Sequence Analysis: Methods and Applications
Benjamin Cornwell
Index
More information

bicomponent approach, 194
Biemann, Torsten, 42n4, 148, 223
biological sequence processes, 4, 39–40, 41–43, 120
bipartite networks. *See* two-mode networks
Bison, Ivano, 158–60
blockmodeling, 152, 191–92, 192n8, 196
blocks (equivalence sets), 190
boundary specification, 69–70
  nominalist versus realist approaches, 69
Bourdieu, Pierre, 24, 229, 243
bridging, 185–89, 188n7
British Household Panel Survey (BHPS), 6
brokerage, 52
Brown, Cliff, 197–99
Brueggemann, John, 198
Bry, Xavier, 149, 150
Brzinsky-Fay, Christian, 119–20
Bureau of Labor Statistics (BLS), 6
Burgess, Ernest W., 29–30
Butts, Carter T., 100, 213, 260

Calinski and Harabasz (*CH*) index, 135–36, 220
career trajectories, 27–28, 40, 43, 51
  fixed substitution costs, 121
  social classes and, 158–60
  transition sequence analysis, 147–48
centrality, 185–89
Centre for Time Use Research (CTUR), 6. *See also* Multinational Time Use Study
centroid linkage (clustering criteria), 272
chaining, 271
Chapman-Kolmogorov equations, 91
Chase-Dunn, Christopher, 77n8–78
CHESA program, 149
Chinese agrarian revolt, research into, 30, 157, 194
chi-square (χ^2) statistic (measure of sequential connection), 92, 99
  homogeneity, 99
  stationarity, 95
  validity assessment, 137
cluster analysis, 44
  defined, 130
  hierarchical, 130–33, 270
  partitional, 131n2
  reliability, 139
  sequence classes
    describing, 139–43
    identifying, 133–36
  validity, 136–39
coding schemes, 69, 71, 81n13
cohesive subsets, 190–93, 195, 206
  methods of identifying, 190–96
    bicomponent approach, 194–95
    blockmodeling, 196
    "frequent set" approach, 195
  sequence motifs, 195–96
color
  of lines in directed sequence network visualization, 181
  use of in visualization, 105–8
combinatorial (NMS) approach, 127, 148–49
complete linkage (clustering criteria), 272
concentric zone model of urban structure, 29–30, 29n1
conditional probability, 84–85, 92–93
continuous data capture approaches, 71
conversation analysis (CA), 36, 37, 255
cophenetic correlation coefficient, 136–37, 139n5
Cornwell, Benjamin, 40–41, 188–89, 212–13, 214, 225
Correlates of War Project, 76–78
correspondence analysis (CA), 150
Critical Path Method (CPM), 197n9
Current Population Study (CPS), 80

data collection, sampling, and measure, 70–74
  archival research, 72
  direct observation, 71
  element-position sampling, 73–74
  future research directions, 261
  online data capture, 72
  real-time data capture, 71–72, 72n3
  survey research, 70n2–71
  units of measure, 74
datasets, 75–82
  American Time Use Survey, 6, 80–82, 80n11, 80n12, 81n13, 81n14
    microsequence analysis, 217–18, 217n2, 217n3, 218n4, 218n5, 218n6, 218n7
    optimal matching sequence classification, 220–22, 220n10, 220n8, 220n9
    subset identification, 193
    tempograms, 140, 141f. 5.4
    temporal granularity, 216
    time warping, 118
    transition and switching analysis, 225

© in this web service Cambridge University Press www.cambridge.org

CAMBRIDGE

Cambridge University Press
978-1-107-10250-7 - Social Sequence Analysis: Methods and Applications
Benjamin Cornwell
Index
More information

Correlates of War Project, 76–78
Deep South study, 78–79
betweenness centrality, 187n6–88
nonrecurrent sequence networks, 167–70, 169n3
relationships among subjects, 173–74
sequence motifs, 196
subset identification, 191
two-mode networks, 174–75
Multinational Time Use Study, 6–7, 79–80, 79n10, 79n9, 176–79, 217, 217n2, 232n16, 232n17, 247–51, 258
SHARE survey, 75–76, 75n4, 190–91
first-position report, 85–86
gender differences in parenthood-stress link, 93–94, 93n1
sequence index plots, 103f. 4.7–4, 106f. 4.9, 107f. 4.10
sequential connection, 93–94, 93n1
state distribution graph, 104
state transition diagram, 102f. 4.6
stress and life course in Europe, 89–91
transition bubble graph, 101f. 4.5.
unordered nonrecurrent sequence affiliation networks, 170
Davis, Allison, 78–79, 167–69
degree centrality
one-mode directed sequence networks, 189
dendrograms, 132
cophenetic correlation coefficient, 136–37
identifying sequence classes, 134
descriptive analysis, 83–86
element frequencies, 84–85
n-grams, 85
position reports, 85–86
sequence length, 84
deviation scores, 151
Dewey, John, 243
diagonals in transition matrices, 88
dimensionality, 65–66
multidimensional sequences, 65–66
ties, 65
unidimensional sequences, 65
directed sequence networks, 164, 171
subject/element subset identification in, 190–93, 193n8
bicomponent approach, 194
"frequent set" approach, 194–95
visualization, 179–84
line color adjustment, 181
line thickness adjustment, 179–81
spring-embedded position-elements, 181–84
tiled position-elements, 184
direct observation, 71
discrete data capture approaches, 71, 72n3
distance normalization, 124–25
division of labor, 49, 213, 228, 257
divisive hierarchical clustering, 131–32
Doreian, Patrick, 192
DT coefficients, 148
duration-adjusted OM (OMv), 127
Durkheim, Émile, 22, 53, 242
dyadic withdrawal, 233n19, 235n21
dynamic Hamming distance, 127–29, 231n13
dynamic sequence networks, 201–8
interest in, 202–8
sequence subset evolution, 206–7
subject- and element-level change, 203–6, 204n10
whole sequence-network evolution, 207–8

ecological momentary assessment (EMA), 5, 71, 216
edges, 164
eigenvector centrality
one-mode sequence networks, 188
two-mode sequence networks, 187–88
element frequencies (relative frequency; unconditional probability), 84–85
element overlap matrices, 165–67, 166n1, 166n2, 192n8
element-positions, 61, 73–74
interval versus selected-interval recording, 73–74
timed- versus untimed-event recording, 73
elements in sequences, 60–61, 80–82
adjacency of, 47
designation of missing, 67, 67n1
element-positions, 61
element universe
defined, 60
size of, 60
imputation of, 66
order of, 22, 60
symbols used to represent, 61
element-transitions, 148
Elzinga, Cees H., 125, 127, 148, 149
Emirbayer, Mustafa, 36–37

© in this web service Cambridge University Press www.cambridge.org

CAMBRIDGE

Cambridge University Press
978-1-107-10250-7 - Social Sequence Analysis: Methods and Applications
Benjamin Cornwell
Index
More information

English Longitudinal Study of Ageing (ELSA), 75
episodes (spells), 62, 97–98
equivalence sets (blocks), 190
ETHNO software, 200
event history analysis, 124–25
event sequence data, 64–65
event stream analysis, 100, 260
event structure analysis (ESA; prerequisite analysis), 33, 36, 196–200, 197n9
experience sampling, 5, 71, 216
exponential random graph (p^*) models (ERGMs), 34, 200–2, 207–8, 260

factor analysis, 132n3
Faris, Robert, 30, 157, 194
Fasang, Anette E., 36, 45, 119–20, 122
Faust, Katherine, 59–62
Ferligoj, Anuška, 192
first-order Markov models ("memoryless" models), 90, 99
first-position reports, 85–86
fixed substitution costs, 121
flipbook (snapshot) visualization approach, 205–6
flow betweenness, 188n7
Forrest, John, 41
frequency state transition matrices, 87
  SHARELIFE sample, 89–90
  ties in, 88–89
"frequent set" approach, 194–95
fsQCA program, 152
fuzzy set analysis, 151–52

G^2 measure of stationarity, 95, 96, 98
game theory, 26, 37
gaps, 66–67
  element imputation, 66
  missing element designation, 67, 67n1
  position deletion, 66–67
Gardner, Burleigh, 78–79, 167–69
Gardner, Mary, 78–79, 167–69
Gauthier, Jacques-Antoine, 146
generalized synchrony
  defined, 227, 228–29
  interpersonal synchrony versus, 227
  measurement of, 230–35
  visualization of, 236–38
general linear model (GLM), 33–35
geometric comparison, 149–50
Gershuny, Jonathan, 214, 214n1. *See also* Centre for Time Use Research; Multinational Time Use Study
Geyer-Schulz, Andreas, 100
Gibson, David R., 227
Giddens, Anthony, 23–24, 185, 243
Glorieux, Ignace, 214
Goffman, Erving, 223
"gold standard" cluster classification schema, 139
Gottman, John Mordechai, 85, 91, 95, 99–100
grayscale, use of in visual aids, 105–8

H^2 measure of homogeneity, 98–99, 225–26
habitus concept, 24, 55, 229, 243
Halpin, Brendan, 127
Hamming, Richard, 116
Hamming distance, 116, 118t. 5.1, 119. *See also* dynamic Hamming distance
Han, Shin-Kap, 40
Health and Retirement Study (HRS), 75
higher-order Markov models (semi-Markov models), 91
historical social science, 30
Hollister, Matissa, 127
homogeneity, 98–99, 225–26
  H^2 measure of, 98–99, 225–26
homophily, 48
Huisman, Mark, 77n7
Hyrcak, Alex, 138

identity formation, 158, 224n12
individuality in modern society, 48–50
informR package for R, 260
insertion/deletion operations (indels), 110, 112, 115–16. *See also* operation costs; operation distance
interactional field theories, 51
interaction process analysis (IPA), 28, 53, 255
International Social Survey Programme (ISSP), 7
interpersonal synchrony
  defined, 227
  generalized synchrony versus, 227, 228–29
  importance of, 227–28
  measurement of, 230–35
  visualization of, 236–38
Inter-university Consortium for Political and Social Research (ICPSR), 7
interval recording, 73–74
interviewer-assisted recall method (IARM), 70n2–71

© in this web service Cambridge University Press www.cambridge.org

CAMBRIDGE

Cambridge University Press
978-1-107-10250-7 - Social Sequence Analysis: Methods and Applications
Benjamin Cornwell
Index
More information

involuntary (reluctant) switches, 224–25

Kan, Man Yee, 147
Knoke, David, 31, 167
Kohler, Ulrich, 119–20

Laumann, Edward O., 24, 29, 31, 50–51, 69, 152, 161, 162, 167, 193
Lausanne Conference on Sequence Analysis (2012), 5
leave-behind diary method (LBDM), 70n2–71
Lesnard, Laurent, 128, 129, 147, 213–14
Levenshtein, Vladimir, 115
Levenshtein distance, 115, 118t. 5.1
Levenshtein II distance, 115–16, 118t. 5.1, 119
life-course studies, 36. *See also* SHARELIFE sample
  distance normalization, 124–25
  network-analytic approaches, 157, 158–60
  position reports, 85–86
  sequence index plots, 102–4
  transition bubble graphs, 100
  transition matrices, 89–91
life history calendar (LHC) method, 76, 89
linear stage theories, 29–30
line graphs, 134–35
localized OM (LOM), 127
logit transform (β) statistic, 92–93, 94

Marcum, Christopher Steve, 260
Markovian analysis, 50, 91, 162–63
  first-order Markov models, 91
  homogeneity testing, 99
  stationarity, 94
Marsden, Peter V., 69
Martin, Peter, 137–38
Mayer, Karl Ulrich, 36
medoid sequence, 126, 141
"memoryless" models (first-order Markov models), 90, 99
microsequence analysis, 8–9, 10–11, 17–18, 33, 43–44, 52–55, 210
  defined, 210
  elements of, 214–17
    data collection and availability, 216–17
    elements and positions, 215–16
    relationship to microinteraction sequences, 215
  implications of, 212–14
  micro-time scale context, 211–14, 214n1
  network sequence approaches to, 226–51
    routine, 55, 241–51
    synchrony, 54, 227–41
  non-network sequence approaches to, 217–26, 217n2
    optimal matching sequence classification, 220–22, 220n10, 220n8, 220n9
    transition and switching analysis, 222–26, 223n11, 224n12
  switching, 54
modal sequence, 126, 140–41
Moen, Phyllis, 40
momentary sampling (selected-interval recording), 73–74
Moody, James, 30, 157, 194
moving time windows, 87
multi-channel sequence analysis (MCSA), 65–66, 146
MultiDendrograms software, 138, 139n5
multidimensional scaling (MDS), 137, 152, 192–93
multidimensional sequence analysis, 65–66, 144–46, 172
  alphabet expansion, 145–46
  multi-channel sequence analysis, 146
  sequence dimension cross-tabulation, 145
Multinational Time Use Study (MTUS), 6–7, 79–80, 79n10, 79n9, 176–79, 217, 217n2, 232n16, 232n17, 247–51, 258. *See also* American Time Use Survey; Centre for Time Use Research
Myrdal, Jan, 157

narrative positivism, 33–36
National Longitudinal Study of Adolescent Health (AddHealth) project, 63, 67n1
  element positions, 85
  subsets, 190
Needleman-Wunsch algorithm, 114–15
Netherlands time use survey, 247–51, 248n26, 248n27, 250n28
network-analytic approaches, 8, 17, 33, 46–52, 105, 155–209
  affiliation through sequential phenomena, 48–51
  concepts and terminology, 163–67
    directed networks, 164

© in this web service Cambridge University Press www.cambridge.org

CAMBRIDGE

Cambridge University Press
978-1-107-10250-7 - Social Sequence Analysis: Methods and Applications
Benjamin Cornwell
Index
More information

network-analytic approaches (*cont.*)
element overlap matrices, 165–67, 166n1, 166n2
network matrices, 163–64
one-mode networks, 165
subject co-membership matrices, 165–67
two-mode networks, 165
undirected networks, 164
dynamic sequence networks, 201–8
interest in, 201–8
sequence subset evolution, 206
subject- and element-level change, 202–6, 204n10
whole sequence-network evolution, 207–8
emergent and fleeting opportunities, 52
event structure analysis, 196–200, 197n9
microsequence analysis, 226–51
routine, 241–51
synchrony, 227–41
sequence-network construction, 167–72
directed sequence networks, 171
multidimensional sequence networks, 172
nonrecurrent sequence networks, 167–70
recurrent sequence affiliation networks, 170–71
sequences of network phenomena, 51–52
Simmel, Georg, 48–50, 160–61, 162, 184–85, 187n6–88, 243
statistical network models for sequential events, 200–1
exponential random graph models, 200
structural measures for sequence networks, 184–89, 188n6, 188n7
subject/element subset identification, 189–96
in directed sequence networks, 193–95
in sequence affiliation networks, 190–93, 192n8
sequence motifs, 195–96
theory behind, 156–63
affiliations among subjects, 160–63
conceptualizing and modeling sequenced phenomena, 156–60
utility of, 155
vacancy chain approach, 51
visualization, 172–84
directed sequence networks, 179–84
one-mode networks, 173–74
two-mode ordered event networks, 174–75
two-mode recurrent sequences, 176–79
network drawing algorithms, 173
network matrices, 163–64
n-grams, 62, 85
NMS (combinatorial) approach, 127, 148–49
non-alignment sequence comparison methods, 148–50
combinatorial approach, 148–49
DT coefficients, 148
geometric comparison, 149–50
nonrecurrent sequence networks, 167–70
ordered nonrecurrent event networks, 167–70, 169n3
unordered nonrecurrent sequence affiliation networks, 170
nonrecurrent sequences, 63

OM analysis. *See* optimal matching analysis
OMv (duration-adjusted OM), 127
one-mode networks, 165
centrality and bridging, 186–88
visualization, 173–74
online data capture, 72
operation costs, 113, 116–19
arbitrary, 120–22
fixed substitution costs, 121
static costs, 121–22
order versus timing, 116–18
regimes, 115–16
dynamic Hamming distance, 127–29
Hamming distance, 116, 118t. 5.1, 119
Levenshtein distance, 115, 118t. 5.1
Levenshtein II distance, 115–16, 118t. 5.1, 119
time warping, 118–19
variable substitution costs, 122–24
complications from variable costs, 124
raw differences as costs, 123–24
operation distance, 113
distance normalization, 124–25
reference sequence comparison, 125–26
spell-adjusted distances, 126–27
duration-adjusted OM, 127
localized OM, 127

© in this web service Cambridge University Press www.cambridge.org

CAMBRIDGE

Cambridge University Press
978-1-107-10250-7 - Social Sequence Analysis: Methods and Applications
Benjamin Cornwell
Index
More information

time warp edit distance, 127
optimal matching (OM) analysis, 33, 40, 41, 47–48, 109–10, 111–15
criticisms of, 41–44, 119–22, 212
arbitrary operation costs, 120–22
theory/method fit, 120
finding optimal solution, 113–14
improvements on classical, 122–29
microsequence classification, 220–22
Needleman-Wunsch algorithm, 114–15
operation costs, 113, 116–19
arbitrary, 120–22
order versus timing, 116–18
regimes, 115–16, 127–29
time warping, 118–19
variable substitution costs, 122–24
operation distance, 113
distance normalization, 124–25
reference sequence comparison, 125–26
spell-adjusted distances, 126–27
position deletion, 66
secondary activities, 172
sequence alignment operations
insertion/deletion operations, 112
substitutions, 112
sequence pattern studies using, 264t.A.1–69
symmetric transition matrices, 88
transformations in, 42–44, 42n4
ordered nonrecurrent event networks, 167–70, 169n3
ordered nonrecurrent sequence networks, 201–2
ordered recurrence, 63–64
oversaturation, 236

*p** (exponential random graph models [ERGMs]), 34, 200–2, 207–8, 260
Pajek network analysis program, 184, 192, 257
Panel Study of Income Dynamics (PSID), 6
Park, Robert E., 39n3
Parsons, Talcott, 23
partitional clustering, 131n2. *See also* agglomerative hierarchical clustering
Pnet software, 201
position reports, 85–86
positions, 60
deletion of, 66–67
position universe, 69
preference orders, 26, 32n2
as nonrecurrent sequences, 63
sequence universe size, 68
Prensky, David, 69
prerequisite analysis (event structure analysis [ESA]), 33, 36, 196–200, 197n9
principal component analysis (PCA), 150
probabilistic patterns. *See* stochastic patterns
probability state transition matrices, 87
SHARELIFE sample, 90
ties in, 89
Program Evaluation and Review Technique (PERT), 197n9
"publics", 185, 238–39. *See also* switching

Qualitative Harmonic Analysis (QHA), 150

"race-relations cycle", 39n3
Rahmann, Sven, 149
real-time data capture, 71–72, 72n3
recall bias, 70n2–71, 193–94
"recombinant-property" network structures, 51–52
reconstructed network approach, 77n7, 77n8–78
recurrence, 63–65
defined, 63
first-position reports, 85–86
nonrecurrent sequences, 63
ordered and unordered, 63–64
repeat observation versus, 64–65
sequence universe size and, 68
transition matrix shape, 88
recurrent sequence affiliation networks, 170–71
reference sequence comparison, 125–26
regression analysis methods, 34–35, 36, 83, 99, 100
regularized action, 22, 53
relational events framework
informR package for R, 260
relative frequency (element frequencies), 84–85
reliability, 139. *See also* validity
reluctant (involuntary) switches, 224–25
repeat observation, 64–65, 73
reversals, 110, 120
Robette, Nicolas, 149, 150

© in this web service Cambridge University Press www.cambridge.org

CAMBRIDGE

Cambridge University Press
978-1-107-10250-7 - Social Sequence Analysis: Methods and Applications
Benjamin Cornwell
Index
More information

routine, 55, 241–51
  defined, 241
  future research directions, 257–58
  measurement of, 244–51, 246n25
    distribution of routine, 248–51
    illustration of, 247–51, 248n26, 248n27, 250n28
  theoretical foundations for, 242–44
  visualization of, 247
routinization, 23–24, 202–3, 257–58
Roy, Anup Kumar, 85, 91
runs (spells), 62, 97–98

Savage, Michael, 43, 120–21
"scraping" technology, 5
script theory, 24, 55
selected-interval recording (momentary sampling), 73–74
semi-Markov models (higher-order Markov models), 91
sensory sequences (stimulus sequences), 25–26
sequence affiliation networks
  recurrent, 170–71
  subject/element subset identification in, 190–93, 193n8
  unordered nonrecurrent, 170
sequence alignment operations. *See also* whole-sequence comparison methods
  insertion/deletion operations, 110, 112
  reversals, 110, 120
  substitutions, 110, 112
  swaps, 110, 120
  symmetry of, 112, 112n1
sequence description techniques, 3, 16
sequence dimension cross-tabulation, 145
sequence index plots, 102–4, 140
sequence learning, 25–26
sequence length (*t*), 84
sequence motifs, 195–96, 239n24
sequence-network methods. *See* network-analytic approaches
sequences, 16. *See also* social sequences
  data collection, sampling and measure, 70–74
    archival research, 72
    direct observation, 71
    element-position sampling, 73–74
    online data capture, 72
    real-time data capture, 71–72, 72n3
    survey research, 70n2–71
    units of measure, 74
  dimensionality, 65–66
    multidimensional sequences, 65–66
    ties, 65
    unidimensional sequences, 65
  gaps, 66–67
    element imputation, 66
    missing element designation, 67, 67n1
    position deletion, 66–67
  outside of the social sciences, 4, 39–40, 41–43
  properties of, 59–62
    elements, 60–61
    n-grams, 62
    positions, 60
    spells, 62
    subjects, 62
    subsequences, 61
    substrings, 62
  recurrence, 63–65
    defined, 63
    nonrecurrent sequences, 63
    ordered and unordered, 63–64
    repeat observation versus, 64–65
  sequence universe, 67–70
    boundary specification, 69–70
    size of, 67–69
sequence structure detection, 16, 83
  descriptive analysis, 83–86
    element frequencies, 84–85
    n-grams, 85
    position reports, 85–86
    sequence length, 84
  homogeneity, 98–99
  sequential connection, 91–94
    illustration of, 93–94, 93n1
  spells, 97–98
  stationarity, 94–97
    defined, 94
    illustration of, 96–97
    lack of, 95
    tests for detecting, 95
  stochastic patterns, 86–91
    defined, 86
    Markov chains, 91
    transition matrices, 86–91
  using summary statistics and tests, 99–100
  visual aids, 100–8
    sequence index plots, 102–4
    sequence-network diagrams, 105
    state distribution graphs, 104

© in this web service Cambridge University Press www.cambridge.org

CAMBRIDGE

Cambridge University Press
978-1-107-10250-7 - Social Sequence Analysis: Methods and Applications
Benjamin Cornwell
Index
More information

state transition diagrams, 101–2
tempograms, 104
transition bubble graphs, 100
use of color and grayscale, 105–8
sequential connection, 91–94
illustration of, 93–94, 93n1
measures of
β (logit transform) statistic, 92–93, 94
chi-square (χ^2) statistic, 92, 95, 99, 137
z-statistic, 92, 93–94, 99
sequential statistical inference, 259–61
sexual script theory, 29
SHARELIFE sample, 75–76, 75n4, 190–91
first-position report, 85–86
gender differences in parenthood-stress link, 93–94, 93n1
sequence index plots, 103f. 4.7.–4, 106f. 4.9., 107f. 4.10.
sequential connection, 93–94, 93n1
state distribution graph, 104
state transition diagram, 102f. 4.6.
stress and life course in Europe, 89–91
transition bubble graph, 101f. 4.5.
unordered nonrecurrent sequence affiliation networks, 170
SIENA software, 208
Simmel, Georg, 48–50, 160–61, 162, 184–85, 187n6–88, 243
single linkage (clustering criteria), 270–71
sleep diaries, 195
snapshot (flipbook) visualization approach, 205–6
social network analysis (SNA), 36, 37, 78–79, 156, 202, 203, 258–59
social network change detection algorithms, 207
social sequence analysis, 16, 18, 21, 255
future research directions, 257–61
data collection, 261
routine and routinization, 257–58
sequential statistical inference, 259–61
social networks, 258–59
growth of interest in, 4–7
increasing availability of datasets, 6–7
limitations of, 256–57
origins of, 32–44
development of whole-sequence analysis methods, 38–41
narrative positivism, 33–36
pivotal criticisms, 41–44
relational nature of social phenomena, 36–38
structural assumptions, 32
recent developments in, 4–7
second wave of, 4–5, 45–55, 122–29
distance normalization, 124–25
dynamic Hamming method, 127–29
microsequence analysis, 52–55
network-analytic approach, 46–52
reference sequence comparison, 125–26
spell-adjusted distances, 126–27
variable substitution costs, 122–24
use of term, 5, 46, 51–52
social sequences
adjacency of elements within, 47
defined, 21–22
forms of order, 22
significance of, 25–31
ecological psychology, 28
economics, 26
economic sociology and organization, 31
emergent networks, 28–29
historical social science, 30
linear stage theories, 29–30
political science, 31
psychology, 25–26
small-group research, 28–29
social exchange, 28–29
sociology, 27
symbolic interaction, 29
time geography, 26–27, 28
urban ecology, 29–30, 29n1
work histories, 27–28
structural origins of, 22–25
habitus concept, 24
institutionalization of social action, 23
regularized action, 22
script theory, 24
social integration, 22–23
structuration theory, 23–24
Sociological Methods & Research special issues on sequence analysis, 4–5, 45
Sorokin, Pitrim A., 213, 242–43, 244, 257–58
Spanish Time Use Survey (STUS), 232–34, 232n15, 233n18, 233n19, 236–38, 239–41
spell-adjusted distances, 126–27
duration-adjusted OM, 127
localized OM, 127
time warp edit distance, 127
spells (runs; episodes), 62, 97–98

© in this web service Cambridge University Press www.cambridge.org

CAMBRIDGE

Cambridge University Press
978-1-107-10250-7 - Social Sequence Analysis: Methods and Applications
Benjamin Cornwell
Index
More information

Spiro, Emma S., 213
spring-embedded
  position-elements, 181–84
square matrices, 87, 163–64
Stadtfeld, Christoph, 100
Stark, David, 40, 203–5, 207
Stata SQ sequence analysis
  package, 6, 84
  advantages and limitations of, 256–57
  cluster analysis, 273
  cophenetic correlation coefficient, 138
  optimal matching algorithm, 114
  raw differences as costs, 124
  SEQCOMP plug-in, 129
  "sqegen" and "sqfirstpos" commands, 86
  "sqegen" and "sqfreq" commands, 85
state distribution graphs, 104, 140
state transition diagrams, 101–2
static costs, 121–22
stationarity, 94–97
  defined, 94
  illustration of, 96–97
  lack of, 95
  tests for detecting, 95
step-by-step (stochastic) methods,
  38–39, 50
stimulus sequences (sensory
  sequences), 25–26
stochastic (probabilistic) patterns, 86–91
  defined, 86
  Markov chains, 91
  transition matrices, 86–91
    defined, 86–87
    diagonals, 88
    frequency state, 87
    illustration of, 89–91
    probability state, 87
    symmetric, 88
    ties in, 88–89
stochastic (step-by-step) methods,
  38–39, 50
stochastic actor-based models
  (SAOMs), 207–8
Stovel, Katherine, 43, 120–21, 158
Strauss, Anselm L., 24, 244
stress measure, 137–38
structural equivalence, 161, 191
structuration theory, 23–24, 55, 242
subject co-membership matrices, 165–67,
  169, 192n8
subjects, 62
subsequences, 61
substitutions, 110, 112. *See also* operation
  costs; operation distance
substrings, 62
Survey of Health, Ageing, and Retirement
  in Europe (SHARE), 75–76, 75n4.
  See also SHARELIFE sample
survey research, 70n2–71
survival analysis, 14
swaps, 110, 120
Swiss Household Panel study, 146
switching, 54, 222–26, 223n11, 224n12.
  See also microsequence analysis;
  "publics"
symbolic interaction, 53, 215
symmetric network matrices, 164
symmetric transition matrices, 88
synchronization, 202, 235n21
synchrony, 54, 176–79, 227–41, 258–59
  defined, 227
  identifying sources of, 238–41, 239n24
  measurement of, 230–35, 231n13,
    231n14
    caveats on, 234–35, 235n20
    illustration of, 232–34, 232n15,
      232n16, 232n17, 233n18, 233n19
  theoretical foundations for, 227–30
  visualization of, 236–38, 236n22,
    236n23

t (sequence length), 84
TEMPO (Time-by-Event-by-Member
  Pattern Observation) system, 28
tempograms, 104, 140
ties
  dimensionality, 65
  in transition matrices, 88–89
tiled position-elements, 184
timed-event recording, 73
timed event sequence data, 64
time diaries, 70, 72n3
  directed sequence networks, 171
  indels versus substitutions, 117
  measuring synchrony, 230–31
  missing element designation, 67
  routine, 247–48
  sequence length, 84
time geography, 26–27, 28
time-use research, 37, 211. *See also*
  microsequence analysis
time warp edit distance (TWED), 127
time warping, 118–19
TraMineR package for R

© in this web service Cambridge University Press www.cambridge.org

CAMBRIDGE

Cambridge University Press
978-1-107-10250-7 - Social Sequence Analysis: Methods and Applications
Benjamin Cornwell
Index
More information

advantages and limitations of, 256–57
cluster analysis, 273
cophenetic correlation coefficient, 137, 138
optimal matching algorithm, 114
raw differences as costs, 124
transformation costs, 43–44
transition bubble graphs, 100
transition matrices, 86–91
defined, 86–87
diagonals, 88
frequency state, 87
illustration of, 89–91
probability state, 87
symmetric, 88
ties in, 88–89
transition plots, 100
transitions, 86
transition sequence analysis approach, 42n4, 147–48, 222–26
transitivity theories, 200
Tsay, Angela, 40, 44
Tufte, Edward R., 9
two-mode (bipartite) networks, 165, 174–75
centrality and bridging, 186–88
ordered event networks, 174–75
recurrent sequences, 176–79, 176n4, 177n5
"two-mode" network analysis (affiliation network analysis), 50, 162
two-stage optimal matching (2SOM) analysis, 146–47
typical-sequences and/or families-of-sequences (TSFS), 15

Ucinet network analysis program, 192, 257
UK Time Use Survey
directed sequence networks, 179–84
dynamic sequence networks, 205–6
two-mode networks, 176–79, 176n4, 177n5
two-mode recurrent sequences, 176–79, 176n4, 177n5
unconditional probability (element frequencies), 84–85
undirected networks, 164
unexpected transitions, 224–25
unidimensional sequences, 65
units of measure, 74
unordered nonrecurrent sequence affiliation networks, 170
unordered recurrence, 63–64
untimed-event recording, 73
urban ecology, 29–30, 29n1, 38

vacancy chains, 51
validity. *See also* reliability
assessing in sequence classification, 136–39
cophenetic correlation coefficient, 136–37, 139n5
stress measure, 137
concerns in sequence analysis, 44, 256
variable substitution costs, 122–24
complications from, 124
raw differences as costs, 123–24
Vedres, Balázs, 40, 203–5, 207
visualization, 9, 100–8, 172–84
directed sequence networks, 179–84
line color adjustment, 181
line thickness adjustment, 179–81
spring-embedded position-elements, 181–84
tiled position-elements, 184
one-mode networks, 173–74
routine, 247
sequence index plots, 102–4
sequence-network diagrams, 105
state distribution graphs, 104
state transition diagrams, 101–2
synchrony, 236–38, 236n22, 236n23
tempograms, 104
transition bubble graphs, 100
Tufte, Edward R., 9
two-mode ordered event networks, 174–75
two-mode recurrent sequences, 176–79, 176n4, 177n5
use of color and grayscale, 105–8
voluntary switches, 224–25

Wallerstein, Immanuel, 76n5–77
Wang, Hui, 149
Warburton, Elizabeth, 40–41
Ward's linkage (clustering criteria), 272
Wasserman, Stanley, 59–62
Watkins, Kate, 188–89, 214
Weber, Max, 22–23, 242
weighted average (clustering criteria), 272
White, Harrison C., 51, 185, 223–24, 224n12, 238–39

© in this web service Cambridge University Press www.cambridge.org

CAMBRIDGE

Cambridge University Press
978-1-107-10250-7 - Social Sequence Analysis: Methods and Applications
Benjamin Cornwell
Index
More information

whole-sequence comparison methods, 16–17, 109–52
  classical optimal matching, 111–15
    considerations in setting operation costs, 116–19
    criticisms of, 119–22
    finding optimal solution, 113–14
    improvements on, 122–29
    Needleman-Wunsch algorithm, 114–15
    operation cost regimes, 115–16
  operation costs, 111, 113
  operation distance, 111, 113
  recent advances in, 143–52
    deviation scores, 151
    fuzzy set analysis, 151–52
    multidimensional sequence analysis, 144–46
    non-alignment techniques, 148–50
    sequence-network methods, 152
    transition sequence analysis, 147–48
    two-stage optimal matching analysis, 146–47
  sequence alignment, 110–11
  sequence alignment operations, 110–11
    insertion/deletion operations, 110, 112
    substitutions, 110, 112
    symmetry of, 112, 112n1
  whole-sequence pattern detection, 129–43
    describing sequence classes, 139–43
    hierarchical cluster analysis, 130–33
    identifying sequence classes, 133–36
    reliability, 139
    validity, 136–39
whole-sequence pattern detection, 129–43
  describing sequence classes, 139–43
    illustration of, 142–43
  hierarchical cluster analysis, 130–33
  identifying sequence classes, 133–36
  reliability, 139
  studies using OM and related methods, 264t. A.1–69
  validity, 136–39
Wiggins, Richard D., 137–38
"working backwards" technique, 81n13
world-system theory, 76–78, 76n5, 77n8
  cluster analysis, 132, 132n4, 135f. 5.3., 142–43
  cophenetic correlation coefficient, 139n5
  stationarity in world system, 96–97
  variable substitution costs, 122–23
World Values Survey (WVS), 7
Wu, Lawrence L., 43, 121
WVS (World Values Survey), 7

z-statistic (measure of sequential connection), 92, 99
  SHARELIFE sample, 93–94

© in this web service Cambridge University Press www.cambridge.org