

Title	人に生まれながらにして具わる言語の仕組みとは何か：理論的意義と経験的帰結
Sub Title	What is the innate mechanism of the human language? : its theoretical significance and empirical consequences
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Abstract	<p>Chomsky (2020)ではMerge はWorkspace (WS) に適用される操作として捉えなおされ、MERGEと呼ばれている。</p> <p>(1) <math>MERGE(P, Q, WS) = [\{P, Q\}, X_1, \dots, X_n] = WS'</math></p> <p>MERGEはWSのP, Qから{P, Q}をつくり、WSをWS'へと変換する操作であるが、WS'には{P, Q}以外に何が含まれているのであろうか。この点についてChomsky (2020)では、以下の一般原理からその答えを導き出すことができると議論している。</p> <p>(2) Preservation of Terms (PT): WS' includes every term of WS as its term. (3) Resource Restriction (RR): The number of accessible terms increases by one and only one from WS to WS'.</p> <p>PTのもとでは、WSの要素でPでもQでもないものは、必ずWS'の要素として含まれねばならず、RRのもとでは、WSからWS'の変換で適用対象となり得る要素の増加は1要素のみに限定される。</p> <p>本研究では、PTとRRを満たすMERGEのもとでは、External MERGE (EM)とInternal MERGE (IM)は認可されるが、それ以外は除外されること、また(4)のTakano-Müllerの制約 (Takano-Müller's constraint, TMC) が定理として導き出せることを明らかにした。</p> <p>(4) In [... [X ... t1 ... ]2 ... Y1 ... t2 ...], movement of Y and movement of X may not be of the same type.</p> <p>MERGEの適用で注目すべき点は以下の通りである。EMでは、WS'はWSのすべての要素を含み、MERGEの適用対象の増加は1 (3→4) である。IMでも、WS'はWSのすべての要素を含み、MERGEの適用対象の増加は (WS'は7要素含む) 最小探索 (Minimal Search) のもと1 (5→6) である。EMとIM以外では、適用対象の増加が2 (4→6) となり、すべてRRの違反として除外される。TMCについては、the Phase-Impenetrability Condition (PIC)を仮定すると、RRの違反が生じるのは相 (phase) 内の移動であり、相 (phase) 外への移動はPICの効果のもとRRの違反とならないことが導き出される。</p> <p>Chomsky (2020) (re)formulates Merge as applying to a Workspace (WS) and yielding a new WS', and it is called (capital) MERGE:</p> <p>(1) <math>MERGE(P, Q, WS) = [\{P, Q\}, X_1, \dots, X_n] = WS'</math></p> <p>MERGE maps WS to WS' by selecting P, Q from WS, forming {P, Q}, and adding {P, Q} to WS'. But what else appears in WS'? Chomsky argues that the answer to this question naturally follows from the following two general principles.</p> <p>(2) Preservation of Terms (PT): WS' includes every term of WS as its term. (3) Resource Restriction (RR): The number of accessible terms increases by one and only one from WS to WS'.</p> <p>It follows from PT that if Y is a member of WS, and Y is neither P nor Q, then Y is a member of {X1, ..., Xn}, and from RR that accessibility increase is restricted to one and only one per MERGE application.</p> <p>In this study, we demonstrated (i) how MERGE, satisfying PT and RR, allows External MERGE</p>

	<p>(EM) and Internal MERGE (IM) (but nothing beyond them) as legitimate applications, and (ii) Takano-Müller's constraint (TMC), stated in (4), is a theorem established on the basis of the proper formulation of 3rd factor principles.</p> <p>(4) In [... [X ... t1 ... ]2 ... Y1 ... t2 ...], movement of Y and movement of X may not be of the same type.</p> <p>Consider the relevant aspects of each application: In EM, WS' includes every term of WS as its term, and accessibility increases by one (3→4). In IM, WS' includes every term of WS as its term, and accessibility increases by one (5→6). Note WS' contains 7 terms, but only 6 of them are accessible under Minimal Search. In all other cases, WS' includes every term of WS as its term, but accessibility increases by two (4→6), so they are all ruled out. As for TMC, given the Phase-Impenetrability Condition (PIC), it follows that a violation of RR results if there is no phase boundary between the higher X and the moved Y, while if there is a phase boundary between them, the moved Y becomes inaccessible by PIC, thereby satisfying RR. Thus, TMC receive a principled account.</p>
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人に生まれながらにして具わる言語の仕組みとは何か: 理論的意義と経験的帰結						
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What is the innate mechanism of the human language? – Its theoretical significance and empirical consequences						
研究組織						
氏名 Name		所属・学科・職名 Affiliation, department, and position				
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1. 研究成果実績の概要						
Chomsky (2020)では Merge は Workspace (WS) に適用される操作として捉えなおされ、MERGE と呼ばれている。						
(1) $MERGE(P, Q, WS) = [ \{P, Q\}, X_1, \dots, X_n ] = WS'$						
MERGE は WS の P, Q から{P, Q}をつくり、WS を WS' へと変換する操作であるが、WS'には{P, Q}以外に何が含まれているのであろうか。この点について Chomsky (2020)では、以下の一般原理からその答えを導き出すことができると議論している。						
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本研究では、PTとRRを満たすMERGEのもとでは、External MERGE (EM)とInternal MERGE (IM)は認可されるが、それ以外は除外されること、また(4)のTakano-Müllerの制約(Takano-Müller's constraint, TMC)が定理として導き出せることを明らかにした。						
(4) In [... [X ... t1 ... ]2 ... Y1 ... t2 ...], movement of Y and movement of X may not be of the same type.						
MERGEの適用で注目すべき点は以下の通りである。EMでは、WS'はWSのすべての要素を含み、MERGEの適用対象の増加は1(3→4)である。IMでも、WS'はWSのすべての要素を含み、MERGEの適用対象の増加は(Ws'は7要素含むが)最小探索(Minimal Search)のもと1(5→6)である。EMとIM以外では、適用対象の増加が2(4→6)となり、すべてRRの違反として除外される。TMCについては、the Phase-Impenetrability Condition (PIC)を仮定すると、RRの違反が生じるのは相(phase)内の移動であり、相(phase)外への移動はPICの効果のもとRRの違反とならないことが導き出される。						
2. 研究成果実績の概要 (英訳)						
Chomsky (2020) (re)formulates Merge as applying to a Workspace (WS) and yielding a new WS', and it is called (capital) MERGE:						
(1) $MERGE(P, Q, WS) = [ \{P, Q\}, X_1, \dots, X_n ] = WS'$						
MERGE maps WS to WS' by selecting P, Q from WS, forming {P, Q}, and adding {P, Q} to WS'. But what else appears in WS'? Chomsky argues that the answer to this question naturally follows from the following two general principles.						
(2) Preservation of Terms (PT): WS' includes every term of WS as its term.						
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It follows from PT that if Y is a member of WS, and Y is neither P nor Q, then Y is a member of {X1, ..., Xn}, and from RR that accessibility increase is restricted to one and only one per MERGE application.						
In this study, we demonstrated (i) how MERGE, satisfying PT and RR, allows External MERGE (EM) and Internal MERGE (IM) (but nothing beyond them) as legitimate applications, and (ii) Takano-Müller's constraint (TMC), stated in (4), is a theorem established on the basis of the proper formulation of 3rd factor principles.						
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## 3. 本研究課題に関する発表

発表者氏名 (著者・講演者)	発表課題名 (著書名・演題)	発表学術誌名 (著書発行所・講演学会)	学術誌発行年月 (著書発行年月・講演年月)
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